GeoJournal of Tourism and Geosites

GTG

GeoJournal of Tourism and Geosites
Oradea University Press

The Journal is issued under aegis and with financial support of:

University of Oradea, Romania
Department of Geography, Tourism and Territorial Planning
Territorial Studies and Analysis Centre
1 University St., 410087, Oradea, Romania

Gdansk University of Physical Education and Sport, Poland
Faculty of Tourism and Recreation
ul. Kazimierza Górskiego 1, 80-336 Gdańsk, Poland

GTG
GeoJournal of Tourism and Geosites

PUBLICATION REQUIREMENTS OF ARTICLES
IN THE GEOJOURNAL OF TOURISM AND GEOSITES

The Editorial Board goes trough each article, which in then submitted to two referees' judgment.
Names of referees are confidential to the Editorial Board. Authors may be asked to make revisions
to their manuscript. If substantial revision is required manuscripts may be re-reviewed before a decision
to accept/publish is made. Final acceptance of manuscripts for publication is at the discretion of the Editors.

Authors alone are responsible for the opinions expressed in their papers.

C O N T E N T S

*   *   *   *   *   *

UNDERSTANDING THE INFLUENCE OF FOOD VALUE ON FAST-FOOD CUSTOMER BEHAVIOR: A STUDY ON THE MEDIATING ROLE OF BLOGGER REVIEWS AND MODERATING EFFECT OF CONTENT CREDIBILITY

Foda M. AISHA⊙
Mass Media Communication Department, College of Arts, King Faisal University, Al-Ahsa, Saudi Arabia, e-mail: Faisha@kfu.edu.sa

Amany E. SALEM[*]⊙
Social Studies Department, College of Arts, King Faisal University, Al Ahsa, Saudi Arabia; Tourism Studies Department, Faculty of Tourism and Hotel Management, Helwan University, Cairo, Egypt, e-mail: asalem@kfu.edu.sa

Muhanna Y. ALMAKHAYITAH⊙
Social Studies Department, College of Arts, King Faisal University, Al-Ahsa, Saudi Arabia, e-mail: malmakhayitah@kfu.edu.sa,

Khaled GHAZY⊙
Department of the Personnel Management and Psychology, Ural Federal University, Yekaterinburg, Russian Federation; Department of Hotel Management, Faculty of Tourism and Hotel Management, Helwan University, Cairo, Egypt, e-mail: Khaled.ghazy@fth.helwan.edu.eg

Hisham M. AL-SMADI⊙
Department of Financial and Administrative Sciences, Ajloun College, AL-Balqa Applied University, Ajloun, Jordan, e-mail: dr-hsmadi@bau.edu.jo

Maria GOZNER⊙
Department of Geography, Tourism and Territorial Planning, Faculty of Geography, Tourism and Sport, University of Oradea, Oradea, Romania, e-mail: maria.gozner@didactic.uoradea.ro

Mohamed A.S ELSAYED⊙
Hotel Management Department, Faculty of Tourism and Hotel Management, Helwan University, Cairo, Egypt, e-mail: m4a.abdelrady@gmail.com

Abstract: This study proposes investigating the effect of food value on food bloggers' reviews (i.e., the direct effect) and the customers' purchase intentions (i.e., the direct and indirect effects) of fast-food restaurants. In addition, this study examines the moderating role of content credibility on food blogger reviews and customers' purchase intention relationships. The quantitative method is used in this study to gather data from fast-food restaurant customers in Cairo, Egypt. Where 450 questionnaires were given out to fast-food restaurant customers, 354 valid questionnaires were gathered for analysis. The data were analyzed using SPSS and Amos software. Food value positively influences food bloggers' reviews and fast-food restaurant customers' purchasing intentions. Additionally, this research found that food blogger reviews mediate a positive relationship between food value and fast-food restaurant customers' intentions to purchase. Importantly, this study discovered that content credibility has a positive moderating impact on the relationship between food blogger reviews and the purchase intention of fast-food restaurant customers. The study contributes to the literature on tourism and hospitality, where we employed food value as a decisive and influencing factor in improving food bloggers' reviews and thus influencing fast-food restaurant customers' intention to purchase. Thus, fast-food restaurant managers should create all the suggested food values because of their impact on food bloggers' reviews and customers' intentions to purchase.

Key words: food value, purchase intention, word of mouth, food bloggers' reviews, content credibility, fast-food restaurant

* * * * * *

INTRODUCTION

Restaurant managers and food industry providers consider food value to predict customers' behavioral intentions toward food consumption (Slack et al., 2020). Food value reflects the customer's perception of the food attributes, desired end-state, and consequences while food consumption in restaurants (Helal, 2022; Izquierdo-Yusta et al., 2019; Kang et al., 2015). From the perspective of food value creation, food value is the customer's provision about the food

---

[*] Corresponding author

quality (e.g., the freshness of the food and standard), food taste, and presentation (e.g., the way it is served) in restaurants (Slack et al., 2020). Needless to say, that service value is crucial to maintain customers' satisfaction and positive behavior in restaurants (Doeim et al., 2022); however, Izquierdo-Yusta et al., 2019 found that customers presented higher positive behavioral outcomes for the food value compared to the service value itself. The higher the food value is, the more vital customers' behavioral intentions are (Slack et al., 2020).

To deliver food value to potential customers, restaurant managers promote their food value on social media (Femenia-Serra et al., 2022). Social media ranks among the most informative sources of consumers' decision-making; many brands and service providers create accounts and marketing campaigns on social media to benefit from social media customers (Belanchen et al., 2021). Although service providers could maintain social media marketing campaigns through their experiences (Vrontis et al., 2021). Still, influencers are the best way to promote service providers' offerings on the service providers' pages or influencers' own social media platforms (Femenia-Serra et al., 2022). Food influencers or bloggers have become a new trend for restaurant managers to promote their food value (Lepkowska-White and Kortright, 2017). However, the restaurants' managers determined a vital problem in food market advertisement credibility, especially from social media influencers (Harris, 2022). Also, some big companies found issues in terms of food content credibility. For instance, Kraft Foods has suggested that the company strategy should go beyond gut feelings and guesswork toward systematic advertising productivity to avoid a marketing productivity credibility crisis (Luo and Donthu, 2006).

While service providers' marketers can incorporate strategies to ensure content credibility and avoid the credible threat of food influencers, customers have the strongest tendencies to evaluate content credibility (Lou and Yuan, 2019). Indeed, marketers' research argues that customers consider content credibility a crucial criterion in service evaluation and consumption intentions (Martínez-López et al., 2020). Source credibility refers to the positive features of a message that elicit acceptance from the recipient (Yılmazdoğan et al., 2021). Message credibility derives from the message itself; customers evaluate the information's accuracy and quality (Stubb and Colliander, 2019). When influencers introduce a message with intrinsic features, they are fundamental in ensuring that the message is likely to achieve desirable effects (Martínez-López et al., 2020). When customers perceive (vs. not) that influencers are trustworthy, honest, and have the credibility of the source, the effectiveness of the desired message increases with positive intentions (vs. negative) (Yılmazdoğan et al., 2021). In the restaurant context, no study investigates customers' behavioral intentions regarding food consumption after they perceive food bloggers' content credibility (vs. not) about the food value.

In this vein, we aim to contribute to the current literature by studying customers' perception of food bloggers' credibility with its impacts on their purchase behavioral intention through the Theory of Planned Behavior (TPB). TPB refers to the theory which aims to widely predict customers' behavioral intentions (Chen and Tung, 2014), TPB is an extension of the theory of reasoned action, but it differs regarding the perceived control (Ajzen, 1991; Choe et al., 2020). Hospitality researchers are concerned about TPB as a domain to study customers' intentions of pro-environmental behavior or customers' recycling intentions in hotels (Chen and Tung, 2014). The researchers found that the TPB model could powerfully predict customer visit intentions, especially in the restaurant context (Helal, 2022; Jun and Arendt, 2016). Despite the general usefulness of TPB utilization to fathom the essence behind customers' intentions, several crucial factors could make an additional effort to enhance the explanatory power of TPB (Jun and Arendt, 2016).

As suggested by Ajzen, 2002, the founder of the theory, many theories still lack justification and remain unresolved and uncertain when it comes to normative beliefs and subjective norms regarding daily life events. Therefore, we will contribute to the theory by investigating the perception of customers regarding food bloggers' content credibility to predict customers' normative beliefs and subjective norms in the restaurant context. And therefore, to the best of our knowledge, our current study will extend The TPB in the restaurant context by conceptualizing Food value (as an independent variable) influences on purchase intention (as a dependent variable) through the customer psychological perceived aspects of food influencers word of mouth (as a mediator) with the content credibility as moderated mediation. For this reason, our current study finds it necessary to explore that model to provide a crucial implication in restaurants to retain higher customers' purchase intentions by understanding customers' motivations.

LITERATURE REVIEW
1. Theory of planned behavior
The TPB is considered one of the most common theoretical frameworks for investigating how the psychological factors of subjective norms, attitude, perceived behavioral control, and behavior intention affects customers' consumption behaviors (Liu et al., 2022). Behavioral intention is considered the best predictor of an individual's behavior (Meng and Choi, 2018). According to TPB, the intention is a readiness to act on specific behaviors, determined by three elements (Vermeir and Verbeke, 2008). First, attitude toward the behavior is the extent to which an individual evaluates the consequence of the behavior favorably or unfavorably. In other words, it is influenced by connecting individuals' beliefs and perceived outcomes with planned behavior (Dunn et al., 2011). Second, the subjective norm is the perceived social pressure that influences an individual to do or not do a specific behavior. It is formed through normative beliefs indicating the degree to which other people's opinions impact an individual's future behavior (Fishbein and Ajzen, 2011). Finally, perceived behavioral control is people's perception of their ability to do a particular behavior (Moon, 2021). Meanwhile, how much one believes that one can control own behavior and ability and motivation determine the likeliness of performing a given behavior (Zhou et al., 2013). The TPB has been used in many domains, including food consumer behaviors (Scalco et al., 2017), fast-food consumption (Dunn et al., 2011; Helal,

2022; Rahamat et al., 2022; Tantawy et al., 2016), and intentions to eat safe food and sustainably (Rezai et al., 2011). In research on food value, a few studies have used the TPB as a theoretical base (Stran et al., 2016).

2. Food value

Food selection judgments become difficult when customers make many daily decisions over a quick meal (Helal, 2022). Accordingly, practitioners and scholars are interested in researching the changes and factors influencing customers' purchasing decisions from fast-food restaurants (Doeim et al., 2022; Helal, 2022; Izquierdo-Yusta et al., 2019; Slack et al., 2020). These studies found that customers make purchasing decisions based on the expected value of the restaurant's services and products. Therefore, restaurant managers must understand aspects of customer value to maintain a competitive edge (Belanche et al., 2021; Lepkowska-White and Kortright, 2017). According to Helal (Helal, 2022), customer value is a holistic perception of customers' desire, need, and anticipation of restaurant products and services in exchange for the money and effort they provide. Further, according to Pérez-Villarreal et al. (2019), among all customer values, food value is the most crucial factor for customers visiting fast-food restaurants. Customers rely on food value, which are general nutritional characteristics that they think are significantly more significant when purchasing food (Kang et al., 2015). We define food value as the qualities, objectives, and benefits customers anticipate from purchasing restaurant food in exchange for the price they pay for these meals.

Lusk (2011) developed a food value model reflecting beliefs regarding the relative importance of descriptive attributes, consequences, and desirable end states associated with purchasing and consuming food. The food value model contains elements that show what matters most to customers.

First, Lusk (2011) emphasized the food price concerning the money and effort customers expend. The cost of meals at fast-food restaurants has been found in numerous studies to be a reliable predictor of repeated purchases because fast-food customers are frequently middle-aged, such as students and new graduates, and low- to middle-income (Doeim et al., 2022; Slack et al., 2020). Second, (Lusk, 2011) paid attention to aspects related to the food, such as its attractive appearance, good preparation, excellent taste, and fixed standard recipes for preparation and presentation. Thirdly, meals with the best nutritional value and no issues for customers should be prepared using fully mature products (Pérez-Villarreal et al., 2019). Finally, the preparation and consumption of these foods respect the traditions and practices of the nation in which they are consumed, and their production has no detrimental effects on the environment (Thomas-Francois et al., 2020). Thus, by considering these food values, we argue that fast-food restaurants can establish strategies for producing items that consider customer value in all aspects.

3. Purchase intention

Purchase intention is the subjective decision to purchase certain products or services (Toudert and Bringas-Rábago, 2019), as purchase intention refers to the possibility that customers make a purchase decision based on a subjective evaluation of products under certain factors (Sharma et al., 2021). Rezai et al. (2017) pointed out the importance of determining the intention to purchase products by examining the factors involved in the purchase decision process. For example, Jahn et al. (2019) indicated that the general attitude toward products directly affects the intention to purchase as long as the people are in a condition of suitability. Similarly, Phau and Teah (2009) confirmed that when the customer has a strong positive attitude, there is a higher intention to purchase.

Purchase intention measures the probability of customers buying a product and can be used to predict customer behavior (Sharma et al., 2021). When purchasing decisions, customers weigh the advantages and disadvantages in many aspects. Only by letting customers understand and approve of the product can the enterprise make customers strongly desire to purchase. When customers use social media, they may not have a strong desire to buy at first, but after watching social media content or interaction, they will have a purchase intention (Park et al., 2007). According to Hsu et al., 2011, food value is more important than information and system quality in influencing customer satisfaction and purchase intention. Chiu et al. (2012) and Diallo (2012) underlined aspects of the probability of buying not before the customer formed an attitude and experience of the past now, as the intention is testified to be a significant factor in buying.

4. Influencers marketing

Influencer marketing refers to individuals who can influence/affect millions of users on social media platforms by promoting brands' offerings. Influencer marketing will grow and reach $16.4 billion in 2022 (Santora, 2022). In marketing strategies, marketers represent Influencers as opinion leaders who are different from celebrities. Consumers don't consider influencers as celebrities because they perceive that celebrities have non–social media activities compared with their perception of influencers that they are "born" on social media (Belanche et al., 2021).

Therefore, influencers' strength derives solely from the social media users while following influencers' social media activities and posts (Vrontis et al., 2021). Influencers often focus more on segmented social media users who share the same interests to appear more trustworthy regarding the provided brands' offerings (Taylor, 2020). Influencers come to serve as experts with whom they share their content within their respective fields (Vrontis et al., 2021). In turn, consumers who join social media platforms seek to find influencers who provide their opinions to rely on them for their decision-making (Femenia-Serra et al., 2022). Besides, the consumers are affected by influencers' word of mouth about the brands more than other marketing campaigns; that's why Zhou et al., 2021 recommended collaborations with social media influencers to leverage electronic word-of-mouth (eWOM).

5. Content credibility

The perceived credibility content is among the most factors that influence customers to have positive intentions (Luo and Donthu, 2006). Empirical studies have investigated the information or source credibility on customer intentions and found that it plays a vital role in customers' future decision-making (Xiao et al., 2018). The influencers' presence on social media platforms drives customers to explore the antecedents related to perceived source credibility.

In other words, when customers seek any information, they determine two vital factors: trustworthiness and expertise (Lou and Yuan, 2019). Source expertise refers to the source qualifications and competence, which include the influencers' skills and knowledge of certain claims or subjects. Source trustworthiness refers to the sincere, honest, and truthful customers receive when concerned about influencers' information.

Other literature (e.g., Munnukka et al., 2016) adopts two dimensions besides trustworthiness and expertise: attractiveness and similarity. Source content similarity refers to the likeness (e.g., ideological factors or demographic) customers perceive when they encounter any information source. Whereas attractiveness refers to the content attributes (e.g., design, color, etc.) that attract tourists and increase their comfort when they are watching/reading it.

6. Hypotheses development

The relationship between food value and purchase intention has been an increasingly prominent research topic in recent years. This is due to people becoming more conscious of food's nutritional worth and its impact on their health. Understanding how food value influences purchase intent is critical for businesses to effectively promote their products and services. The absence of empirical studies in this field is primarily responsible for the research gap between food value and purchase intention. While several research have looked into the relationship between food value and purchase intent, their reach has been limited. They have not fully comprehended this link and the external elements that may influence the relationship between food value and purchasing intent. For example, the food may have a high value, but friends speak adversely about this food type or food suppliers, so the desire to eat it is diminished. Still, more extensive research that examines the long-term effects of food value on purchase intention across external factors is required.

With the increasing growth of social media, blogger evaluations are an important component to consider in the context of food value and buy intent. It is unknown, for example, how food blogger reviews and content trustworthiness influence consumer purchasing decisions based on nutritional information about food goods. Such research could provide useful insights into how organizations can effectively target their marketing tactics to increase sales and profits while also giving consumers with healthier purchasing options. According to Kang et al., 2015 hospitality managers consider food value when forecasting customers' behavioral intentions.

Customers regard food value as a set of desires and expectations that enable them to judge and make purchasing decisions (Izquierdo-Yusta et al., 2019). Food value represents the benefits customers get from meals and affects their intentions and goals of purchasing (Pérez-Villarreal et al., 2019). Hence, we argue that food value is essential in creating food bloggers' reviews and customers' purchasing decisions from fast-food restaurants. Food values will influence food bloggers' reviews, and customers will purchase if the food value they expect from fast-food restaurants is provided. For example, the affordable price for value, consistent quality every time, nutritional value, excellent taste, and appealing presentation. Therefore, we hypothesize that:

H1: food value positively influences food bloggers' reviews.

H2: food value positively influences restaurants' customer purchase intentions.

In the restaurant context, Lee et al., 2021 highlighted the importance of influencers as a powerful channel for food brands' promotions. They described the food influencers as a myth of food viewability to potential customers. In the vein of the restaurant influencers' importance, the marketers give them a related name, the food bloggers (Cuomo et al., 2017). Food bloggers are influencers who represent their opinions and evaluations for customers about food value, taste, prices, and recommendations (Pilař et al., 2022). According to Mainolfi et al. (2021), food bloggers are the dominant potential consumers' intentions about specific types of foods. Therefore, we hypothesize that:

H3: food bloggers positively influence restaurants' customer purchase intentions.

H4: food bloggers positively mediate the relationship between food value and restaurants' customer purchase intentions.

When customers of restaurants evaluate any food bloggers, they consider some crucial factors such as blog authenticity, quality food products, and food shape, the same as what they are looking for in the food blog. All the previous factors are a part of the content food bloggers provide. The diversity and propagation of food bloggers raise customer questions about the food content itself. Thus, studying the content credibility of food bloggers is crucial to achieving the best results in restaurant marketing campaigns.

Customers also find that credible content and brand trust are moving in the same decision-making tube. Therefore, scholars in customer service investigate the credibility of source information on customer-perceived trust. Martínez-López et al. (2020) have recently shown that customers who perceive influencers' messages with trust are likely to rely more on them when making their decisions. In this vein, customers seeking food experiences at restaurants will likely encounter the same path of information source credibility, given the positive effects of content credibility on consumers' satisfaction and intentions (Kim and Kim, 2021). Therefore, we hypothesize that:

H5: content credibility about restaurant foods moderates the relationship between food bloggers recommendation and customer purchase intentions. Figure 1 illustrates the hypotheses of the current study.
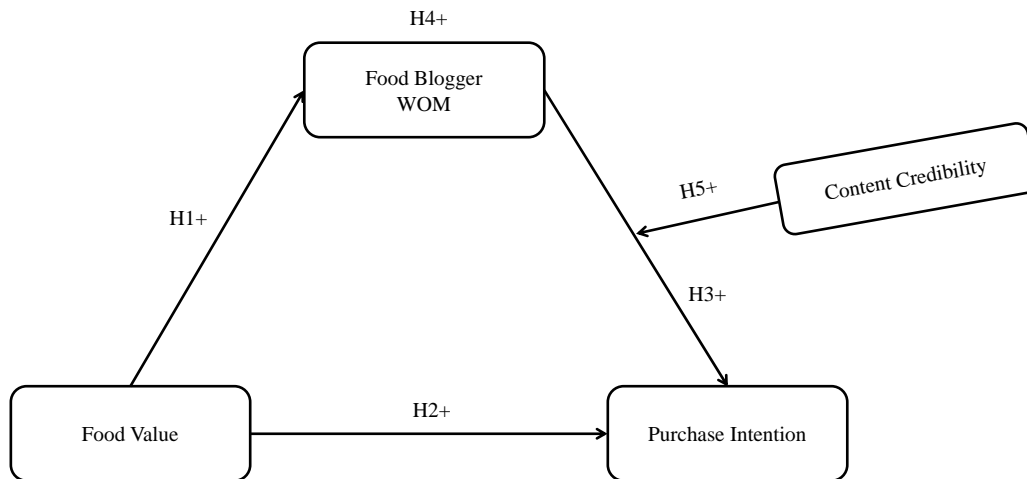
Figure 1. The conceptual framework

MATERIALS AND METHODS

1. Constructs measures

Their wide usage justifies these variables in the survey in previous literature. The food value variable was adopted from two studies (Lusk, 2011; Pérez-Villarreal et al., 2019), which used it to measure the perceived quality of food products. The bloggers' reviewers' variable was adopted from one study, which used it to measure the influence of bloggers on consumer purchase decisions. The content credibility variable was adopted from two studies (Lee et al., 2021), which used it to measure the trustworthiness of online content. Finally, the purchase intention variable was adopted from two studies (Diallo, 2012; Pérez-Villarreal et al., 2019), which used it to measure consumers' intentions to purchase a product or service. These variables have been widely used in previous literature and are valid and reliable measures of consumer behavior. Therefore, their use in this survey is justified as they comprehensively assess consumer attitudes towards food products and online content. Furthermore, these variables are likely to yield meaningful insights into how consumers make decisions about purchasing food products and engaging with online content.

2. The study context and data collection

For data collection, we translated the questionnaire from English into Arabic. The questionnaire was then given to a linguist for assessment before being distributed to customers of fast-food restaurants in Cairo, Egypt. We distributed the questionnaires for about three months, from June 2022 to August 2022. Egypt does not have a publicly available database or report on the number of fast-food restaurants (Helal, 2022). Hence, we employed convenience sampling to select respondents from fast-food restaurants. Convenient sampling is a non-probability method in which participants are selected for inclusion in the sample based on their accessibility (Winton and Sabol, 2021).

We asked the customers whether they follow food bloggers (i.e., do you always follow food bloggers?). Then, the participating customers were chosen because they had read or watched the food bloggers' reviews. We found almost 40% of fast-food restaurant customers follow the content of food blogger influencers. The customers participating in the study were told that it was voluntary work for research purposes. The questionnaire contains two parts; in the first part, the customer profile of the fast-food restaurant was presented. Part two contains a 5-point Likert scale used to rate all 25 study items (1 = "strongly disagree" to 5 = "strongly agree"). Four hundred and fifty questionnaires were distributed, and three hundred and fifty-four (n = 354) valid questionnaires were filled out, resulting in a response rate of 78.6%.

3. Data analysis

Amos software was utilized in the study to test the conceptual model using structural equation modeling (SEM). The minimum sample size needed for SEM analysis should be ten times as many items as examined (Floyd and Widaman, 1995). Accordingly, in this research (i.e., 25 items), four hundred and fifty questionnaires were distributed, and three hundred and fifty-four valid questionnaires were filled out. Four constructs with multiple-item scales were subjected to confirmatory factor analysis to see if the manifest variables matched the predicted latent variables (Hair et al., 2020). For each latent variable, Cronbach's alpha and composite reliability (CR) were used to evaluate the construct's reliability. The average variance extracted (AVE) was used to test the construct's convergent and discriminant validity. After the measures were verified, standardized path coefficients (ß) were utilized to test the hypotheses (Hair et al., 2019). Additionally, this study used the Macro Process software's regression-based moderation analysis method, developed by Andrew (2018). Also, we used the Sobel test for the mediations analysis (Abu-Bader and Jones, 2021).

RESULTS

1. Sample profile

Table 1 shows that among the participants, there were 46.7% women, and 53.3% men. Only 22.6% of respondents were 40 years of age or older, while 77.4% of participants were between the ages of 18 and 39. This indicates that the sample

was primarily young people for more than one reason: First, the youth is more likely to be on the go and looking for a quick meal. Fast food restaurants are designed to provide a convenient and relatively inexpensive solution to this need (Helal, 2022). Another factor that fast-food restaurants target the youth is that they are more likely to be influenced by marketing campaigns. Fast-food restaurants often use appealing visuals and catchy slogans to draw in the youth (Doeim et al., 2022). Additionally, many fast-food restaurants offer discounts and deals to the youth demographic to further entice them. Finally, the youth is likelier to engage with social media platforms, food bloggers, and influencers (Lee et al., 2021). 53.7% of respondents held a bachelor's degree, compared to 26.8% who had just finished high school and 19.5% who had only finished their postgraduate studies. This result indicates that well-educated youth are more likely to be engaged with social media platforms, and food bloggers often have a strong presence (Cuomo et al., 2017). The percentages of respondents who were single, married, and married with children were 43.3%, 42%, and 14.7%, respectively.

Table 1. Sample profile

Characteristics	Descriptions	Statistics	(%)
Gender	Male	189	(53.3)
	Female	165	(46.7)
Age	18–28	124	(35)
	29–39	150	(42.4)
	40 or more	80	(22.6)
Education	Secondary school or below	95	(26.8)
	University degree	190	(53.7)
	Postgraduate (Diploma–Master – PhD.)	69	(19.5)
Marital status	Single	153	(43.3)
	Married	149	(42)
	Married with children	52	(14.7)

2. Measurement model

Table 2 displays the reliability test, or Cronbach's alpha, for each construct, examined between 0.793 to 0.983, over 0.70, demonstrating the dependability of all variables (Nunnally, 1978). The composite reliability of the constructs, which ranges from 0.830 to 0.927, demonstrates that all constructs have significant internal dependability (Hair et al., 2019). Every component with factor loadings greater than 0.50 was included in the structures (Hair et al., 2020). The AVE for each construct is greater than the squared correlations between the components in discriminant validity (Table 3) (Nunnally, 1978).

Table 2. Measuring model analysis

Constructs	Item-to-factor loadings	AVE	Composite reliability	Cronbach's alpha
Food value				
The food at this restaurant is appealing.	0.706			
This restaurant's food is well-prepared.	0.751			
This restaurant's food has no negative environmental impact.	0.654			
This restaurant provides an equally standard.	0.760			
This restaurant's food has a certain level of naturalness.	0.856	0.548	0.923	0.793
This restaurant food has a high nutritional value.	0.654			
This restaurant's food uses grown ingredients.	0.591			
The restaurant food is worth the price.	0.687			
This restaurant's food is healthy.	0.876			
This restaurant's food is delicious.	0.784			
This restaurant considers our eating habits.	0.687			
Food blogger WOM				
I follow food bloggers because of their advice and experience about my food consumption.	0.687			
Food bloggers recommendations about foods influence my food consumption intentions.	0.870			
I follow the proposals of food bloggers	0.678	0.564	0.865	0.816
Before selecting this restaurant, I search for food bloggers' reviews.	0.821			
It is possible to choose the restaurant to choose it after hearing food bloggers.	0.678			
Purchase intention				
Most likely, I will purchase food from this fast-food restaurant.	0.784			
If I need food, I might purchase it from this fast-food restaurant.	0.841	0.553	0.830	0.854
This fast-food restaurant offers items that I want to purchase.	0.678			
There is an excellent chance to think about purchasing from restaurants.	0.656			
Content credibility				
Food bloggers give accurate information.	0.891			
Food bloggers give credible information.	0.875			
Food bloggers give crucial information.	0.784	0.719	0.927	0.893
Food bloggers give insightful information.	0.895			
Food bloggers give relevant information.	0.786			

Various fit indices were used to assess how well the measurement model fit the data. The total model's chi-square is 199.185, and its degree of freedom is 89 (p < 0.001). As a result, the relative/normed chi-square (x^2/df) values are 2.238. The adjusted goodness-of-fit value is 0.95, the value for the root means a square error of approximation (RMSEA) is 0.032, the goodness-of-fit value is 0.94, the comparative fit index value is 0.95, Tucker-Lewis Index (TLI) is 0.96, and the normed fit index is 0.94. Fit indices' findings showed that the model fit was satisfactory (Hair et al., 2020).

Table 3. Discriminant validity

Constructs	Food value	Food blogger WOM	Content credibility	Purchase intention
Food value	**0.740**			
Food blogger WOM	0.420	**0.750**		
Content credibility	0.341	0.340	**0.847**	
Purchase intention	0.332	0.421	0.450	**0.743**

3. Hypothesis testing

All direct hypotheses are supported by the path coefficient analysis, as seen in Table 4 and Figure 2. Food value positively affected bloggers' reviews (β = 0.540, p < 0.000). Also noteworthy are the significant effects that food value (β = 0.322, p < 0.000) and blogger reviews (β = 0.469, p < 0.000) had on customers' intentions to purchase. Further, blogger reviews mediated the relationship between food value and customers' intentions to purchase (β = 0.465, p < 0.000).

Further, the regression-based moderation analysis results show that content credibility positively moderates bloggers' reviews and purchase intention, H5 (β = 0.469, p < 0.000) (Table 5 and Figure 3).
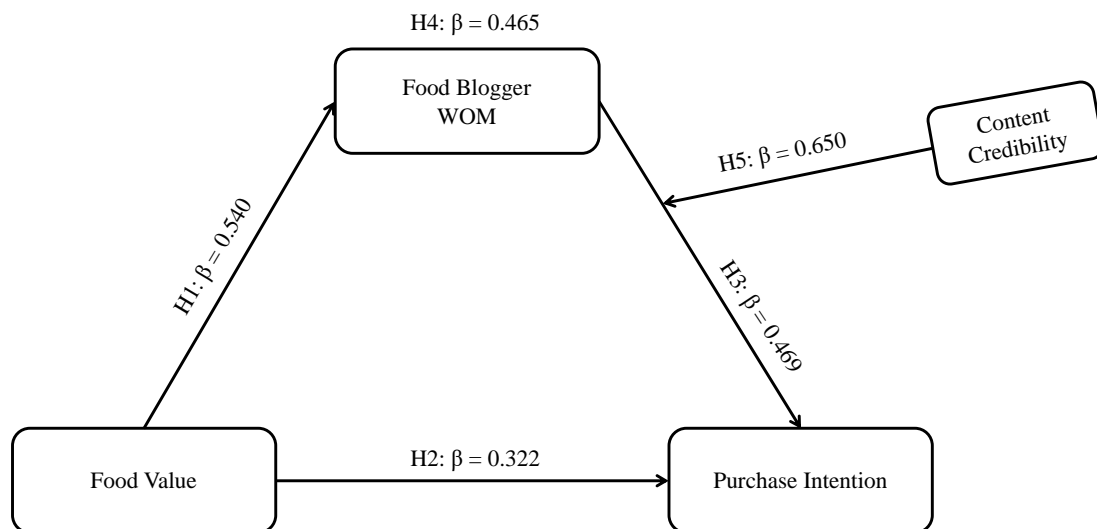
Figure 2. The structural model

Table 4. Direct effects and moderation analysis

Hypotheses	**Direct Effects**	Beta (ß)	t-values	p-Value
H1	Food value □ Food blogger WOM	0.540	9.62	0.000***
H2	Food value □ Purchase intention	0.322	3.75	0.000***
H3	Food blogger WOM □ Purchase intention	0.469	7.92	0.000***
H5	Food blogger WOM × Content Credibility □ Purchase intention	0.650	10.73	0.000***

Note: *Absolute t-value > 1.96, p< 0.05; **Absolute t-value > 2.58, p< 0.01; ***Absolute t-value > 3.29, p< 0.001

Table 5. Indirect effect

Hypotheses	Indirect Effects	Beta (ß)	Z-values	P-Value
H4	Food value □ Food blogger WOM □ Purchase intention	0.465	11.194	0.000***

Note: *Absolute Z-value > 1.96, p< 0.05; **Absolute Z-value > 2.58, p< 0.01; ***Absolute Z-value > 3.29, p< 0.001

DISCUSSION AND IMPLICATIONS
1. Theoretical contribution

This study's findings contribute to developing the hospitality industry literature in various ways, including expanding the literature on TPB, customer value, particularly food value, and food bloggers. Technology advancements led to the emergence of food bloggers, whose content significantly impacted large fast-food restaurant customer segments (Vrontis et al., 2021). Thus, the factors influencing food bloggers' positive recommendations of fast-food restaurant products need to be investigated. Therefore, this study addresses a research gap by examining how food value affects food bloggers' positive reviews of fast-food restaurant products, influencing customers' purchasing intentions. Additionally,

we examine how customers' followers of food bloggers perceive the credibility of the content they provide regarding food value from fast-food restaurants and how this impacts their intention to make a purchase.

This study generating new knowledge by investigating the effect of the food value of fast-food restaurant products on food blogger reviews and customers' intentions to purchase. We found that the food value of fast-food restaurant products influences customers' intentions to purchase and positive reviews from food bloggers. This finding demonstrates how providing food values such as great taste, an attractive appearance, consistent food standards, healthy food, and a reasonable price positively impacts both food bloggers' reviews of restaurant products and customers' intentions to purchase. This outcome demonstrates the significance of food value in delivering what customers anticipate from restaurant food (Kang et al., 2015). Therefore, fast-food restaurant managers should consider providing customers with all the fundamental food values and describing them to reputable and well-respected food bloggers.
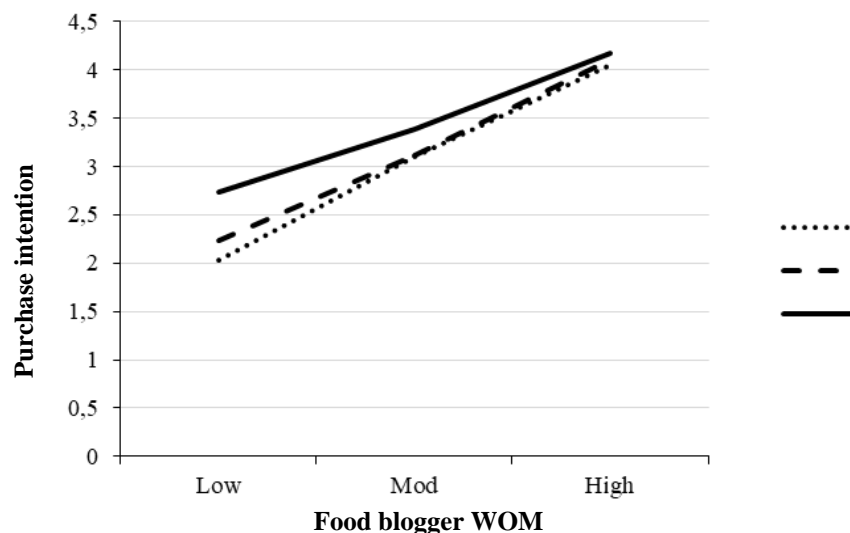
Figure 3. Interaction of content credibility and food blogger WOM on customers' purchase intentions

This study expands the hospitality literature by examining the mediating role of food bloggers' reviews on the relationship between the food value of fast-food restaurant products and customers' purchase intentions. The result of the Sobel test showed that food bloggers' reviews mediate a positive relationship between food value and customers' intentions to buy. This result shows that the influence of food bloggers and their complete understanding of the food value through their personal experience or the explanation of restaurant managers have an impact on how they present the advantages and benefits of the products of these restaurants. This influences the decisions of potential customers who follow the food bloggers to purchase. Femenia-Serra et al., 2022 confirmed that customers who follow food bloggers are influenced by their purchase decisions by their recommendations. Thus, it becomes clear to the managers of fast-food restaurants that there is an effective marketing trend through influencers of food bloggers that requires integration with them and providing them with sufficient information to deliver to the following customers (Zhou et al., 2021).

The most exciting contribution to the hospitality and TPB literature is that the credibility of food bloggers' content increases the relationship between food bloggers' reviews and customers' purchase intention (Figure 3). The accuracy, authenticity, and purposefulness of the information provided by food bloggers have been found to influence the purchasing decisions of their followers who frequent fast-food restaurants. Similarly, Zhou et al., 2021 discovered that customers' future decision-making heavily depends on the content's credibility. Thus, the importance of food bloggers' content information and its influence on consumers' restaurant dining choices becomes clear, as does customers' awareness of the credibility of food bloggers' influencers.

Theoretical discussions and empirical findings demonstrate this study's proposed paradigm's efficiency. This model demonstrated how the food value of fast-food restaurant products strongly influences customers' intention to purchase and the recommendations made by food bloggers. In addition, the role of food bloggers' reviews in mediating the relationship between the food value of fast-food restaurant products and customers' purchase intentions was established. The study model also emphasized the significance of the credibility of food bloggers' content in terms of enhancing followers' knowledge and influencing their intention to purchase from fast-food restaurants. Thus, by delving into the complex theory and practice of the proposed model, this model contributes to the growth of hospitality literature and the development of practical practices for fast-food restaurants.

2. Managerial implications

Managerially, this study has several practical implications; first, we found that food value directly affects purchase intentions and food bloggers' reviews. Therefore, we suggest that Egyptian restaurant managers increase the factors that increase the customer's perception of customer value. For instance, we recommend Egyptian restaurant managers consider biological determinants of food value (e.g., appetite and taste), economic determinants of food value (e.g.,

customer income and food availability), and the skills determinants of food value (e.g., staff education skills (e.g., cooking). These determinants help achieve high food value for the customers. Second, we found that food bloggers' reviews strongly affect food value and customer purchase intentions.

Therefore, the managers must follow all food bloggers and watch their content on social media, influencers, and promotions to make continuous improvements depending on their opinion. Managers may need to invite some food bloggers to try the restaurant experience. In this vein, the managers should provide the bloggers with all food value context and encourage them to deliver it to the potential customers. In other words, most bloggers focus on taste and avoid the determinant of food value (e.g., cooking skills, fresh food quality, etc.). Therefore, managers should deliver a strategy all for one and one for all to deliver all the food value content through the food bloggers.

Moreover, this study's results have vital implications regarding food bloggers' content. Currently, in the digital marketing world, we can find various contents without barriers, and customers can interact and intent effectively toward different food content. We found that the content credibility of bloggers plays a proper role in strengthening the purchase intention when the food has a high value. Therefore, restaurant managers should consider when they invite bloggers with highly positive reviews from their peers and customers. We also encourage managers to promote their food value through specialized food content creators to increase their credibility. For instance, bloggers famous for desserts food evaluation are more likely to be trusted by customers who want to try dessert meals than bloggers with other foods. Thus, the influence of food bloggers' content credibility could simultaneously be an added value for the food and customer perception.

3. Limitations and further research

This study is not without limitations, which are opportunities for future research. Firstly, this study investigated the influence of the food value of fast-food restaurant products on food bloggers' reviews and customer purchase intentions. Therefore, future research can study other factors influencing food bloggers' reviews, such as the fast-food restaurant's reputation (Serman and Sims, 2022). Also, future research can conduct interviews with food bloggers to understand the other factors that most influence customers' decisions to purchase from restaurants.

Secondly, because this study concentrated on the viewpoint of fast-food restaurant customers, future research can concentrate on figuring out the managers' perspectives using the proposed model. Thirdly, the target population of this study was fast-food restaurant customers. Future research has the potential to examine our paradigm in many sorts of restaurants and other hospitality businesses. Finally, previous studies have determined a significant difference in customer response to technology according to age (Hysa et al., 2021). Thus, there is an opportunity for future research to study the variance between the customers' age groups most affected by food bloggers' reviews.

REFERENCES

Abu-Bader, S., & Jones, T.V. (2021). Statistical mediation analysis using the sobel test and hayes SPSS process macro. *International Journal of Quantitative and Qualitative Research Methods, 9*(1), 42-61. https://ssrn.com/abstract=3799204

Ajzen, I. (1991). The Theory of Planned Behavior-Organizational Behavior and Human Decision Processes 50. 179-211.

Ajzen, I. (2002) Perceived Behavioural Control, Self-efficacy, Locus of Control and the Theory of Planned Behaviour. *Journal of Applied Social Psychology, 32*(4), 665-683. https://doi.org/10.1016/0749-5978(91)90020-T

Belanche, D., Casaló, L.V., Flavián, M., & Ibáñez-Sánchez, S. (2021). Understanding influencer marketing: The role of congruence between influencers, products and consumers. *Journal of Business Research, 132*, 186-195. https://doi.org/10.1016/j.jbusres.2021.03.067

Chen, M.F., & Tung, P.J. (2014). Developing an extended Theory of Planned Behavior model to predict consumers' intention to visit green hotels. *International Journal of Hospitality Management, 36*, 221-230. https://doi.org/10.1016/j.ijhm.2013.09.006

Chiu, H.C., Hsieh, Y.C., & Kuo, Y.C. (2012). How to Align your Brand Stories with Your Products. *Journal of Retailing, 88*(2), 262-275. https://doi.org/10.1016/j.jretai.2012.02.001

Choe, J.Y., Kim, J.J., & Hwang, J. (2020). The environmentally friendly role of edible insect restaurants in the tourism industry: applying an extended theory of planned behavior. *International Journal of Contemporary Hospitality Management, 32*(11), 3581-3600. https://doi.org/10.1108/ijchm-04-2020-0352

Cuomo, M.T., Tortora, D., Festa, G., Giordano, A., & Metallo, G. (2017). Enablers for end-user entrepreneurship: An investigation on Italian food bloggers. *Psychology & marketing, 34*(12), 1109-1118.

Diallo, M.F. (2012). Effects of store image and store brand price-image on store brand purchase intention: Application to an emerging market. *Journal of Retailing and Consumer Services, 19*(3), 360-367. https://doi.org/10.1016/j.jretconser.2012.03.010

Doeim, A.R., Hassan, T.H., Helal, M.Y., Saleh, M.I., Salem, A.E., & Elsayed, M.A.S. (2022). Service Value and Repurchase Intention in the Egyptian Fast-Food Restaurants: Toward a New Measurement Model. *International Journal of Environmental Research and Public Health, 19*(23), 15779. https://doi.org/10.3390/ijerph192315779

Dunn, K.I., Mohr, P., Wilson, C.J., & Wittert, G.A. (2011). Determinants of fast-food consumption. An application of the Theory of Planned Behaviour. *Appetite, 57*(2), 349-357. https://doi.org/10.1016/j.appet.2011.06.004

Femenia-Serra, F., Gretzel, U., & Alzua-Sorzabal, A. (2022). Instagram travel influencers in #quarantine: Communicative practices and roles during COVID-19. *Tourism Management, 89*, 104454. https://doi.org/10.1016/j.tourman.2021.104454

Fishbein, M., & Ajzen, I. (2011). *Predicting and changing behavior: The reasoned action approach*: Psychology press.

Floyd, F.J., & Widaman, K.F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological assessment, 7*(3), 286.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., & Tatham, R.L. (2019). *Multivariate Data Analysis*: Cengage Learning EMEA.

Hair, J.F., Howard, M.C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research, 109*, 101-110. https://doi.org/10.1016/j.jbusres.2019.11.069

Harris, J. (2022). What restaurant critics really think about food influencers. Retrieved from https://www.latimes.com/food/story/2022-09-11/what-restaurant-critics-are-saying-about-food-influencers

Hayes, A.F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). New York: Guilford publications, 1-732.

Helal, M.Y.I. (2022). The role of customer orientation in creating customer value in fast-food restaurants. *Journal of Hospitality and Tourism Insights*, ahead of print. https://doi.org/10.1108/jhti-08-2022-0394

Hsu, C.L., Chang, K.C., & Chen, M.C. (2011). The impact of website quality on customer satisfaction and purchase intention: perceived playfulness and perceived flow as mediators. *Information Systems and e-Business Management, 10*(4), 549-570. https://doi.org/10.1007/s10257-011-0181-5

Hysa, B., Karasek, A., & Zdonek, I. (2021). Social Media Usage by Different Generations as a Tool for Sustainable Tourism Marketing in Society 5.0 Idea. *Sustainability, 13*(3), 1018. https://doi.org/10.3390/su13031018

Izquierdo-Yusta, A., Gómez-Cantó, C.M., Pelegrin-Borondo, J., & Martínez-Ruiz, M.P. (2019). Consumers' behaviour in fast-food restaurants: a food value perspective from Spain. *British Food Journal, 121*(2), 386-399. https://doi.org/10.1108/bfj-01-2018-0059

Jahn, S., Tsalis, G., & Lähteenmäki, L. (2019). How attitude towards food fortification can lead to purchase intention. *Appetite, 133*, 370-377. https://doi.org/10.1016/j.appet.2018.11.022

Jun, J., & Arendt, S.W. (2016). Understanding healthy eating behaviors at casual dining restaurants using the extended theory of planned behavior. *International Journal of Hospitality Management, 53*, 106-115. https://doi.org/10.1016/j.ijhm.2015.12.002

Kang, J., Jun, J., & Arendt, S.W. (2015). Understanding customers' healthy food choices at casual dining restaurants: Using the Value–Attitude–Behavior model. *International Journal of Hospitality Management, 48*, 12-21. https://doi.org/10.1016/j.ijhm.2015.04.005

Kim, D.Y., & Kim, H.Y. (2021). Trust me, trust me not: A nuanced view of influencer marketing on social media. *Journal of Business Research, 134*, 223-232. https://doi.org/10.1016/j.jbusres.2021.05.024

Lee, P.Y., Koseoglu, M.A., Qi, L., Liu, E.C., & King, B. (2021). The sway of influencer marketing: Evidence from a restaurant group. *International Journal of Hospitality Management, 98*, 103022. https://doi.org/10.1016/j.ijhm.2021.103022

Lepkowska-White, E., & Kortright, E. (2017). The business of blogging: Effective approaches of women food bloggers. *Journal of Foodservice Business Research, 21*(3), 257-279. https://doi.org/10.1080/15378020.2017.1399046

Liu, P., Segovia, M., Tse, E.C.Y., & Nayga, R.M. (2022). Become an environmentally responsible customer by choosing low-carbon footprint products at restaurants: Integrating the elaboration likelihood model (ELM) and the theory of planned behavior (TPB). *Journal of Hospitality and Tourism Management, 52*, 346-355. https://doi.org/10.1016/j.jhtm.2022.07.021

Lou, C., & Yuan, S. (2019). Influencer Marketing: How Message Value and Credibility Affect Consumer Trust of Branded Content on Social Media. *Journal of Interactive Advertising, 19*(1), 58-73. https://doi.org/10.1080/15252019.2018.1533501

Luo, X., & Donthu, N. (2006). Marketing's Credibility: A Longitudinal Investigation of Marketing Communication Productivity and Shareholder Value. *Journal of Marketing, 70*(4), 70-91. https://doi.org/10.1509/jmkg.70.4.70

Lusk, J.L. (2011). External validity of the food values scale. *Food Quality and Preference, 22*(5), 452-462. https://doi.org/10.1016/j.foodqual.2011.02.009

Mainolfi, G., Marino, V., & Resciniti, R. (2021). Not just food: Exploring the influence of food blog engagement on intention to taste and to visit. *British Food Journal, 124*(2), 430-461. https://doi.org/10.1108/bfj-04-2021-0400

Martínez-López, F.J., Anaya-Sánchez, R., Esteban-Millat, I., Torrez-Meruvia, H., D'Alessandro, S., & Miles, M. (2020). Influencer marketing: brand control, commercial orientation and post credibility. *Journal of Marketing Management, 36*(17-18), 1805-1831. https://doi.org/10.1080/0267257x.2020.1806906

Meng, B., & Choi, K. (2018). An investigation on customer revisit intention to theme restaurants. *International Journal of Contemporary Hospitality Management, 30*(3), 1646-1662. https://doi.org/10.1108/ijchm-11-2016-0630

Moon, S.J. (2021). Investigating beliefs, attitudes, and intentions regarding green restaurant patronage: An application of the extended theory of planned behavior with moderating effects of gender and age. *International Journal of Hospitality Management, 92*, 102727. https://doi.org/10.1016/j.ijhm.2020.102727

Munnukka, J., Uusitalo, O., & Toivonen, H. (2016). Credibility of a peer endorser and advertising effectiveness. *Journal of Consumer Marketing, 33*(3), 182-192. https://doi.org/10.1108/jcm-11-2014-1221

Nunnally, J.C. (1978). *Psychometric Theory*. New York: McGraw-Hill.

Park, D.H., Lee, J., & Han, I. (2007). The Effect of On-Line Consumer Reviews on Consumer Purchasing Intention: The Moderating Role of Involvement. *International Journal of Electronic Commerce, 11*(4), 125-148. https://doi.org/10.2753/jec1086-4415110405

Pérez-Villarreal, H.H., Martínez-Ruiz, M.P., & Izquierdo-Yusta, A. (2019). Testing Model of Purchase Intention for Fast Food in Mexico: How do Consumers React to Food Values, Positive Anticipated Emotions, Attitude toward the Brand, and Attitude toward Eating Hamburgers? *Foods, 8*(9), 369. https://doi.org/10.3390/foods8090369

Phau, I., & Teah, M. (2009). Devil wears (counterfeit) Prada: a study of antecedents and outcomes of attitudes towards counterfeits of luxury brands. *Journal of Consumer Marketing, 26*(1), 15-27. https://doi.org/10.1108/07363760910927019

Pilař, L., Pilařová, L., Chalupová, M., Kvasničková Stanislavská, L., & Pitrová, J. (2022). Food Bloggers on the Twitter Social Network: Yummy, Healthy, Homemade, and Vegan Food. *Foods, 11*(18), 2798. https://doi.org/10.3390/foods11182798

Rahamat, S., Jeong, E., Arendt, S.W., & Xu, Y. (2022). Menu labeling influence on purchase behaviors: Applying the theory of planned behavior and health consciousness. *Appetite, 172*, 105967. https://doi.org/10.1016/j.appet.2022.105967

Rezai, G., Mohamed, Z., & Shamsudin, M.N. (2011). *Consumers' Awareness And Consumption Intention Towards Green Foods*, *6*(12), 4496. Paper presented at the International Conference on Management (ICM 2011).

Rezai, G., Teng, P.K., Shamsudin, M.N., Mohamed, Z., & Stanton, J.L. (2017). Effect of perceptual differences on consumer purchase intention of natural functional food. *Journal of Agribusiness in Developing and Emerging Economies, 7*(2), 153-173. https://doi.org/10.1108/jadee-02-2015-0014

Santora, J. (2022). Key Influencer Marketing Statistics You Need to Know for 2022.

Scalco, A., Noventa, S., Sartori, R., & Ceschi, A. (2017). Predicting organic food consumption: A meta-analytic structural equation model based on the theory of planned behavior. *Appetite, 112*, 235-248. https://doi.org/10.1016/j.appet.2017.02.007

Serman, Z.E., & Sims, J. (2022). Source Credibility Theory: SME Hospitality Sector Blog Posting During the Covid-19 Pandemic. *Information Systems Frontiers*. https://doi.org/10.1007/s10796-022-10349-3

Sharma, A., Dwivedi, Y.K., Arya, V., & Siddiqui, M.Q. (2021). Does SMS advertising still have relevance to increase consumer purchase intention? A hybrid PLS-SEM-neural network modelling approach. *Computers in Human Behavior, 124*, 106919. https://doi.org/10.1016/j.chb.2021.106919

Slack, N.J., Singh, G., Ali, J., Lata, R., Mudaliar, K., & Swamy, Y. (2020). Influence of fast-food restaurant service quality and its dimensions on customer perceived value, satisfaction and behavioural intentions. *British Food Journal, 123*(4), 1324-1344. https://doi.org/10.1108/bfj-09-2020-0771

Stran, K.A., Knol, L.L., Severt, K., & Lawrence, J.C. (2016). College Students' Intentions to Use Calorie Information on a Restaurant Menu: Application of the Theory of Planned Behavior. *American Journal of Health Education, 47*(4), 215-223. https://doi.org/10.1080/19325037.2016.1179142

Stubb, C., & Colliander, J. (2019). "This is not sponsored content" – The effects of impartiality disclosure and e-commerce landing pages on consumer responses to social media influencer posts. *Computers in Human Behavior, 98*, 210-222. https://doi.org/10.1016/j.chb.2019.04.024

Tantawy, A., Abbas, T., & Youssef, M. (2016). Measuring the Relationship between Job Stress and Service Quality in Quick-Service Restaurants.

Taylor, C.R. (2020). The urgent need for more research on influencer marketing. *International Journal of Advertising, 39*(7), 889-891. https://doi.org/10.1080/02650487.2020.1822104

Thomas-Francois, K., Joppe, M., & von Massow, M. (2020). The impact of customer engagement and service leadership on the local food value chain of hotels. *Journal of Hospitality and Tourism Insights, 4*(1), 35-58. https://doi.org/10.1108/jhti-03-2020-0031

Toudert, D., & Bringas-Rábago, N.L. (2019). Destination food image, satisfaction and outcomes in a border context: tourists vs excursionists. *British Food Journal, 121*(5), 1101-1115. https://doi.org/10.1108/bfj-03-2019-0148

Vermeir, I., & Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. *Ecological Economics, 64*(3), 542-553. https://doi.org/10.1016/j.ecolecon.2007.03.007

Vrontis, D., Makrides, A., Christofi, M., & Thrassou, A. (2021). Social media influencer marketing: A systematic review, integrative framework and future research agenda. *International Journal of Consumer Studies, 45*(4), 617-644. https://doi.org/10.1111/ijcs.12647

Winton, B.G., & Sabol, M.A. (2021). A multi-group analysis of convenience samples: free, cheap, friendly, and fancy sources. *International Journal of Social Research Methodology, 25*(6), 861-876. https://doi.org/10.1080/13645579.2021.1961187

Xiao, M., Wang, R., & Chan-Olmsted, S. (2018). Factors affecting YouTube influencer marketing credibility: a heuristic-systematic model. *Journal of Media Business Studies, 15*(3), 188-213. https://doi.org/10.1080/16522354.2018.1501146

Yılmazdoğan, O.C., Doğan, R.Ş., & Altıntaş, E. (2021). The impact of the source credibility of Instagram influencers on travel intention: The mediating role of parasocial interaction. *Journal of Vacation Marketing, 27*(3), 299-313. https://doi.org/10.1177/1356766721995973

Zhou, S., Blazquez, M., McCormick, H., & Barnes, L. (2021). How social media influencers' narrative strategies benefit cultivating influencer marketing: Tackling issues of cultural barriers, commercialised content, and sponsorship disclosure. *Journal of Business Research, 134*, 122-142. https://doi.org/10.1016/j.jbusres.2021.05.011

Zhou, Y., Thøgersen, J., Ruan, Y., & Huang, G. (2013). The moderating role of human values in planned behavior: the case of Chinese consumers' intention to buy organic food. *Journal of Consumer Marketing, 30*(4), 335-344. https://doi.org/10.1108/jcm-02-2013-0482

COMPREHENSIVE ASSESSMENT OF WATER SUPPLY OF THE TURKESTAN REGION FOR THE DEVELOPMENT OF ECONOMIC SECTORS AND RECREATIONAL TOURISM

Zhumakhan MUSTAFAYEV
Institute of Geography and Water Security Science Committee, Department of Landscape Study and Problems of Nature
Management, Almaty, Kazakhstan, e-mail: z-mustafa@rambler.ru

Irina SKORINTSEVA
Institute of Geography and Water Security Science Committee, Department of Landscape Study and Problems of Nature
Management, Almaty, Kazakhstan, e-mail: skorintseva@mail.ru

Askhat TOLETAYEV
Al-Farabi Kazakh National University, Department of geography and environmental sciences,
Almaty, Kazakhstan, e-mail: hat_0512@mail.ru

Gulnar ALDAZHANOVA*
Institute of Geography and Water Security Science Committee, Almaty, Department of Landscape Study and Problems
of Nature Management, Almaty, Kazakhstan, e-mail: gulnara.aldazhanova@mail.ru

Amanzhol KUDERIN
Institute of Geography and Water Security Science Committee, Almaty, Department of Landscape Study and Problems
of Nature Management, Almaty, Kazakhstan, e-mail: kuderin@list.ru

Abstract: The purpose of this study was a comprehensive assessment of water supply of the population, territory and economic sectors in the context of water-resource regions of Turkestan region of the Republic of Kazakhstan based on integrated specific water supply index, taking into account the environmental flows of river basins, providing data on the current state of water resources, level of water supply and their changes under influence of natural and anthropogenic factors. The research methodology is based on statistical analysis, long-term information-analytical materials on the hydrological condition of rivers, territorial organization of water consumption and the population of Turkestan region. For a comprehensive assessment of water supply of the population, territory and economy, a methodology was developed that allowed to assess the current state of water supply in the territory of river basins in the region and their changes under the influence of natural and anthropogenic factors. A comparative assessment of water supply in the Turkestan region in terms of water-resource areas based on the proposed methodological approach and the created research base covering the period of 2002-2020 showed that, in general, there is a high level of water shortage, which is associated with water shortage problems in the region. The obtained results of study are of fundamental environmental and economic importance when assessing water supply and can be used as an effective tool for the assessment of the influence of water factors during socio-economic forecasting of the region's development, especially recreational activities.

Key words: water resources, assessment, methodology, water stress, sustainability index, water supply, water consumption

* * * * * *

INTRODUCTION

For sustainable socio-economic development of any region of Kazakhstan, a strategic assessment of the water supply of river basins is necessary, which is the spatial basis of nature management and population, which condition human economic activity and performs important environment-forming and ecological functions. These functions of river basins determine the scientific and practical feasibility of dividing their territory into water resource regions, within which it is possible to conduct a comprehensive assessment of water supply, develop a unified program for their improvement, taking into account the interests of not only individual water users, but also the interests of the entire living population and, in general, for restoration and conservation of the environment. At the same time, a strategic assessment of water supply of the territory of river basins, which for thousands of years served as a great boost for the economic and spiritual development of the living population, should precede the adoption of fundamental decisions regarding the use of their water resource potential for the sustainable and safe development of economic activity. At the end of the XX century, territory of the Turkestan region of the Republic of Kazakhstan became a significant tourist route for popularizing the historical and cultural heritage of the XIII-XIV centuries, which included: reserve museums of Arystan-bab and Khoja Ahmed-Yasawi (UNESCO World

---

* Corresponding author

Heritage List); Museum of Nature "Weeping Cave", located at the foot of Karatau Mountain; Aksu-Zhabagaly Nature Reserve, located at the western tip of the Tien Shan Ridge (https://whc.unesco.org/en/list/1103).

Turkestan region has a huge natural potential for the development of the economy and food security of the Republic of Kazakhstan (Mukayev et al., 2022), since it has an adequate supply of mineral resources, fertile soil, abundance of sunlight and extensive natural fodder resources (pastures), which makes it possible to develop various branches of agriculture in the region, primarily, irrigated cropping and range sheep production using available water resources (Mustafayev et al., 2023). Water resources are essential elements for any touristic destination (Aliyev and Suleymanov, 2023). As part of the development of tourism and water recreation, the level of water utilization has significantly increased in the last decade, which gives priority to study of assessments of the current and forecasted water supply in the region.

Assessment of the water supply of the territory and the population within the boundaries of the catchment area of river basins in the methodological aspect is quite complicated and is associated with the formation of a research base based on long-term information and analytical materials on the hydrological regime of rivers and the organization of water utilization due to various conditions for the formation and use of water resources. To assess the current and forecasted water supply within the catchment areas of river basins, the following criteria are traditionally used: M. Falkenmark (CMF) (Falkenmark, 1986), sustainability index (SI) (Raskin et al., 1997), water resource utilization factor ($WRUF$) (Boulay et al., 2014), specific water supply of the population ($SWSP$) (Shiklomanov, 2008), specific water supply of the territory ($SWST$) (Danilov-Danilyan and Losev, 2006), water stress index (IWS) (Raskin et al., 1997) and complex indicator of specific water supply of the catchment area of river basins ($CISWS$) (Mustafaev, 2022), etc.

One of the common approaches to assessing the water supply of the population in European practice is the M. Falkenmark criteria ($CMF_i = RWR_i/QP_i$, with a quantitative value of less than 1700 m³/year, indicates the existence of water stress) (Falkenmark et al., 1989). Water shortage in the catchment areas of river basins (Jiang et al., 2023) is defined as the amount of renewable fresh water (AR_i) available to each person (PS_i) every year and is used to assess the state of the world's water resources and the ability of countries to meet the basic needs of their population according to the UN Food and Agriculture Organization (FAO) (https://www.fao.org/home/en; Chenoweth, 2008; Moyle et al., 2022). To assess the water resource potential of river basins of the countries of Africa (Falkenmark, 1989), Russian-Kazakhstan transboundary region (Rybkina and Sivokhip, 2019) and the North Caucasus (Rybak and Rybak, 2021), the trend of water scarcity over the past 2000 years on a scale of units of global food production was taken as a basis (Kummu et al., 2010).

In world practice, to assess the water supply of economic sectors, the sustainability index ($SI_i = WIV_i/RWR_i$) is used, which is equal to the ration of water volume (WIV_i), taken out of natural resources to the total replenished water volume (RWR_i). This indicator was used to assess the integrated water resources management (IWRM) in the Rio-Grande Basin (Morelia, Mexico) (Hernández-Bedolla et al., 2017); sustainable supply and demand levels in Akhachay river basin in northwestern Iran (Karamouz et al., 2017); sustainability of water resources in the Amudarya Basin in Central Asia (Salehie et al., 2022); determine the ecological and hydrological value of the river resource in the Prescott Active Management Zone in north-central Arizona, USA (Oxley and Mays, 2017); water resource potential of a number of developed and developing countries of the world (Friedman, 2015); water shortage on a national scale across Africa (Damkjaer and Taylor, 2017). In accordance with the World Water Assessment Program ($WWAP$) the term "water stress" is widely used to determine the level of water supply in the catchment area of river basins (water stress) ($WS_i = (WIV_i/RWR_i) \cdot 100$), which is defined as the ratio of water intake from water resources (WIV_i) to available renewable water resources (RWR_i). This indicator was used to assess water shortage in the Lower Vu-Gia-Thu-Bon river basin in Vietnam (Mai et al., 2023); geospatial water stress in Africa (Vörösmarty et al., 2005) and river basin using hydrologic unit (HUC) in the USA (Sun et al., 2008); availability of water in Jucar river basin located in the eastern part of the Iberian Peninsula in Spain (Pedro-Monzonís et al., 2014); study the water stress and drought in the Niger River Basin (Bani River, Mali) (Roudier and Mahe, 2010), water-resource potential of the catchment area of Ile and Esil river basins (Ryskulbekova, 2020; Kozykeeva and Kalmashova, 2018); anthropogenic loads on water elements of the environment in the Central Federal District of Russia (Georgiadi et al., 2021), groundwater impact assessments (GF) as a tool for sustainable water management in Mediterranean islands (Kourgialas et al., 2018), impact of tourism development on the water resources and environment of tourist destinations (Cao et al., 2023) and for a preliminary assessment of water use sustainability in industries for Italian sub-basins (Sabia et al., 2023), etc.

An important feature used in the analysis of the distribution of water resources in river basins is the water resource utilization factor ($WRUF_i = FWC_i/RWR_i$), defined as the percentage factor of the total water consumption (FWC_i) (Boulay et al. (2014) and renewable water resources (RWR_i) (Falkenmark et al., 1989). Based on these indicators, assessment were performed - spatial variability in the use of water resources of Indian river basins (Amarasinghe et al., 2005); water scarcity in the Yellow River, Indus, Ganges and Amu Darya river basins, as well as in river basins in the Midwest United States (Oki et al., 2003); overall availability of water resources in the Amu Darya River Basin within Afghanistan (Ibrahimzada and Sharma, 2012); the concept of a global water security index was developed, which was adapted to the state level in Mexico (Arreguin-Cortes et al., 2020) and guaranteed water supply under the conditions of space-time flow variability in the Tobyl River basin (Shevtsov, 2015). In assessing the water supply of the population and the catchment area of river basins, indicator of the specific water supply of the population ($SWSP_i = RWR_i/PS_i$) (Shiklomanov, 2008) is traditionally used, which is defined as the ratio of long-term average annual renewable water resources (RWR_i) (Falkenmark et al., 1989) to the number of population in this territory (PS_i). Specific water supply of the territory ($SWST_i = RWR_i/CARB_i$) is defined as the ratio of available water resources (RWR_i) to its catchment area of the

river basin ($CARB_i$) (Danilov-Danilyan and Losev, 2006). These indicators were considered when assessing and justifying the environmental aspects of addressing water and environmental problems and utilization of water resources in the Russian Federation and the Republic of Kazakhstan (Shevtsov, 2015; Tursunova et al., 2022); water resource potential in all constituent entities of the Russian Federation, taking into account river and lake waters (Izmailova, 2019); availability of water resources for the population in the San Francisco Verdadeiro River basin in southern Brazil (Chaves and Alipaz, 2007); future global water availability per capita based on climate change and world population (Parish et al., 2012), etc.

A new approach to the joint assessment of the water supply of the population and the catchment area of river basins is a complex index of specific water supply ($CISWS = \sqrt{SWP_i \cdot SWST_i}$) (Mustafaev, 2022), defined as the geometric mean of the specific water supply of the population ($SWP_i = RWR_i/PS_i$) (Shiklomanov, 2008) and the territory ($SWST_i = RWR_i/CARB_i$) (m³/person per year) (Danilov-Danilyan and Losev, 2006), which was implemented for the first time in assessing the water resource potential of the catchment area of the Tobol River Basin of the Republic of Kazakhstan (Mustafayev et al., 2021). The above methodology logically presents and considers all the parameters of the water management of river basins. This methodology is relevant in the light of the improvement of natural-science ideas about the ecological mechanisms of water resources use in the aspect of the triad of ecology (ensuring the quality of the human environment), economy (increasing the purchasing power of society) and society (improving the well-being of the population).

The purpose of this study was a comprehensive assessment of water supply of the population, territory and economic sectors in the context of water-resource regions of Turkestan region of the Republic of Kazakhstan based on integrated specific water supply index, taking into account the environmental flows of river basins, providing data on the current state of water resources, level of water supply and their changes under influence of natural and anthropogenic factors.

The object of study is the Turkestan region, located in the south of Kazakhstan, within the eastern part of the Turan lowland, western offshoot the Tien Shan Mountain and the southern part of the Betpak-Dala desert with a variety of landscape systems, which is part of the Great Silk Road in the XIII-XIV centuries (Mukayev et al., 2022). Six water resource regions of river basins have been identified within the region (Figure 1).

MATERIALS AND METHODS

The information and analytic database of the study for comprehensive assessment of the water supply in the territory of Turkestan region in the context of a changing climate and anthropogenic activities was created on the basis of long-term data from the Department of the Bureau of National Statistics, Agency for Strategic Planning and Reforms of the Republic of Kazakhstan for Turkestan region and the Aral-Syrdarya basin Inspectorate for regulation of the utilization and protection of water resources of the Republic of Kazakhstan, covering the period from 2002 to 2021. Methodology of the study is presented in Figure 2.

№	Name of water resources regions
①	Chirchik-Keles river basin
②	Arys river basin
③	River Basin of the south-western slope of the Karatau ridge
④	River Basin of the northeast slope of the Karatau ridge
⑤	Above the Shardara reservoir
⑥	Below the Shardara reservoir

M:1:1000000
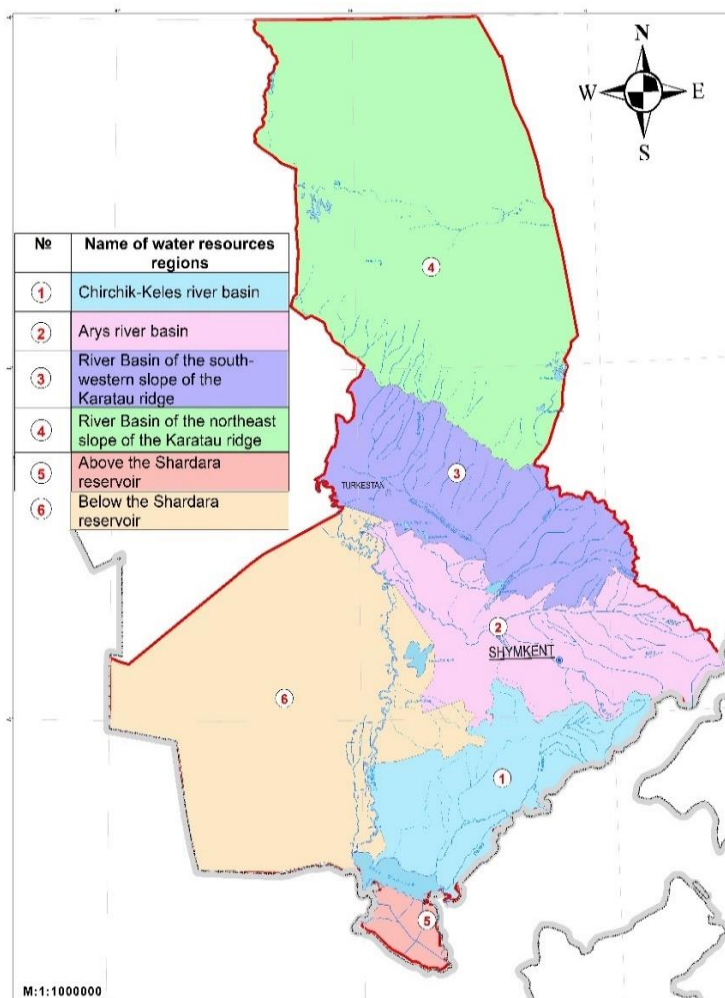
Figure 1. Distribution of six water-resource regions in the territory of Turkestan region of the Republic of Kazakhstan (Source: results of field survey of the territory, 2023)
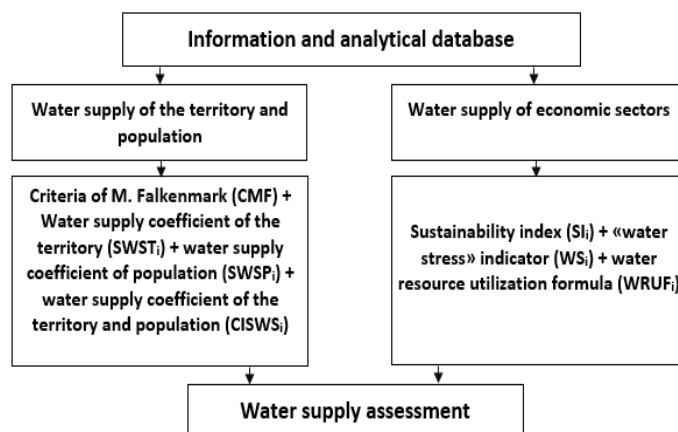
Figure 2. Flowchart of the study methodology in terms of water supply of Turkestan region within the water-resource regions (Source: personal original data)

Turkestan region of the Republic of Kazakhstan includes 13 administrative districts, four cities of regional and republican status, 826 rural settlements, where 3135.47 thousand people live. For a comprehensive assessment of the water supply in the territory of Turkestan region, number of populations living in the territory of six selected water-resource regions of river basins from 2002 to 2021 (Figure 3) were used (About changes in population of the Republic of Kazakhstan, 2021). For this assessment, indicators of available and used water resources in the territory of Turkestan region were also used across water-resource regions (Figure 4 and 5) (Regions of Kazakhstan, 2021). In the future, assessment of the water supply of the territory, the population and economic sectors of the catchment area of river basins, which perform an important environment-forming or ecological function, should not be some isolated form

Figure 3. Population of Turkestan region living in the territory of six water-resource regions (1 – Chirchik-Keles river basin; 2 – Arys river basin; 3 – River Basin of the south-western slope of the Karatau mountains; 4 – River Basin of the north-east slope of the Karatau mountains and the Shu river, 5 – above the Shardara reservoir, – below the Shardara reservoir), thousand people

of human perception of reality, but a system of worldview, where, along with philosophical, scientific,political, moral and other values, there are also environmental values, which condition the need for a careful attitude of a man to nature in the interests of not only living, but also future generations. It is time to revise the existing structure of indicators in assessing the water supply of the territory, with the inclusion of the ecological flow of river basins into their composition ($EFRB_i$) (Mustafayev, 2022). In general, the estimated indicators for the assessment of water supply of the territory should include:

– criteria of M. Falkenmark: $CMF_i = (RWR_i - EFRB_i)/QP_i$, >1700 m³/person per year – no stress; 1500-1700 m³/person per year – low stress; 1500-1300 m³/person per year – average stress; 1300-1100 m³/person per year – high stress; 800-1100 m³/person per year – water scarcity; 500-800 m³/person per year – chronic scarcity; <500 m³/person per year – absolute water scarcity (Falkenmark, 1986);

– sustainability index: $SI_i = WIV_i/(RWR_i - EFRB_i) \cdot 100$, >10 % – very low level of water scarcity; 10-20 % – low level of water scarcity; 20-30 % – slight water scarcity; 30-40 % – moderate water scarcity; 40-50 % – high level of water scarcity (water stress); 50-60 % – very high level of water scarcity (strong water stress); >60 % – chronic water scarcity (very high-water stress) (Raskin et al., 1997);

Figure 4. Available water resources of Turkestan region across water-resource regions (1 – Keles-Chirchik river basin; 2 – Arys river basin; 3 – River Basin of the south-western slope of the Karatau mountains; 4 – River Basin of the north-east slope of the Karatau mountains and the Shu river, 5 – above the Shardara reservoir, 6 – below the Shardara reservoir), km³
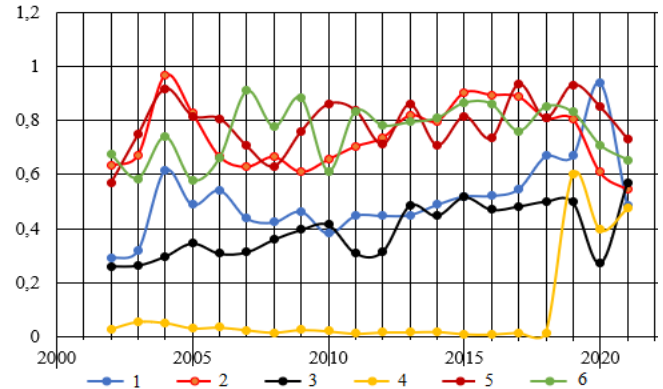
Figure 5. Utilization of water resources by economic sectors of Turkestan region across water-resource regions (1 – Keles-Chirchik river basin; 2 – Arys River basin; 3 – River Basin of the south-western slope of the Karatau mountains; 4 – River Basin of the north-east slope of the Karatau mountains and the Shu River; 5 – above the Shardara reservoir, 6 – below the Shardara reservoir), km³

– water stress: $WS_i = (WIV_i/(RWR_i - EFRB_i))$, <0.1 – very low; 0.1-0.2 – low; 0.2-0.3 – moderate; 0.3-0.4 – average; 0.4-0.5 – high; 0.5-0.6 – very high; >0.6 – catastrophic (coefficient) (Raskin et al., 1997);

– water resource utilization factor: $WRUF_i = FWC_i/(RWR_i - EFRB_i) \cdot 100$ (in %), <10 % – minimum risk; 10-20 % – moderate risk; 20-30 % – average risk; 30-40 % – increased risk; 40-50 % – high risk; 50-60 % – very high risk; >60 % – catastrophic risk (Boulay et al., 2014);

– specific water supply of the population: $SWSP_i = (RWR_i - EFRB_i)/PS_i$ (thousand m³/person per year), <1.00 thousand m³/person per year – catastrophically low; 1.01-2.00 thousand m³/person per year – very low; 2.01-5.00 thousand m³/person per year – low; 5.01-10.00 thousand m³/person per year – moderate; 10.01-15.00 thousand m³/person per year – average; 15.01-20.00 thousand m³/person per year – high; >20.00 thousand m³/person per year – very high (Shiklomanov, 2008);

– specific water supply of the territory: $SWST_i = (RWR_i - EFRB_i)/CARB_i$ (thousand m³/km²), <5.00 thousand m³/km² – catastrophically low; 5.01-10.00 thousand m³/km² – very low; 10.01-20.00 thousand m³/km² – low; 20.01- 30.00 thousand m³/km² – moderate; 30.01-40.00 thousand m³/km² – average; 40.01-80.00 thousand m³/km² – high; >80.00 thousand m³/km² – very high (Danilov-Danilyan and Losev, 2006);

– complex index of specific water supply of the territory and population: $CISWS = \sqrt{SWP_i \cdot SWST_i}$, where $SWP_i = \sqrt{[(RWR_i - EFRB_i)/PS_i]}$ and $SWST_i = \sqrt{[(RWR_i - EFRB_i)/CARB_i]}$, >5.00 – catastrophically low; <2.25 – very low; 2.25-3.35 – low; 3.35-7.25 – moderate; 7.50-13.70 – average; 13.70-32.40 – high; >32.40 – very high (thousand m^3/km^2) (Mustafaev, 2022). Based on the methodological approaches developed by K.Zh. Mustafaev and Zh.S. Mustafaev [25, 37], comprehensive assessment of water supply of the territory, population and economy of Turkestan region across water-resource regions has been conducted.

RESULTS AND DISCUSSION
Water supply of the territory and population
Based on the above methodology and the developed database of the study, water supply of the territory and population of Turkestan region was assessed across water-resource regions using the criteria of M. Falkenmark (CMF), specific water supply of the territory ($SWST_i$) and specific water supply of the population ($SWSP_i$), integrated (complex) index of specific water supply of the territory and population ($CISWS_i$), which enables to assess water security and prospects for the development of the economy and tourism sectors of the region (Figure 6; a) (Falkenmark, 1986); b) (Danilov-Danilyan and Losev, 2006); c) (Shiklomanov, 2008); d) (Mustafaev, 2022):

a) according to criteria of M. Falkenmark (CMF)
(in coefficient by M. Falkenmark)

b) according to specific water supply of the territory ($SWST_i$)
(thousand m^3/km^2)

c) according to specific water supply of the population ($SWSP_i$)
(thousand m^3/person per year)

d) according to specific water supply of the population and territory
($CISWS_i$) (thousand m^3/km^2)
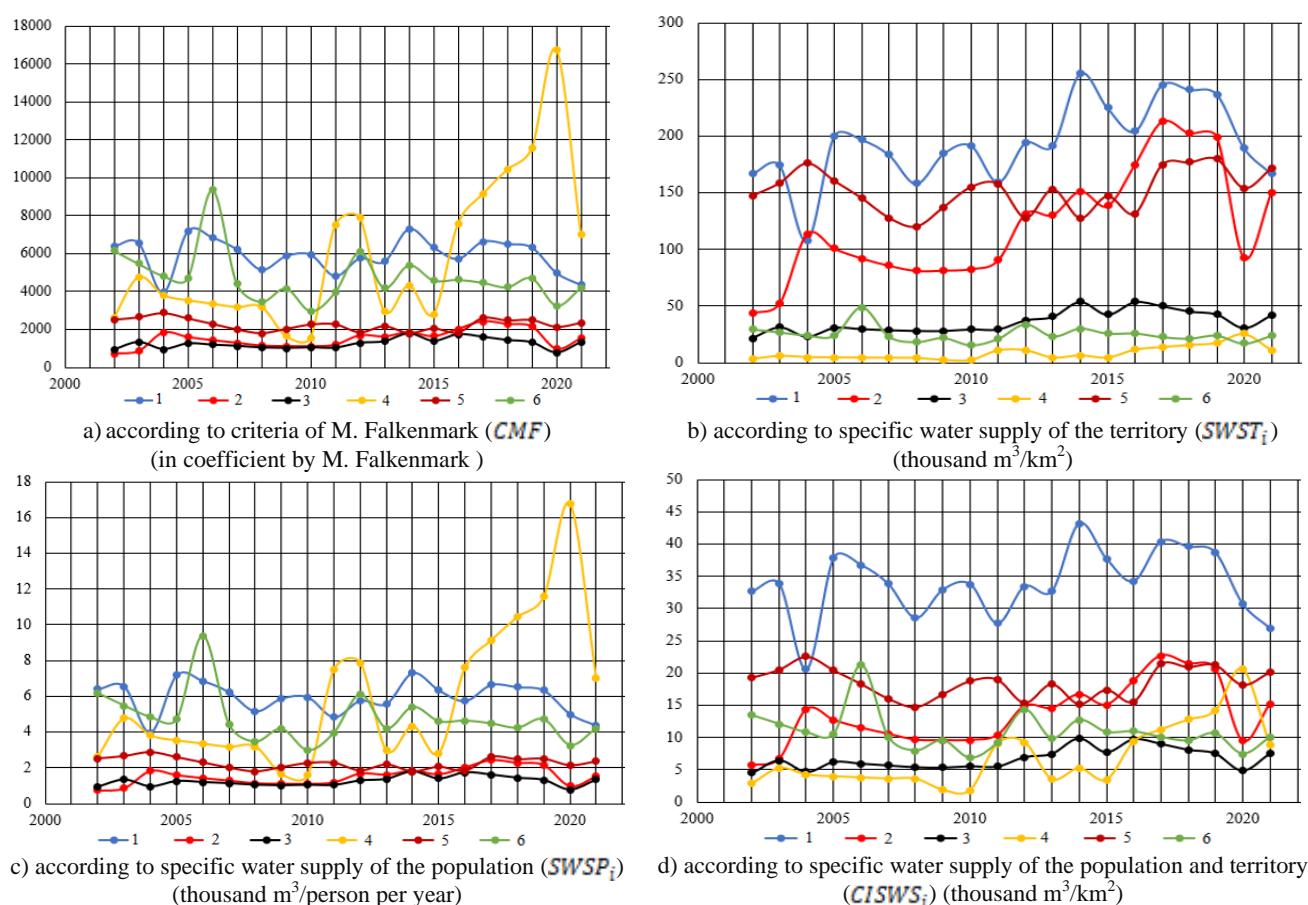
Figure 6. Water supply of the territory and population across water-resource regions of Turkestan region
1 – Keles-Chirchik river basin; 2 – Arys River basin; 3 – River Basin of the south-western slope of the Karatau mountains;
4 – River Basin of the north-east slope of the Karatau mountains and the Shu River, 5 – above the Shardara reservoir,
6 – below the Shardara reservoir (Units are represented in each graph)

The assessment of water supply of the territory and population across six water-resource regions of Turkestan region for 2002-2021 showed:

– in the water-resource region of Keles-Chirchik river basin, criteria of M. Falkenmark (CMF) ranges within 3945.0-7305.0 m3/person, no water stress is observed here; specific water supply of the territory (SWSTi) – 107.3-255.4 thousand m3/km2 (from high to very high) and specific water supply of the population (SWSPi) – 3.95-7.31 thousand m3/person (from low to moderate); complex index of specific water supply of the population and territory (CISWSi) – 20.57-43.19 (very high), which indicates a fairly high level of water supply in this water-resource region;

– in the water-resource region of Arys river basin, criteria of M. Falkenmark (CMF) ranges within 727.5-2415 m3/person (from the absence of water stress to chronic scarcity); specific water supply of the territory (SWSTi) – 44.0-212.9 thousand m3/km2 (very high) and specific water supply of the population (SWSPi) – 0.73-2.42 thousand m3/person (catastrophically low); complex index of specific water supply of the population and territory (CISWSi) – 5.56-22.68 (from moderate to high), which reflect fluctuations of the level of water supply of the water-resource region from low to average;

– in the water-resource region of the River Basin of the south-western slope of the Karatau mountains, criteria of M. Falkenmark (CMF) ranges within 930.0-1785.0 m^3/person (from water scarcity to low stress); specific water supply of the territory (SWSTi) – 21.60-53.90 thousand m^3/km^2 (from moderate to high) and specific water supply of the population (SWSPi) – 0.93-1.79 thousand m3/person (from catastrophically low to low); complex index of specific water supply of the population and territory (CISWSi) – 4.49-9.82 (from moderate to average), which show the change in the level of water supply of this water-resource region from low to medium;

– in the water-resource region of the River Basin of the north-east slope of the Karatau mountains, criteria of M. Falkenmark (CMF) ranges within 2625.0-16762.5 m3/person (from low stress to no stress); specific water supply of the territory (SWSTi) – 3.10-17.50 thousand m3/km2 (from low to high) and specific water supply of the population (SWSPi) – 2.63-16.76 thousand m3/person (from low to moderate); complex index of specific water supply of the population and territory (CISWSi) – 1.81-20.69 (from catastrophically low to high), which reflect changes in the level of water supply of this water-resource region from very low to low;

– in the water-resource region of the above the Shardara reservoir, criteria of M. Falkenmark (CMF) ranges within 1792.5-2887.5 m3/person (no stress); specific water supply of the territory (SWSTi) – 127.5-180.0 - thousand m^3/km^2 (very high) and specific water supply of the population (SWSPi) – 1.79-2.89 thousand m^3/person (from very low to low); complex index of specific water supply of the population and territory (CISWSi) – 14.65-22.57 (high), which show the change in the level of water supply of the water-resource region from very low to high;

– in the water-resource region of the below the Shardara reservoir, criteria of M. Falkenmark (CMF) ranges within 2962.5-9375.0 m^3/person (no stress); specific water supply of the territory (SWSTi) – 15.60-48.50 - thousand m^3/km^2 (from high to very high) and specific water supply of the population (SWSPi) – 2.96-9.38 thousand m^3/person (from low to moderate); complex index of specific water supply of the population and territory (CISWSi) – 6.80-21.32 (from moderate to high), which reflect the change in the level of water supply of this water-resource region from very low to high.

Assessment of the current water supply of the territory and population of Turkestan region across six water-resource regions for 2002-2021, using the criteria of M. Falkenmark (CMF), specific water supply of the territory (SWSTi) and specific water supply of the population (SWSPi), integrated (complex) index of specific water supply of the territory and population (CISWSi), showed that the highest water supply is observed in the water-resource region of Keles-Chirchik river basin; average water supply in two water-resource regions – Arys river basin and southwest slope of the Karatau mountains; low water supply is observed in the water-resource region of the River Basin of the north-east slope of the Karatau mountains, and relatively moderate water supply is observed in two water-resource regions located above and below the Shardara reservoir. Results of the assessment of water supply of the territory and population of Turkestan region should be considered when organizing territorial water utilization and long-term planning of the development of economic and tourism sectors.

a) according to sustainability index, % (SI_i)

b) according to "water stress" indicator, points (WS_i)

c) according to water resource utilization factor, % ($WRUF_i$)
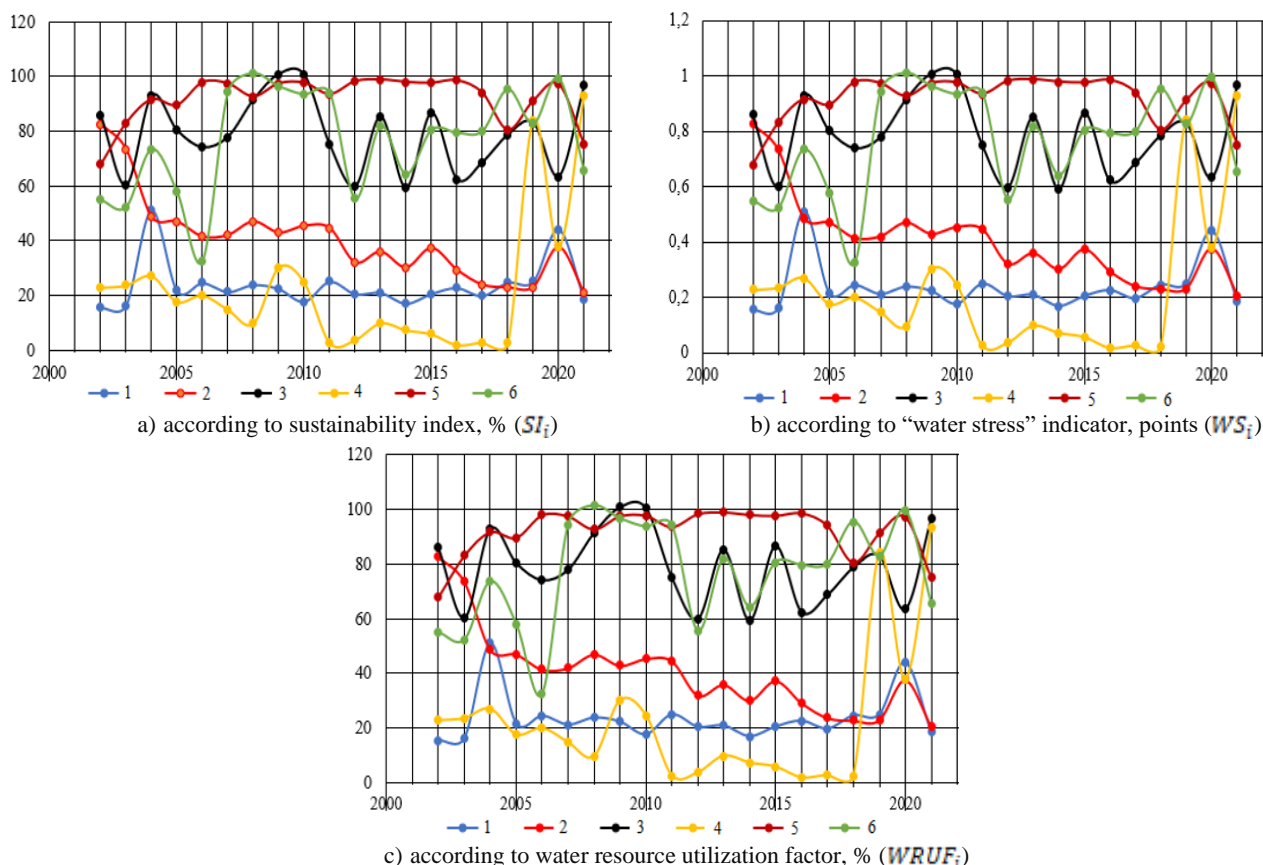
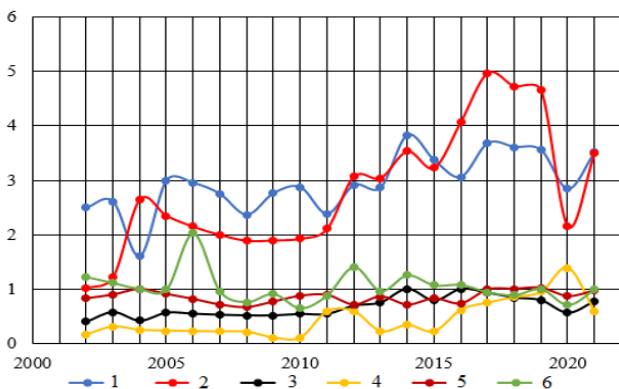Figure 7 – Water supply of economic sectors of Turkestan region across six water-resource regions

1 – Keles-Chirchik river basin; 2 – Arys river basin; 3 – River basin of the south-western slope of the Karatau mountains; 4 – River basin of the north-east slope of the Karatau mountains and the Shu river, 5 – above the Shardara reservoir, 6 – below the Shardara reservoir

Water supply of economic sectors

Assessment of the water supply of economic sectors of Turkestan region was performed across six water-resource regions for 2002-2021, for applied purposes and taking into account the sustainability index (SIi), "water stress" indicator (WSi) and water resource utilization factor (WRUFi) (Figures 7).

The assessment of water supply of economic sectors of Turkestan region across water-resource regions showed:

– in the water-resource region of Keles-Chirchik river basin, sustainability index (SIi) ranges within 15.57-51.16 % (from low to moderate level of water scarcity); «water stress» indicator (WSi) – 0.158-0.512 (from low to high) and water resource utilization factor (WRUFi) – 15.57-51.16 % (from moderate to high risk), which together reflect a rather low level of water supply in this region;

– in the water-resource region of Arys River basin, sustainability index (SIi) ranges within 20.80-82.57 % (from low to chronic water scarcity); «water stress» indicator (WSi) – 0.208-0.826 (from moderate to catastrophic) and water resource utilization factor (WRUFi) – 20.80-82.57 % (from average to catastrophic risk), which indicate the catastrophic level of water supply of the water-resource region;

– in the water-resource region of the River Basin of the south-western slope of the Karatau mountains, sustainability index (SIi) ranges within 59.18-100.76 % (from very high to chronic water scarcity); «water stress» indicator (WSi) – 0.592-1.008 (from very high to catastrophic) and water resource utilization factor (WRUFi) – 59.18-100.76 % (from very high to catastrophic risk), which show the catastrophic level of water supply of this water-resource region;

– in the water-resource region of the River Basin of the north-east slope of the Karatau mountains, sustainability index (SIi) ranges within 1.92-93.14 % (from low to chronic water scarcity), «water stress» indicator (WSi) – 0.019-0.931 (from very low to catastrophic) and water resource utilization factor (WRUFi) – 1.92-93.14 % (from minimum to catastrophic risk), which show the catastrophic level of water supply of the water-resource region;

– in the water-resource region of the above the Shardara reservoir, sustainability index (SIi) ranges within 67.86-98.85 % (chronic water scarcity); «water stress» indicator (WSi) – 0.679-0.988 (catastrophic) and water resource utilization factor (WRUFi) – 67.86-98.85 % (catastrophic risk), which reflect the catastrophic level of water supply of the region in question;

– in the water-resource region of the below the Shardara reservoir, sustainability index (SIi) ranges within 32.54-101.17 % (from moderate to chronic water scarcity); «water stress» indicator (WSi) – 0.325-1.002 (from average to catastrophic) and water resource utilization factor (WRUFi) – 32.54-101.17 % (from increased to catastrophic risk), which in general, reflect the catastrophic level of water supply of the water-resource region in question.
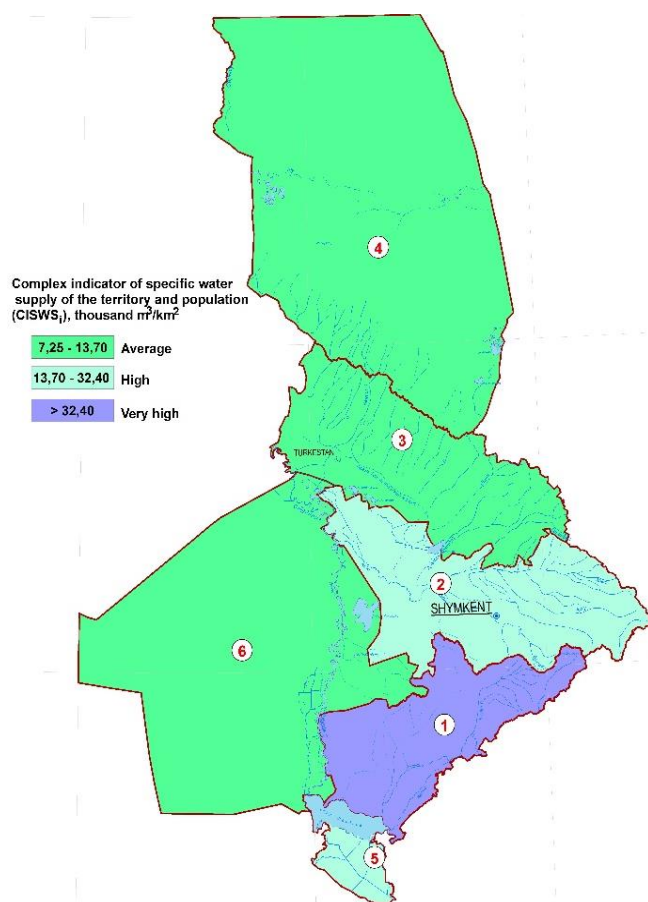
Figure 8 – Water supply map of Turkestan region across water-resource regions according to the integrated indicator of a comprehensive assessment of water supply of the population and territory (Source: personal original data)
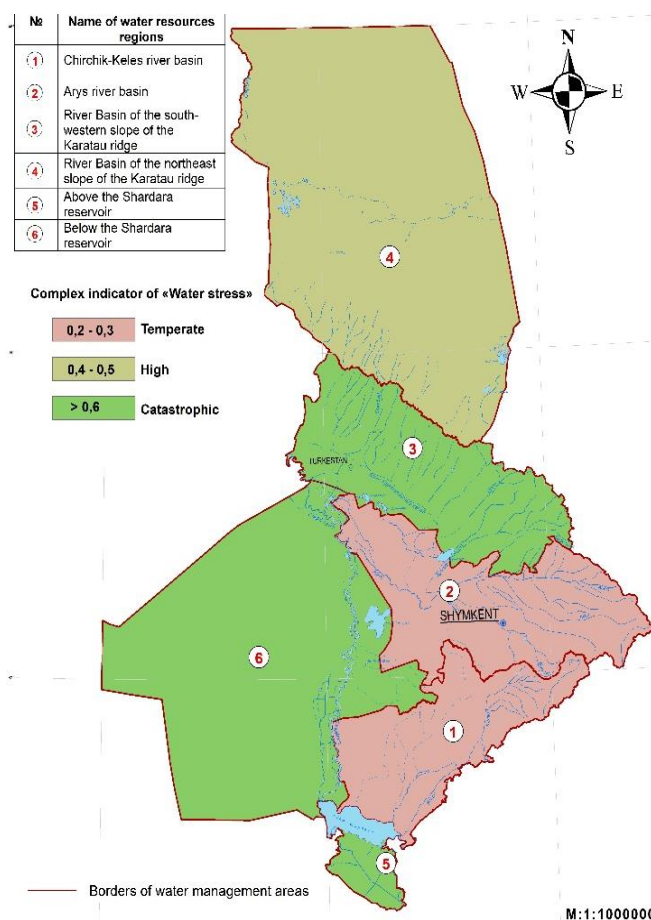
Figure 9 – Water supply map of the economy of Turkestan region across water-resource regions according to the integrated "water stress" indicator (Source: personal original data)

Comparative analysis of the estimated indicators of water supply of economic sectors of Turkestan region indicates that in all water-resource regions, except for the water-resource region of the Keles-Chirchik river basin, a high-stress catastrophic situation has developed, which is associated with water-deficit problems requiring urgent solutions to ensure water security of the economy and sustainable development of the region (economic and tourism sectors).

On the basis of the estimated indicators obtained, water supply maps were developed for the Turkestan region across water-resource regions. One of which was developed on the basis of a comprehensive assessment of water supply of the population and territory, and the other one - integrated "water stress" indicator, characterizing the water supply of the region's economy (Figures 8 and 9). Maps of water supply of the population, territory and economy of the Turkestan region across water-resource regions are an objective, operational and effective tool during analysis of environmental and socio-economic situations that can be used in long-term territorial planning and organization of economic activities, providing the sustainable development of the region.

CONCLUSION

The developed methodological approaches to the assessment and the created study database can be used as the basic tool to determine the water supply of the territory, population and economic sectors in the catchment areas of river basins, which are the spatial basis of the population and human production activities and is the basis for decision-making when developing measures for economic, environmental and water security of the Turkestan region. Assessment of the water-resource organization (surface water resources) of the Turkestan region using integrated indicators (criteria) of water supply of the territory, population and economic sectors showed that in all six water-resource regions, except for the Keles-Chirchik river basin, there is a high level of water scarcity (water stress), which is associated with the water-deficit problems of the region, has fundamental environmental and economic importance and can be used as an effective tool for consideration of the influence of water factors during socio-economic forecasting of the development of the region.

The proposed and used system of environmental and socio-economic indicators when developing water supply maps of the Turkestan region across water-resource regions objectively characterizes the essence of the existing processes and can be used in the territorial organization of economic activity in the region. The study of water supply of the territory, population and economic sectors of Turkestan region across water-resource regions is a tool for space-time analysis of water management, environmental and related demographic and production problems, determines the scientific and practical feasibility of developing a unified program of environmental and water security of the region, taking into account the interests of not only water users of the region, but also the interests of the environment.

REFERENCES
Aliyev, V., & Suleymanov, F. (2023). The protection of water resources for sustainable tourism under climate change in south Caucasus: in the context of Azerbaijan. GeoJournal of Tourism and Geosites, 47(2), 515–522. https://doi.org/10.30892/gtg.47219-1051
Amarasinghe, U., Sharma, B.R., Aloysius, N., Scott, C., Smakhtin, V., & De Fraiture, C. (2005). *Spatial variation in water supply and demand across river basins of India* (Vol. 83). *IWMI.*
Arreguin-Cortes, F.I., Saavedra-Horita, J.R., Rodriguez-Varela, J.M., Tzatchkov, V.G., Cortez-Mejia, P.E., Llaguno-Guilberto, O.J., & Sainos-Candelario, A. (2020). State level water security indices in Mexico. *Sustainable Earth*, 3(1), 1-14. https://doi.org/10.1186/s42055-020-00031-4
Boulay, A.M., Bare, J., Benini, L., Berger, M., Klemmayer, I., Lathuilliere, M., & Pfister, S. (2014). Building consensus on a generic water scarcity indicator for LCA-based water footprint: preliminary results from WULCA. *In Proceedings of the 9th International Conference on Life Cycle Assessment in the Agri-Food Sector (LCA Food 2014),* San Francisco, California, USA, 8-10 October, 2014 (pp. 142-149). American Center for Life Cycle Assessment.
Cao, S., He, Z., Wang, S., & Niu, J. (2023). Decoupling Analysis of Water Consumption and Economic Growth in Tourism in Arid Areas: Case of Xinjiang, China. *Sustainability*, 15 (13), 10379. https://doi.org/10.3390/su151310379
Chaves, H.M., & Alipaz, S. (2007). An integrated indicator based on basin hydrology, environment, life, and policy: the watershed sustainability index. *Water Resources Management*, 21, 883-895. https://doi.org/10.1007/s11269-006-9107-2
Chenoweth, J. (2008). A re-assessment of indicators of national water scarcity. *Water International*, 33 (1), 5-18.

Danilov-Danilyan, V.I., & Losev, K.S. (2006). Water consumption. Federal State Unitary Enterprise Academic Scientific Publishing, *Production and Printing and Book Distribution Center Nauka*, 221 (in Russian).

Damkjaer, S., & Taylor, R. (2017). The measurement of water scarcity: Defining a meaningful indicator. *Ambio*, *46*(5), 513-531. https://doi.org/10.1007/s13280-017-0912-z

Danilov-Danilyan, V.I., & Losev, K.S. (2006). Water consumption. Federal State Unitary Enterprise Academic Scientific Publishing, *Production and Printing and Book Distribution Center Nauka*, 221 (in Russian).

Falkenmark, M. (1986). Fresh water: Time for a modified approach. *Ambio*, 192-200.

Falkenmark, M. (1989). The massive water scarcity now threatening Africa: why isn't it being addressed? *Ambio*, 112-118.

Falkenmark, M., Lundqvist, J., & Widstrand, C. (1989). Macro-scale water scarcity requires micro-scale approaches: Aspects of vulnerability in semi-arid development. In *Natural resources forum* (Vol. 13, No. 4, pp. 258-267). Oxford, UK: Blackwell Publishing Ltd.

Friedman, A. (2015). Models for the economic management of water resources *[Modeli jekonomicheskogo upravlenija vodnymi resursami]. Litres. Publishing House for the Higher School of Economics*, 288 (in Russian).

Georgiadi, A.G., Koronkevich, N.I., Barabanova, K.S., & Melnik, K.S. (2021). Vodnye resursy i vodno-jekologicheskaja naprjazhennost' v Central'nom federal'nom okruge Rossii [Water resources and water-environmental tension in the Central Federal District of Russia]. *News of the Russian Academy of Sciences. Series of geography*, (3), 325-340 (in Russian).

Hernández-Bedolla, J., Solera, A., Paredes-Arquiola, J., Pedro-Monzonís, M., Andreu, J., & Sánchez-Quispe, S.T. (2017). The assessment of sustainability indexes and climate change impacts on integrated water resource management. *Water, 9*(3), 213. https://doi.org/10.3390/w9030213

Ibrahimzada, M.W., & Sharma, D. (2012). Vulnerability assessment of water resources in Amu Darya river basin, Afghanistan. *International Journal of Environmental Sciences*, *3*(2), 802-812. https://doi.org/10.6088/ijes.2012030132007

Izmailova, A.V. (2019). Udel'naja vodoobespechennost' i ozernyj fond regionov vodnogo deficita [Specific water supply and lake fund of water deficit regions]. *Water management in Russia: problems, technologies, management*, (5), 6-24. (in Russian).

Jiang, M., Wu, Z., Guo, X., Wang, H., & Zhou, Y. (2023). Study on the Contribution of Land Use and Climate Change to Available Water Resources in Basins Based on Vector Autoregression (VAR) Model. *Water*, *15*(11), 2130.

Karamouz, M., Mohammadpour, P., & Mahmoodzadeh, D. (2017). Assessment of sustainability in water supply-demand considering uncertainties. *Water Resources Management*, *31*, 3761-3778. https://doi.org/10.1007/s11269-017-1703-9

Kozykeeva, A.T., & Kalmashova, A.N. (2018). Osobennosti formirovanija gidrologicheskogo rezhima stoka bassejna reki Esil' [Features of the formation of the hydrological flow regime of the Yesil River basin]. *Hydrometeorology and ecology*, (1 (88)), 66-74 (in Russian).

Kourgialas, N.N., Karatzas, G.P., Dokou, Z., & Kokorogiannis, A. (2018). Groundwater footprint methodology as policy tool for balancing water needs (agriculture & tourism) in water scarce islands-The case of Crete, Greece. *Science of the Total Environment*, *615*, 381-389. https://doi.org/10.1016/j.scitotenv.2017.09.308

Kummu, M., Ward, P.J., De Moel, H., & Varis, O. (2010). Is physical water scarcity a new phenomenon? Global assessment of water shortage over the last two millennia. *Environmental Research Letters*, *5* (3), 034006.

Mai, D.T.T., Vo, D.N., & Tran, N.T.V. (2023). Water Stress Index application to assess water scarcity of Lower Vu Gia-Thu Bon River Basin in Vietnam. In *IOP Conference Series: Earth and Environmental Science*, 1143(1), 012004, *IOP Publishing*. https://doi.org/10.1088/1755-1315/1143/1/012004

Moyle, B.D., Weaver, D.B., Gössling, S., McLennan, C.L., & Hadinejad, A. (2022). Are water-centric themes in sustainable tourism research congruent with the UN Sustainable Development Goals? *Journal of Sustainable Tourism*, *30*(8), 1821-1836.

Mustafaev, Z. (2022). Sovershenstvovanie metodov ocenki vodoobespechennosti vodosbornyh territorij rechnyh bassejnov s uchetom jekologicheskogo priznaka vodopol'zovanija [Improving the methods for assessing the water supply of the water-collecting areas of river basins, taking into account the ecological sign of water use] // *Bulletin: Sustainable development of territories: theory and practice. materials of the III International scientific-practical conference. Sibay*, 120-122 (in Russian).

Mustafayev, Z.S. (2022). Integrated water management of transboundary rivers: concepts, theory and methodology. *Chisinau: LAP LAMBERT Academic Publishing*, 299. ISBN-13: 978-6205509838.

Mustafayev, Z.S., Kozykeeva, A.T., & Tastemirova, B.E. (2021). Covremennoe sostojanie i problemy ocenki vodoobespechennosti vodosbora bassejna reki Tobyl [The current state and problems of assessing the water supply of the water-collecting area of the Tobyl River basin]. *Scientific journal "Reports of the National Academy of Sciences of the Republic of Kazakhstan", (4)*, 57-63. https://doi.org/10.32014/2021.2518-1483.59 (in Russian).

Mukayev, Z., Ozgeldinova, Z., Dasturbayev, S., Ramazanova, N., Zhanguzhina, A., & Bektemirova, A. (2022). Landscape and recreational potential of the mountainous territories of the Turkestan region of the Republic of Kazakhstan. *GeoJournal of Tourism and Geosites, 41*(2), 362–367. https://doi.org/10.30892/gtg.41204-838

Mustafayev, Z., Skorintseva, I., Toletayev, A., Bassova, T., & Aldazhanova, G. (2023). Assessment of climate change in natural areas of the Turkestan region of the Republic of Kazakhstan for the purposes of sustainable agricultural and recreational nature management. *GeoJournal of Tourism and Geosites, 46*(1), 70-77. https://doi.org/10.30892/gtg.46108-1002

Oki, T., Agata, Y., Kanae, S., Saruhashi, T., & Musiake, K. (2003). Global water resources assessment under climatic change in 2050 using TRIP. *International Association of Hydrological Sciences, Publication*, *280*, 124-133.

Oxley, R.L., & Mays, L.W. (2017). Sustainability index for the management of river basins based upon ecological, environmental and hydrological integrity and the minimization of long term risks to supply. *Environment and Natural Resources Research*, *7*(4), 1-16.

Parish, E.S., Kodra, E., Steinhaeuser, K., & Ganguly, A.R. (2012). Estimating future global per capita water availability based on changes in climate and population. *Computers & Geosciences*, *42*, 79-86. https://doi.org/10.1016/j.cageo.2012.01.019

Pedro-Monzonís, M., Ferrer, J., Solera, A., Estrela, T., & Paredes-Arquiola, J. (2014). Water Accounts and Water Stress Indexes in the European Context of Water Planning: Jucar River Basin. *Procedia Engineering*, *89*, 1470-1477.

Raskin, P., Gleick, P., Kirshen, P., Pontius, G., & Strzepek, K. (1997). Comprehensive Assessment of the Freshwater Resources of the World: *Report of the Secretary General United Nations Economic and Social Council, Commission on Sustainable Development Online*: http://www.un.org/ga/search/viewdoc.asp?symbol=E/CN.17/1997/9&Lang=E

Raskin, P., Gleick, P., Kirshen, P., Pontius, G., & Strzepek, K. (1997). Water futures: assessment of long-range patterns and problems. Comprehensive assessment of the freshwater resources of the world. *SEI*

Roudier, P., & Mahe, G. (2010). Study of water stress and droughts with indicators using daily data on the Bani river (Niger basin, Mali). *International Journal of climatology*, *30* (11), 1689-1705.

Rybak, E.A., & Rybak, O.O. (2021). Analiz regional'nyh osobennostej struktury vodopol'zovanija na Severnom Kavkaze. chast' 1 [Analysis of regional features of the structure of water use in the North Caucasus. Part 1]. *Environmental control systems*, № 2 (44), 96-105 (in Russian).

Rybkina, I.D., & Sivokhip, Z.T. (2019). Vodnye resursy rossijsko-kazahstanskogo transgranichnogo regiona i ih ispol'zovanie [Water resources of the Russian-Kazakh transboundary region and their use]. *South of Russia: ecology, development, (2),* 70-86. https://doi.org/10.18470/1992-1098-2019-2-70-86 (in Russian).

Ryskulbekova, L.M. (2020). Na territorijah vodosborov bassejna reki Ile [In the catchment areas of the Ile River basin]. *Issues of geography,* (3), 3-11 (in Russian).

Sabia, G., Mattioli, D., Langone, M., & Petta, L. (2023). Methodology for a preliminary assessment of water use sustainability in industries at sub-basin level. *Journal of Environmental Management*, *343*, 118163. https://doi.org/10.1016/j.jenvman.2023.118163

Salehie, O., Ismail, T.B., Shahid, S., Hamed, M.M., Chinnasamy, P., & Wang, X. (2022). Assessment of water resources availability in Amu Darya River basin using GRACE data. *Water*, *14*(4), 533. https://doi.org/10.3390/w14040533

Shevtsov, M.N. (2015). Vodno-jekologicheskie problemy i ispol'zovanie vodnyh resursov [Water-environmental problems and use of water resources]. Khabarovsk, *Publishing House of the Pacific State University*, 197 (in Russian).

Shiklomanov, I.A. (2008). Water resources of Russia and their use. *State Hydrological Institute, St. Petersburg (1),* 600.

Sun, G., McNulty, S.G., Myers, J.M., & Cohen, E.C. (2008). Impacts of climate change, population growth, land use change, and groundwater availability on water supply and demand across the conterminous US. *Watershed Update*, *6*(2), 1-30.

Tursunova, A., Medeu, A., Alimkulov, S., Saparova, A., & Baspakova, G. (2022). Water resources of Kazakhstan in conditions of uncertainty. *Journal of Water and Land Development*, 138-149. https://doi.org/10.24425/jwld.2022.141565.

Vörösmarty, C.J., Ellen, M., Douglas, Green, P.A., & Revenga, C. (2005). Geospatial Indicators of Emerging Water Stress: An Application to Africa. *Ambio, 34*(3), 230–236. http://www.jstor.org/stable/4315590

*** World Heritage List URL: https://whc.unesco.org/en/list/1103

*** World Water Assessment Programme URL: https://www.unesco.org/en/wwap

*** About changes in population of the Republic of Kazakhstan: statistical publication (2021). Astana: Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan.

*** Regions of Kazakhstan in 2021: statistical compilation (2021). Astana.

*** Food and Agriculture Organization URL: https://www.fao.org/home/en

DOES TRUSTWORTHINESS INFLUENCE TRAVEL SERVICE USE INTENTIONS AT AN ONLINE TRAVEL AGENCY? A STUDY ON THE DIGITALIZATION OF THE TOURISM SECTOR IN BANGLADESH

Md. Soleman MOLLIK[*]
Department of Business Administration in Marketing, Faculty of Business Studies, Bangladesh University of Professionals,
Mirpur Cantonment, Dhaka, Bangladesh, e-mail: solemanmollik1993@gmail.com

Sk. Mahrufur RAHMAN
Department of Business Administration, Faculty of Business Studies, North Western University,
Khulna, Bangladesh, e-mail: mahrufur89@gmail.com

Mohammad Robaitur RAHAT
Department of Business Administration in Finance and Banking, Bangladesh University of Professionals,
Mirpur Cantonment, Dhaka, Bangladesh, e-mail: robaitur.rahat@bup.edu.bd

Chowdhury Ummeh KULSUM
Department of Management, Faculty of Business Administration, University of Chittagong, Chittagong University Road,
Chittagong, Bangladesh, e-mail: tasnu15@gmail.com

Saiful Anis Muhammad SAGIR
Department of Management Studies (Army Education Corps), Bangladesh Army, Bangladesh Military Academy,
Chittagong, Bangladesh, e-mail: saifulsagir0102@gmail.com

Abstract: The use of online travel agency (OTA) in the sphere of tourism and hospitality industry is steadily rising along with digitalization. The aim of the investigation is to explore the relationship between the elements of trustworthiness (perceived ability, perceived benevolence, and perceived integrity) and the use of online travel agencies. In this study, a purposive sampling technique was used to collect data from the 292 clients of online travel agencies in Bangladesh. With the application of SPSS version 24 and AMOS version 26, structural equation modeling (SEM) was used to examine the research model. The findings indicate that all three elements of trustworthiness - perceived ability, perceived benevolence, and perceived integrity positively influence tourists to use online travel agencies. It scaled a new development in social exchange theory (SET) by introducing the elements of trustworthiness in the context of online travel agencies (OTAs). The present study's findings have important and useful ramifications for online travel service providers, online service agents, and managers of various tourism platforms. They should develop and put into practice strategies to manage trustworthiness across various levels of online travel services to achieve improved responses from travelers.

Key words: online travel agency, digitalization of tourism, trustworthiness, use intention, structural equation modeling

* * * * * *

INTRODUCTION

With the advancement of information technology, people increasingly depend on it for their daily activities. Due to smart devices such as mobile phones, tablets, etc., engaging with digital services has become much easier than before (Min and Lee, 2020). All these devices have accelerated the customer's easy, interactive, and low-effort service delivery (Lee and Lee, 2020). The use of information technology in the tourism sector has given it a new dimension (Fan et al., 2022; Sun, 2021; Bayram, 2020). According to a market study by Ireland-based market research firm Research and Markets, the present size of the Internet travel industry is close to USD 450 billion, and by 2026, it is predicted to reach USD 700 billion (Hasan, 2021). Thus, the demand for a structured online travel industry is evident. Online travel agencies are intermediaries in the tourism sector that bring all tourism services to travelers' fingertips through the use of applications and web portals. Travelers can now perform things like ticket booking, hotel booking, payment negotiation, comparing tour plans, etc. through OTAs (Merkert and Hakim, 2022; Andriotis and Paraskevaidis, 2021; Jo et al., 2022).

Tech-based travel business is the demand of the era nowadays, it is predicted that Asian nations' tourism sectors will expand over the coming years (Wah et al., 2022). The tourism industry in Bangladesh has limitless growth potential. Currently, people are increasingly traveling through online services (Hasan, 2021). As a result, the number of online travel

---

[*] Corresponding author

service providers and online travel agencies is constantly increasing. The industry analyst claimed that there are already more than 50 OTAs functioning in the nation. By 2025, OTAs are anticipated to hold a market share of more than 45% (The Business Standard, 2021). Despite the popularity of traveling through online travel agencies, some factors are hindering the growth of this sector. Among the inhibiting factors a lack of consumer trust and confidence in online travel agencies are major factors (Chen et al., 2022). Deliberate fraud, failure to deliver promised services, ambiguity in financial matters, unclear business terms, ultra-profiteering tendencies, presence of unscrupulous travel agencies, exaggerated campaigns, etc., have questioned the credibility and trust of Bangladeshi online travel agencies in the minds of travelers (Uddin, 2020). This is why it is essential to know the impact of the trustworthiness of online tourists on their intention to use OTAs.

The usage of OTA is significantly influenced by trustworthiness (Setiawan and Widanta, 2021; Uddin, 2020). Some recent researches were done to explain the relationship of trustworthiness with e-commerce applications (Casare et al., 2022; Wang et al., 2021), mobile banking (Khan et al., 2021; Almarashdeh et al., 2019), e-ticketing (Mellani et al., 2019), online hotel booking (Baki, 2020; Gao and Bi, 2021), online banking (Murthy and Varalakshmi, 2021). The majority of research discovered a strong, favorable association between trust and intention to utilize these online services. As a result, it is plausible to deduce that there may be an association between trust and OTAs usage intention in the context of Bangladesh.

Setiawan and Widanta (2021) discovered a favorable association between trust and OTA use intention. The Technology Acceptance Model (TAM) (Davis et al., 1989) was employed in that study to unravel the connection between trust and OTA usage intentions. It was shown that ease of use, usefulness, and attitude all favorably affect OTA adoption. However, travelers trust OTAs not only for ease of use and usefulness but also for their continuous and constant benefits. It is a reciprocal process. Because of trust, people share sensitive information with OTAs and use them without hesitation. So, it is more logical to explain the relationship between trustworthiness and OTA usage with the elements of trustworthiness like perceived ability, perceived benevolence, and perceived integrity because ability, integrity, and benevolence were recognized as the three main elements of perceived trustworthiness by Mayer et al. (1995). Travelers are more likely to trust OTAs if they ensure these features. Therefore, this mutual exchange process between travelers and OTAs can better be analyzed with the help of Social Exchange Theory (SET) (Homans, 1958). Thus, this study uses SET to explain the relationship between trust and OTA use intention by travelers.

Many theories and models were used to explain the impact of trustworthiness; for example, Amaro and Duarte (2016) utilized the theory of planned behavior (TPB), (Brandão et al., 2021) used the theory of rational action (TRA), and Setiawan and Widanta (2021) utilized the technology adoption model (TAM), have been used to explain how trustworthiness affects the usage of online travel agencies. However, to date, no research study has been found using the social exchange theory to clarify the involvement between trustworthiness and the usage of OTA.

Trustworthiness has been explained with so many elements in order to explore its relationship with use intention. The components of trustworthiness - ability, benevolence, and integrity - have been studied in the past to ascertain how they relate to use intentions in various contexts such as e-commerce (Abdullah and Saleh, 2019; Setyoparwati, 2019), mobile banking Lin (2011), e-governance (Janssen et al., 2017), mobile banking app (Khan et al., 2021) but none of these studies took perceived ability, benevolence, and integrity into account to explain how trustworthiness relates to online travel agencies. Therefore, this fact makes the research unique and important.

Some research (Setiawan and Widanta, 2021; Zahidah and Rostiani, 2021; Kim et al., 2018; Rakhmada and Hati, 2019) discovered a positive association between trust and OTAs usage. However, none of the studies have been identified in the Bangladeshi context. Bangladeshi visitors have different sociopsychological, behavioral, and cultural challenges than tourists from other nations (Bernard et al., 2022). As a result, it is imperative to conduct research in the context of Bangladesh. Therefore, the study's aims are to determine the components of trustworthiness that influence online travel agency usage, as well as the most essential elements of trustworthiness that constitute the factors responsible for OTAs usage.

Objectives:
- To identify the elements of trustworthiness that affect tourists' intention to use online travel agency.
- To investigate the degree to which trustworthiness affects Bangladeshi tourists' intentions to use OTA.

LITERATURE REVIEW
Theoretical Background

The social exchange theory (SET) was first proposed by Homans (1958) to understand human actions. It is a theory founded on the proposition that social conduct results from an exchange mechanism. According to the social exchange theory, people make social decisions based on logical calculations of the benefits and burdens associated with performing so (Enayat et al., 2022). The idea suggests that when using an online travel agency, tourists evaluate the firm's trustworthiness and decide based on the perceived advantages and hazards (Wei, 2021). In the interaction between travelers and online travel agents, trustworthiness is a key component. In this case, trust plays a crucial part in influencing people's decision-making (Datta, 2021).

The perceived ability, benevolence, dependability, credibility, and integrity of an online travel agency are referred to as the elements of trustworthiness (Sadiq et al., 2022). Individuals assess the possible benefits they anticipate obtaining from utilizing an online travel agency against the expenses and potential hazards connected with it in the framework of the social exchange theory. Trustworthiness becomes an important criterion in this evaluation since it has a direct impact on perceived advantages and potential threats (Khan et al., 2021). Individuals are more inclined to utilize an online travel firm that is

seen as trustworthy. Users feel more secure and assured when they trust the agency will keep its commitments, offer truthful data, and preserve their confidential data (Choi et al., 2021). This trust strengthens the positive aspects of utilizing an online travel agency, such as convenience, access to a wide range of choices, affordable pricing, and dependable customer assistance (Setiawan and Widanta, 2021; Çiftçi and Çizel, 2019). On the contrary, tourists are less inclined to utilize an online travel agency if they judge it to be untrustworthy. The absence of trust increases fears of potential hazards and adverse consequences. Uddin (2020) mentioned that the dangers encompass fraudulent behavior, deceptive facts, poor customer service, and illegal use of confidential information. With these considerations in mind, people are more likely to avoid using a shady online travel agency, even if it provides upfront advantages like reduced rates or appealing discounts.

Therefore, trustworthiness has an important role in the perceived benefits and risks of utilizing an online travel agency. Visitors have a higher inclination to utilize a trustworthy service due to increased rewards and lower potential risks. The social exchange theory emphasizes the significance of trustworthiness in influencing tourists' decisions to use online travel firms.

Trustworthiness

Trustworthiness is a multidimensional concept that encircles the ability, benevolence, and integrity of the trustee (Mayer et al., 1995; Svare et al., 2020). To comprehend trust in different circumstances, it is vital to consider variables like ability, benevolence, and integrity (Hallikainen and Laukkanen, 2021). In this era of social media, trustworthiness is difficult to achieve (Aziz, 2023; Khoa and Huynh, 2023; Yen et al., 2022). The existence of trust in an e-commerce platform boosts consumer confidence and lowers anxiety about risk, increasing purchase intentions and online buying (Wong et al., 2019). It also triggers customers' engagement and brand loyalty toward market offerings (Firmansyah et al., 2019; Kosiba et al., 2018). Kharouf et al. (2019) added that trustworthiness implies the feature of a person - a trustee who may or may not be believed. Since purchasing any product or service online is deemed to be highly risky (Jain et al., 2017) elements of trustworthiness need to be considered while dealing with any online transaction (Ma, 2021).

Trustworthiness has emerged as one way of determining whether anybody has a larger or lower level of trust in online purchasing, thereby driving customers' plans to buy (George, 2023). Numerous academics have studied the effects of trustworthiness on various aspects of e-commerce, including online banking (Adityawan et al., 2023), e-commerce (Givan et al., 2021), online shopping (Mosunmola et al., 2018), fashion industry (Hang et al., 2023), and e-purchasing (Cerdeira, 2020) but there is still a paucity of studies especially on the relationship of trustworthiness and online travel agency. Therefore, the researchers assume that trustworthiness favorably impacts the use behavior of OTAs.

Intention to use

Intention to use is the likelihood that a customer will actually be inclined to the purchase of a good or service from a business (Srivastava and Gupta, 2023). Trustworthiness significantly creates the intention to buy online in the minds of customers (Mbete and Tanamal, 2020; Osei-Frimpong et al., 2019). Trustworthiness and Intention to buy are closely related to each other (Li et al., 2023). Perceived ability, benevolence, and integrity create intentions to avail e-commerce services among buyers (Özdemir and Sonmezay, 2020). Tourists are motivated to avail of tourism services when they find trustworthiness variables in the service offerings (Su et al., 2020). Eventually, in this study, the authors assume that visitors' intentions to utilize online travel agencies (OTAs) will be positively impacted by OTA trustworthiness factors.

Perceived Ability

Ability implies a trustee's capacity to meet the trustor's requirements (Mayer et al., 1995). Additionally, Deljoo et al. (2018) allude that the ability refers to the trustee (service provider) is competent enough to satisfy the trustor (service receiver or customer). Although a company may be extremely skilled in the field in which it specializes, it may be less skilled in other areas. Ability in e-commerce involves the conviction that a web-based business is competent in its field, which lessens the sense of insecurity around online purchasing (Hallikainen and Laukkanen, 2021). The Previous study divided ability into two parts, namely professional and relational (Khan et al., 2021) that trigger a guarantee of a high level of skill, expertise, and capability (Mcknight et al., 1998). Trust, encompassing perceived skill, has been proven to positively influence purchasing motives (Setiawan and Widanta, 2021). Perceived ability is a component of trustworthiness that affects online travel businesses. The likelihood that a customer would use an online travel agency's offering correlates strongly with the site's trust, suggesting that the portal's trust increases their willingness to buy (Brandão et al., 2021). Consequently, the study assumes that if the users believe that the OTAs will provide them with the required services with perfection in the cases of competence, skills, and expertise, then they will be interested enough to consume online travel services through OTAs. Therefore, the study posits that:

H1: Perceived ability has a positive relationship with the intention to use online travel agency.

Perceived Benevolence

Benevolence depicts that a trustee considers the trustor's interests and cares for them highly (Mayer et al., 1995; Zhang and Li, 2019). It is the conviction that the service provider will act honestly, with commitment, and without regard to personal gain. In addition to that, benevolence denotes the perception that the trustee will act on behalf of the trustor and/or place the trustor's interests before his/her own, along with thinking of the trustor's wellbeing (Choi et al., 2019). The trustors or users of any product or service tend to receive cooperation, reciprocity, and loyalty in the light of benevolence (Nguyen, 2016; Mayer et al., 1995). Client trust in the backdrop of selling products via the Internet is

impacted by the vendor's credibility, encompassing their competence, benevolence, and integrity (Hallikainen and Laukkanen, 2021). In e-commerce, it has also been discovered that perceived trustworthiness, especially benevolence, influences buyer preferences (Khan et al., 2021). As per Choi et al. (2019), if the users of online tourism find that online travel agencies are considerably benevolent, they will necessarily generate interest to take online travel services. In light of this consideration, the study proposes that:

H2: Perceived benevolence has a positive relationship with the intention to use online travel agency.

Perceived Integrity

Integrity pertains that the trustee will have honesty and promise-keeping attitudes toward trustors (Zhang and Li, 2019). It ensures that the trustee or service provider will be more reliable, trade fairly, and will not make any false claims (Dowell et al., 2015). Integrity is the conviction that a seller would uphold a set of values that are trustworthy and suitable to the clients (Mayer et al., 1995). Integrity relates to ensuring consistency, fairness, and satisfaction while providing services to customers (Gong et al., 2015; Amatulli et al., 2021). In the case of travel services, the customers feel angry and become disappointed while experiencing dissatisfaction with integrity issues (Gong et al., 2015). When customers are satisfied with the integrity of the firms, they might exert positive reactions (Amatulli et al., 2021). In line with these findings, the researchers in this study have considered that if the customers discover integrity in the services of the online travel agencies, then they might accept the offerings jubilantly. Hence, the study assumes that:

H3: Perceived integrity has a positive relationship with the intention to use online travel agency.

Overview of the Proposed Model

In considering the literature mentioned above, this study suggests a model that assesses the relationship between perceived ability, perceived benevolence, and perceived integrity (independent variables) with usage (dependent variables) of online travel agencies by Bangladeshi tourists (Figure 1). The suggested model was modified from the research project "Impact of trustworthiness on the usage of m-banking apps: A study on Bangladeshi consumers" (Khan et al., 2021: 234-250).
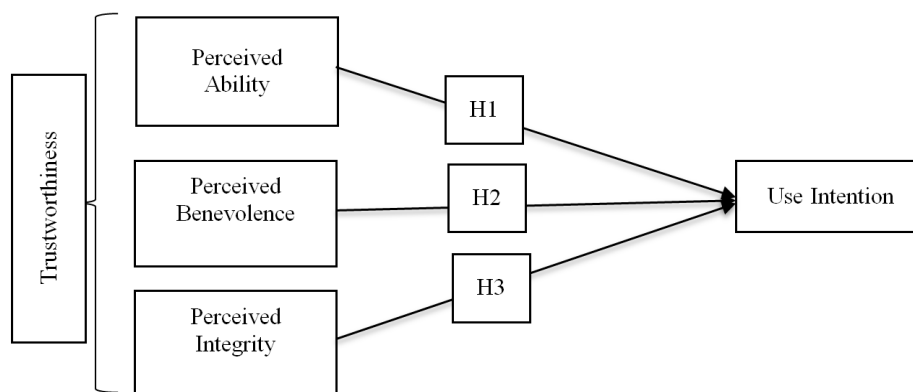
Figure 1. Proposed model of trustworthiness and OTA use intention (Source: Adapted from Khan et al., 2021)

METHODOLOGY
Sample and Data Analysis

Data collection has been done through in-person survey using structured questionnaires (printed) from three famous travel spots in Bangladesh. Visitors to these sites are considered representative visitors for this study. The sites are Cox's Bazar Sea Beach, Kuakata Sea Beach, and Koromjol tourist point (Sundarban). These tourist spots are some of the most popular tourist spots in Bangladesh. Data was collected directly from the visitors present on these sites. Nine trained students took part in the data collection process. The survey was done from 12th January to 15th May 2023 (four months) by confirming the privacy of data and usage only for academic purposes. All participants had to answer a screening question to rule out the possibility that they had used an online travel agency at least once. "Have you ever traveled using an online travel agency?" They were considered if they responded in the affirmative.

Therefore, purposive sampling techniques were utilized for this study. Prior to beginning the major data collection, a pilot survey was carried out with 30 samples. Considering the evaluation of the survey's findings and the recommendations of the experts, 14 items were kept out of 20 initial items. A total of 321 respondents were used in the data-gathering process. After eliminating the incorrect replies through verification, the 292 respondents' responses were ultimately considered for the study. Table 1 displays the demographic data of the respondents. In this study, the hypothesis is tested using structural equation modeling according to the approach recommended by Anderson and Gerbing (1988). For data analysis, SP. SS version 25 and Amos version 26 were utilized. Since an unknown number of people use OTA, therefore, to get a sufficient sample size, we followed Alshibly (2020) by multiplying the number of measurement items by 10, which yields a total sample size. Our sample size is, therefore, 292, which is more than the advised number (10*14 = 140). Again, 292 is a sufficient sample size for this study utilizing structural equation modeling (SEM) (Comrey and Lee, 2013). We used factor analysis to assess validity and reliability in the initial phase. After that, a structural model analysis was carried out to clarify the causes of the correlations between the constructs.

Table 1. Demographic data of the sample (Source: Own Survey, 2023)

Variables	Variables Categories	Frequency	%
Gender	Male	175	59.93
	Female	117	40.07
Age	18-35	181	61.99
	36-50	87	29.79
	51 and above	24	8.22
Education	Secondary level	66	22.60
	Higher secondary level	74	25.34
	Graduates and above	152	52.05
Monthly Income (Taka)	5000-20000	52	17.81
	20001-40000	111	38.01
	40001 and above	129	44.18
Online Traveling Frequency (per year)	Once in a year	201	68.84
	More than one	91	31.16

Instrument development

For this study, a wide range of well-known scientific publications were reviewed. The review states that the following characteristics of trustworthiness have been found by recent research. In light of the prior literature, the present research only took into account items that have been assessed using procedures that are recognized academically (Table 2). All the items of perceived ability, perceived benevolence, perceived integrity, and usage was adapted from Khan et al. (2021). One item of perceived ability (PA 4) was adapted from Özdemir and Sonmezay (2020), and another item of perceived benevolence (PB 4) was adapted from Hsiao et al. (2010) (Table 2). The items were slightly edited to fit the framework of the study. A 5-point Likert scale is used to evaluate the items, where 1 = "strongly disagree," 2 = "disagree," 3 = "neutral," 4 = "agree," and 5 = "strongly agree." Since the five-point Likert scale seems to be less ambiguous and boosts response rates (Babakus and Mangold, 1992), it has been adopted.

Table 2. Source of measurement items and factor Cronbach's alpha (Source: Own Survey, 2023)

Constructs	Code	Source	Cronbach's Alpha (from source study)
Perceived ability	PA 1	Khan et al., (2021)	0.72
	PA 2		
	PA 3		
	PA 4	Özdemir and Sonmezay, (2020)	0.86
Perceived benevolence	PB 1	Khan et al., (2021)	0.80
	PB 2		
	PB 3		
	PB 4	Hsiao et al., (2010)	0.86
Perceived integrity	PI 1	Khan et al., (2021)	0.83
	PI 2		
	PI 3		
Use Intention	UI 1		0.79
	UI 2		
	UI 3		

Table 3. Validity and reliability test results of the measurement model (Source: Own Survey, 2023)

Constructs	Code	Factor Loading	Cronbach's Alpha	CR	AVE
Perceived ability	PA 1	0.752	0.856	0.857	0.599
	PA 2	0.792			
	PA 3	0.802			
	PA 4	0.749			
Perceived benevolence	PB 1	0.887	0.931	0.931	0.773
	PB 2	0.873			
	PB 3	0.922			
	PB 4	0.832			
Perceived integrity	PI 1	0.865	0.852	0.856	0.667
	PI 2	0.865			
	PI 3	0.711			
Use Intention	UI 1	0.870	0.911	0.911	0.773
	UI 2	0.864			
	UI 3	0.903			

RESULTS AND DISCUSSION
Measurement Model

A suitable measurement model fit was confirmed before assessing the structural model. Testing the factor loading,

composite reliability (CR), and average variance extracted (AVE) led to the model's convergent validity and reliability. According to Hair et al. (2016), the threshold values for factor loading, CR, and AVE are 0.7, 0.7, and 0.5, respectively (Table 3). According to the results of the aforementioned values (shown in Table 1), convergent validity was attained since all the values were at an acceptable level (Henseler et al., 2015). The measurement model's AMOS fit indices are as follows: CMIN/df = 2.047, CFI = 0.972, RAMSE = 0.60, GFI = 0.939, AGFI = 0.910, RMR = 0.040, NFI = 0.947, TLI = 0.964, (Table 6). According to (Byrne, 2001; Hair et al., 2016), these values demonstrate a satisfactory model match. According to Fornell and Larcker (1981), the AVE (bold diagonal) (Table 4) of each construct in this investigation was higher than the inter-construct correlations, indicating the discriminant validity of the scale.
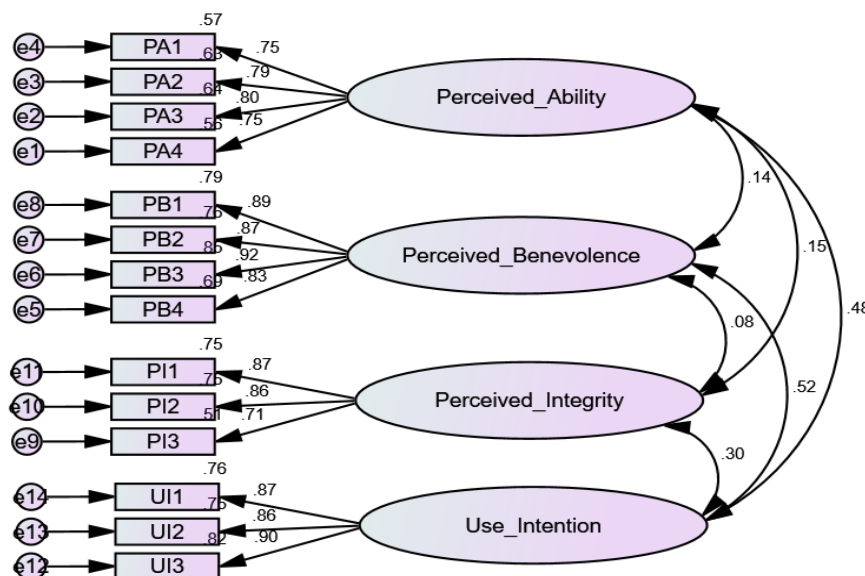
Figure 2. Confirmatory factor analysis diagram (Source: researcher's own creation 2023)

Table 4. Discriminant validity–Fornell–Larcker criterion (Source: Own Survey, 2023)

Constructs	MSV	MaxR(H)	Perceived ability	Perceived benevolence	Perceived integrity	Usage
Perceived ability	0.233	0.858	**0.774**	-	-	-
Perceived benevolence	0.270	0.937	0.140	**0.879**	-	-
Perceived integrity	0.089	0.874	0.150	0.085	**0.817**	-
Usage	0.270	0.913	0.482	0.520	0.298	**0.879**

HTMT analysis

HTMT ratio was used to assess discriminant validity in light of Fornell and Larcker's (1981) criteria provided by Henseler et al. (2015). HTMT analysis was conducted in this study using the "Master Validity Tool" AMOS Plugin provided by Gaskin and Lim (2019), as the AMOS package does not include the HTMT test. When the HTMT ratios are 0.85 or 0.90 or below, the measurements can be separated. Otherwise, if the HTMT rates above the cut-off values, the measurements become incoherent. The fact that none of the HTMT ratios are higher than 0.85 (Table 5) showing that the respondents understood that four separate constructs were used in the study. When taking into account the aforementioned, it can be said that the measurement model demonstrated acceptable levels of validity and reliability.

Table 5. HTMT analysis (Source: Own Survey, 2023)

Constructs	1	2	3	4
Perceived ability		-	-	-
Perceived benevolence	0.144		-	-
Perceived integrity	0.174	0.108		-
Use Intention	0.486	0.531	0.332	

Structural Model

The necessary indices were adequately attained, as stated by (Jain and Chetty, 2022; Byrne, 2001 and Hair et al. 2016), and the data fit the path model well. The model fit indices include CMIN/df = 2.107, CFI = 0.969, RAMSE = 0.62, GFI = 0.934, AGFI = 0.906, RMR = 0.077, NFI = 0.944, and TLI = 0.962, (Table 6). This indicates that perceived ability, perceived benevolence, and perceived integrity had a significant positive impact on the usage of online travel agencies. (βPA→UI = 0.410, p < 0.001; βPB→UI = 0.474, p < 0.001; βPI→UI = 0.220, p < 0.001) supporting H1, H2 and H3. An R^2 value of 0.67 is considered significant, 0.33 is considered moderate, and 0.19 is considered weak, according to Chin (1998). The statistical analysis of this research revealed an R^2 value of 0.44, confirming the study's moderate explanatory strength. The findings are reported in Table 7, and the path coefficients are displayed in Figure 3.

Table 6. Goodness of fit indices of both measurement and structural model
(Source: Thresholds adapted from Jain and Chetty, 2022; Byrne, 2001)

Fitness indices		Thresholds	Model	
			Measurement	Structural
Absolute Fit values:	CMIN/DF	1-3	2.047	2.107
GFI		> 0.90	0.939	0.934
RMR		< 0.05, <0.08	0.040	.077
RMSEA		< 0.05, <0.08	0.60	0.62
AGFI		> 0.90	0.910	0.906
Comparative/incremental Fit values:	CFI	> 0.90	0.972	0.969
NFI		> 0.90	0.947	0.944
IFI		> 0.90	0.972	0.970
RFI		> 0.90	0.933	0.931
TLI		> 0.90	0.964	0.962
Parsimonious Fit values:	PGFI	> 0.50	0.635	0.658
PNFI		> 0.50	0.739	0.767
PCFI		> 0.50	0.759	0.788

DISCUSSION

The study's goal was to investigate how trustworthiness affects Bangladeshi tourists' intentions to utilize OTA. This study also sought to ascertain the degree to which factors related to trustworthiness influence how Bangladeshi tourists utilize online travel firms. The empirical findings indicate that trustworthiness significantly impacts tourists' intentions to use OTA and that all its components favor OTA use intentions (Table 7 and Figure 3). Some past studies conducted on trustworthiness and found that perceived ability, perceived benevolence, and perceived integrity have a positive influence on e-commerce (Khan et al., 2021; Hallikainen and Laukkanen, 2021). In this study, it was discovered that perceived ability was positively correlated with OTA usage intention. Therefore, H1 is supported. The reason behind such result is that the majority of respondents are young and technologically savvy, which is why they trust OTAs that provide them with expert services. The faith and trust of passengers in a travel agency increases with the degree of competence, expertise, and efficiency of the agency since a competent and professional agency can offer the finest service. Their abilities allow them to produce and provide better services more quickly and affordably
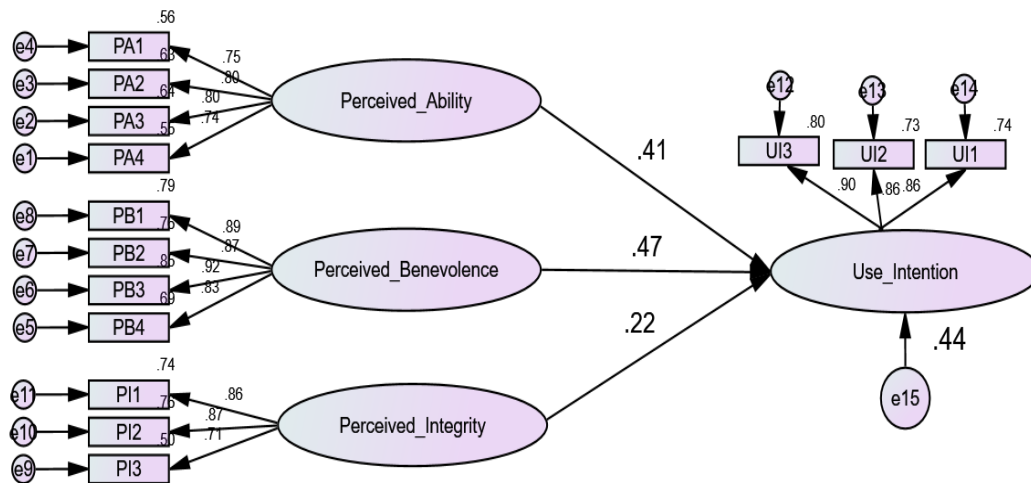
Figure 3. Trustworthiness and purchase intention model (Source: Own development based on survey 2023)

. Some previous studies support this result (Khan et al., 2021; Özdemir and Sonmezay, 2020; Lin, 2011).

Additionally, it was discovered that the desire to utilize OTA was positively correlated with perceived benevolence. Thus, H2 is accepted. Since there are more travel agencies in Bangladesh than ever before and as a result, the competition is getting fiercer. Consequently, OTAs are striving to attract customers by offering exceptional value in an effort to establish a reputation (Laboni and Abdullah, 2019). Travelers choose travel companies that prioritize delivering excellent customer care over maximizing profits. Travel agencies may win consumers' hearts if they adhere to the reciprocity principle, which states that if they offer outstanding service, customers will prefer their agency. The conviction that a travel firm will always offer suitable perks if travelers spend money with them fostering loyalty.

This finding is supported by the outcomes of some recent studies in mobile banking (Hallikainen and Laukkanen, 2021; Khan et al., 2021; Setyoparwati, 2019). Although some previous studies found the opposite of these results (Özdemir and Sonmezay, 2020) in e-commerce context. The study's findings show that perceived integrity and OTA usage are highly connected which indicating that the H3 is accepted. Perceived integrity implies that the online travel service will supply consumers with exactly what it claims. It is the online travel agency's own principles and ethics that

will create a certain standard of service for consumers and continue to deliver service in accordance with those standards. Customers clearly feel that if a travel firm maintains its standards, follows ethics, and defends fairness, then travelers boost that travel agency's trust. The outcome indicates that, despite the existence of certain dishonest OTAs in the market, the majority of OTA companies are making an effort to uphold their commitment to their clients because they understand that, in the absence of truthfulness and fairness, clients would shun them.

As a result, the perception of integrity among tourists favors OTA use. Some previous study supports these results (Khan et al., 2021; Setyoparwati, 2019; Özdemir and Sonmezay, 2020; Lin, 2011).

Table 7. Hypothesis Statements (Note: H=Hypothesis; P= Probability, ***<0.001) (Source: Own Survey, 2023)

Hypo-thesis	Dependent variable	Independent variable	Estimates	Std. Estimates	Standard Error (SE)	Critical Ratio (CR)	P	Results
H1	Usage	Perceived ability	.478	.410	.068	7.002	***	Supported
H2	Usage	Perceived benevolence	.477	.474	.056	8.574	***	Supported
H3	Usage	Perceived integrity	.292	.220	.073	4.024	***	Supported

CONCLUSION AND IMPLICATIONS

This study demonstrates the implication of SET theory in understanding the link between trustworthiness and OTA usage behavior based on Bangladeshi travelers. All three trustworthiness factors- perceived ability, perceived benevolence, and perceived integrity strongly impact visitors to use online travel agencies. This discovery will be useful for academics in the field of e-tourism, particularly online travel agencies, because it empirically explains SET theory with trustworthiness dimensions for the first time ever. Online travel agency operators will get essential insights into developing suitable services in order to make clients more trustworthy.

Theoretical Implications

A growing number of tourists are turning to online platforms to buy travel-related services. As a result, online travel agencies are multiplying and, at the same time, heightening the rivalry between them. In these conditions, OTAs' ability to win over tourists' trust is crucial. In this study, it was discovered that trustworthiness and OTA purchase intention have a favorable association. However, specific management applications may be drawn from the paper's findings. Firstly, the link between trustworthiness and the use intentions of online travel agencies has yet to be adequately studied. This study will fill the knowledge gap for researchers in this field. Secondly, a positive impact of trustworthiness and OTA use intention was found, which includes new knowledge in the area. Thirdly, the implications of perceived ability, benevolence, and integrity on social exchange theory have been described and empirically proven. Lastly, the Social Exchange Theory's application described in this paper can further be applied in developing countries context.

Managerial Implications

The results of the investigation demonstrated a favorable relationship between trustworthiness and Bangladeshi visitors' use of online travel companies. This finding directs online travel firms, service providers, marketers, and intermediaries to focus on strengthening tourist trustworthiness. When supplying their clients with the promised services, online travel service providers should understand the importance of trust and the reciprocal advantages of being trustworthy. To provide travelers smooth online experience businesses should develop their skills and expertise. OTA must hire qualified staff, offer training, and professionally conduct its operations while dealing with visitors. When offering travel services to customers, never make the same mistakes repeatedly. OTAs should pay close attention to customer complaints and work to resolve them as fast and effectively as they can. While developing and providing services to its customers, the online travel agency should uphold an appropriate standard of service, a code of ethics, and fairness. OTAs should not compromise on providing the promised service or benefits that were advertised earlier. Additionally, OTAs must continually prioritize treating customers fairly and honestly, and they must be wholly consumer centered.

Limitations and Future Research Directions

There are several shortcomings in the current research. Future studies must address some of this study's weaknesses. The impact of trustworthiness might be better understood using a longitudinal study, as this study is cross-sectional in nature. This study mainly gathered data only from three selected spots in Bangladesh and the sample size of this study was relatively small. This prevents the results from being applied generally. Further studies need to be conducted in a wider context to generalize the result. The limited involvement of the older participants was due to their low frequency of visits and hesitation to participate in the survey. Possible explanations for the elderly population's fewer visits include a lack of amenities, insufficient accessibility, and a lack of marketing efforts aimed at them. As a result, extreme caution should be exercised while generalizing the research findings. To understand the impact of trustworthiness in a comprehensive manner, some other determinants of trustworthiness, like communication, shared values, complaint management, emergency management, and privacy management, should be included in future research. Further studies may include gender as a moderator to observe if there is any gender-specific impact on the result.

Author Contributions: Conceptualization, M.S.M. and M.R.R; Methodology, M.S.M. C.U.M, S.A.M.S , M.R. and M.R.R; software, M.S.M; Validation, M.S.M. and M.R.R.; Formal analysis, M.S.M. and M.R.; Investigation, M.S.M,

C.U.K; Data curation, M.S.M. and R.R; Original draft preparation, M.S.M. and S.A.M.S.; Review and editing, S.K. and M.R; Visualization, S.M, C.U.K and K.H.; Supervision, M.S.M. All authors have read and agreed to the published version of the manuscript.

REFERENCES
Abdullah, R., & Saleh, Y. (2019). Factors affecting buyers' trust in e-commerce in Palestine. *Middle East Journal of Management,* 6(5), 597-639. https://doi.org/10.1504/mejm.2019.10017834
Adityawan¹, Y., Arief, M., Alamsjah, F., & Bandur, A. (2023). The Role of Digital Innovation in Improving Performance Study on Islamic Banking in Indonesia. *Journal of System and Management Sciences*, 13(1), 103-116. ISSN 1816-6075 (Print), 1818-0523 (Online), 13(1), 103-116. https://doi.org/10.33168/JSMS.2023.0106
Almarashdeh, I., Aldhmour, K., Aljamaeen, R., Alsmadi, M., & Jaradat, G. (2019). The effect of perceived trust in technology, trust in the bank and perceived risk on customer adoption of mobile banking. *In 2019 international conference on internet of things, embedded systems and communications (IINTEC) (pp. 118-123). IEEE.* https://doi.org/10.1109/iintec48298.2019.9112107
Alshibly, H.H. (2020). Investigating the effectiveness of business intelligence systems: A PLS-SEM approach. *International Journal of Management Sciences and Business Research,* 9(9), 33-49.
Amaro, S., & Duarte, P. (2016). Travellers' intention to purchase travel online: integrating trust and risk to the theory of planned behaviour. *Anatolia, an International Journal of Tourism and Hospitality,* 27(3), 389–400. https://doi.org/10.1080/13032917.2016.1191771
Amatulli, C., De Angelis, M., & Stoppani, A. (2021). The appeal of sustainability in luxury hospitality: An investigation on the role of perceived integrity. *Tourism Management,* 83, 104228. https://doi.org/10.1016/j.tourman.2020.104228
Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin,* 103(3), 411–423. https://doi.org/10.1037/0033-2909.103.3.411
Andriotis, K., & Paraskevaidis, P. (2021). Negotiated exchanges in the online hospitality market: Hoteliers and hotel managers' perceptions of Booking.com. *International Journal of Hospitality Management,* 97, 103010. https://doi.org/10.1016/j.ijhm.2021.103010
Aziz, K.A. (2023). Social Media Natives and Online Learning: A Longitudinal Study across the COVID-19 Lockdowns in Malaysia. *Journal of Logistics, Informatics and Service Science.* 10(1), 141-168. ISSN 2409-2665. https://doi.org/10.33168/JLISS.2023.0108
Babakus, E., & Mangold, W.G. (1992). Adapting the SERVQUAL scale to hospital services: an empirical investigation. *Health services research,* 26(6), 767.
Baki, R. (2020). Analysis of factors affecting customer trust in online hotel booking website usage. *European Journal of Tourism, Hospitality and Recreation,* 10(2), 106–117. https://doi.org/10.2478/ejthr-2020-0009
Bernard, S., Rahman, I., & McGehee, N.G. (2022). Breaking barriers for Bangladeshi female solo travelers. *Tourism Management Perspectives,* 41, 100932. https://doi.org/10.1016/j.tmp.2021.100932
Brandão, M.M., Sincorá, L.A., & Sarcinelli, A.F. (2021). Perceived value of the online environment of tourism agencies and its impacts on the purchase decision: The mediating role of attitude. *Revista Brasileira de Pesquisa em Turismo,* 15. https://doi.org/10.7784/rbtur.v15i2.1977
Byrne, B.M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International journal of testing,* 1(1), 55-86.
Casare, A., Basso, T., & Moraes, R. (2022). User Experience and Trustworthiness Measurement: Challenges in the Context of e-Commerce Applications. *In Proceedings of the Future Technologies Conference (FTC)* 2021, 1, 173-192, *Springer International Publishing.*
Cerdeira, J.P. (2020). Trustworthiness, Security and the Decision to Buy on Electronic Platforms: Validity studies of a scale. *Consumer Behavior Review.* https://doi.org/10.51359/2526-7884.2021.247811
Chen, X., Hyun, S.S., & Lee, T.J. (2022). The effects of parasocial interaction, authenticity, and self-congruity on the formation of consumer trust in online travel agencies. *International Journal of Tourism Research,* 24(4), 563-576.
Chin, W.W. (1998). Commentary: Issues and opinion on structural equation modeling. *MIS quarterly, vii-xvi.*
Choi, S., Kim, I., Cha, K., Suh, Y.K., & Kim, K.H. (2019). Travelers' parasocial interactions in online travel communities. *Journal of Travel & Tourism Marketing,* 36(8), 888-904. https://doi.org/10.1080/10548408.2019.1657053
Choi, Y., Lee, J., & Choe, Y. (2021). Online travel information filtering: Role of commercial cues in trust and distrust mechanisms. *Journal of Travel & Tourism Marketing,* 38(7), 710-724. https://doi.org/10.1080/10548408.2021.1985037
Çiftçi, Ş.F., & Çizel, B. (2019). Investigating Antecedents of Customer Loyalty for Web-Based Travel Intermediaries. *Journal of Tourism Leisure and Hospitality,* 1(2), 50–58. https://dergipark.org.tr/en/download/article-file/906821
Comrey, A.L., & Lee, H.B. (2013). A first course in factor analysis. *Psychology Press.*
Datta, B. (2021). What influences business travelers behavioral intentions of travel booking: A study of the bottlenecks of online travel portals. *Geo Journal of Tourism and Geosites,* 37(3), 929-933. doi: 10.30892/GTG.37326-728
Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science,* 35(8), 982-1003. https://doi.org/10.1287/mnsc.35.8.982
Deljoo, A., Van Engers, T., Gommans, L., & De Laat, C. (2018). The impact of competence and benevolence in a computational model of trust. In Trust Management XII: *12th IFIP WG 11.11 International Conference, IFIPTM 2018, Toronto, ON, Canada,* July 10–13, 2018, Proceedings 12 (pp. 45-57). Springer International Publishing. https://doi.org/10.1007/978-3-319-95276-5_4

Dowell, D., Morrison, M., & Heffernan, T. (2015). The changing importance of affective trust and cognitive trust across the relationship lifecycle: A study of business-to-business relationships. *Industrial Marketing Management, 44*, 119-130. https://doi.org/10.1016/j.indmarman.2014.10.016

Enayat, T., Ardebili, M.M., Kivi, R.R., Amjadi, B., & Jamali, Y. (2022). A Computational Approach to Homans Social Exchange Theory. *Physica A: Statistical Mechanics and its Applications, 597*, 127263.

Fan, X., Jiang, X., & Deng, N. (2022). Immersive technology: A meta-analysis of augmented/virtual reality applications and their impact on tourism experience. *Tourism Management*, 91, 104534.

Firmansyah, M.R., Amelia, R., Jamil, R.A., Faturochman, F., & Minza, W.M. (2019). Benevolence, competency, and integrity: which is more influential on trust in friendships? *Jurnal Psikologi UNDIP, 18*(1), 91. https://doi.org/10.14710/jp.18.1.91-105

Fornell, C., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50

Gao, G.X., & Bi, J.W. (2021). Hotel booking through online travel agency: Optimal Stackelberg strategies under customer-centric payment service. *Annals of Tourism Research, 86*, 103074.

Gaskin, J., James, M., & Lim, J. (2019). "Master Validity Tool", AMOS Plugin

George, A. (2023). A Study on the Assessment of Customer Readiness toward the Adoption of Technological Innovations in Indian Tourism Sector. *Journal of Logistics, Informatics and Service Science, 10*(1), 237-256, ISSN 2409-2665. https://doi.org/10.33168/JLISS.2023.0113

Givan, B., Wirawan, R., Andriawan, D., Aisyah, N., Asep, A., & Putra, A.S. (2021). Effect of ease and trustworthiness to use e-commerce for purchasing goods online. *International Journal of Educational Research and Social Sciences (IJERSC), 2*(2), 277-282. https://doi.org/10.51601/ijersc.v2i2.74

Gong, J.H., Xie, L.S., Peng, J. M., & Guan, X.H. (2015). Customer responses to integrity issues for travel services in China: A content analysis based on online complaints. *International Journal of Contemporary Hospitality Management, 27*(2), 199-213.

Hair, J.F., Hult, G.T.M., Ringle, C.M., & Sarstedt, M. (2016). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). 2nd edition. Thousand Oaks, CA: Sage.

Hallikainen, H., & Laukkanen, T. (2021). Trustworthiness in e-commerce: A replication study of competing measures. *Journal of Business Research, 126*, 644-653. https://doi.org/10.1016/j.jbusres.2019.12.033

Hang, N.T., Linh, N.T.M., Tung, N.M., Khoa, B.T., & Nhung, N.T.T. (2023). The Role of Technology in Omnichannel Strategy: The Case of Fashion Industry. *Journal of System and Management Sciences, 13*(3), 421-430. https://doi.org/10.33168/JSMS.2023.0329

Hasan, E.H. (2021). The future of the travel industry. *The Financial Express.* https://thefinancialexpress.com.bd/ views/reviews/the-future-of-the-travel-industry-1639981030. (Accessed at 5th August, 2023)

Henseler, J., Ringle, C.M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science, 43*, 115-135. https://doi.org/10.1007/s11747-014

Homans, G.C. (1958). Social behavior as exchange. *American journal of sociology, 63*(6), 597-606.

Hsiao, K.L., Chuan-Chuan Lin, J., Wang, X.Y., Lu, H.P., & Yu, H. (2010). Antecedents and consequences of trust in online product recommendations: An empirical study in social shopping. *Online Information Review, 34*(6), 935-953.

Jain, R., & Chetty, P. (2022). Confirmatory Factor Analysis (CFA) in SEM using SPSS Amos. Knowledge Tank. https://www.projectguru.in/confirmatory-factor-analysis-cfa-in-sem-using-spss-amos/ [Accessed 07 Apr. 2023].

Jain, V.H., Tadv, S.A., & Pawar, S.P. (2017). A review on the pros and cons of online pharmacies. *Journal of Applied Pharmaceutical Research, 5*(1), 20-26. https://www.japtronline.com/index.php/joapr/article/download/73/69

Janssen, M., Rana, N.P., Slade, E., & Dwivedi, Y.K. (2017). Trustworthiness of digital government services: deriving a comprehensive theory through interpretive structural modelling. *Public Management Review, 20*(5), 647–671. https://doi.org/10.1080/14719037.2017.1305689

Jo, H., Chung, N., Hlee, S., & Koo, C. (2022). Perceived affordances and regret in online travel agencies. Journal of Travel Research, 61(5), 1024-1042.

Khan, M.R., Rana, S., & Hosen, M.I. (2021). Impact of trustworthiness on the usage of m-banking apps: A study on Bangladeshi consumers. *Business Perspectives and Research, 10*(2), 234-250. https://doi.org/10.1177/22785337211001969

Kharouf, H., Sekhon, H., Fazal-e-Hasan, S.M., Hickman, E., & Mortimer, G. (2019). The role of effective communication and trustworthiness in determining guests' loyalty. *Journal of Hospitality Marketing & Management, 28*(2), 240-262. https://doi.org/10.1080/19368623.2018.1505574

Khoa, B.T., & Huynh, T.T. (2022). The Influence of Individuals' Concerns about Organization's Privacy Information Practices on Customers' Online Purchase Intentions: The Mediating Role of Online Trust. *Journal of Logistics, Informatics and Service Science, 9*, 31-44. https://doi.org/10.33168/LISS.2022.0303

Kim, J.J., Nam, M., & Kim, I. (2018). The effect of trust on value on travel websites: Enhancing well-being and word-of-mouth among the elderly. *Journal of Travel & Tourism Marketing, 36*(1), 76-89. https://doi.org/10.1080/10548408.2018.1494086

Kosiba, J.P.B., Boateng, H., Okoe Amartey, A.F., Boakye, R.O., & Hinson, R. (2018). Examining customer engagement and brand loyalty in retail banking: The trustworthiness influence. *International Journal of Retail & Distribution Management, 46*(8), 764-779.

Laboni, S.A., & Abdullah, S.Z. (2019). Operations and Market Analysis of Travel Agencies: An Empirical Study on Two Travel Agencies of Bangladesh. *European Journal of Business and Management Research, 4*(6).

Lee, S. M., & Lee, D. (2020). "Untact": a new customer service strategy in the digital age. *Service Business, 14*(1), 1-22.

Li, X., Tse, Y. K., Zhang, M., & Phi, H. D. (2023). Impact of relocation strategy on brand trustworthiness and word-of-mouth: experimental vignette research on the US fashion industry. *International Journal of Production Economics*, 257, 108775.

Lin, H.F. (2011). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *International journal of information management, 31*(3), 252-260. https://doi.org/10.1016/j.ijinfomgt.2010.07.006

Ma, L. (2021). Understanding non-adopters' intention to use internet pharmacy: Revisiting the roles of trustworthiness, perceived risk and consumer traits. *Journal of Engineering and Technology Management, 59*, 101613. https://doi.org/10.1016/j.jengtecman.2021.101613

Mayer, R.C., Davis, J.H., & Schoorman, F.D. (1995). An integrative model of organizational trust. *Academy of Management Review, 20*(3), 709-734. https://doi.org/10.5465/amr.1995.9508080335

Mbete, G.S., & Tanamal, R. (2020). Effect of easiness, service quality, price, trust of quality of information, and brand image of consumer purchase decision on shopee online purchase. *Jurnal Informatika Universitas Pamulang, 5*(2), 100-110.

McKnight, D.H., Cummings, L.L., & Chervany, N.L. (1998). Initial trust formation in new organizational relationships. *Academy of Management review,* 23(3), 473-490. https://doi.org/10.5465/amr.1998.926622

Mellani, C., Bopeng, L.S., & Bajari, M. (2019). The Effect of Trust and Information Quality on the Decision to Purchase Airline Tickets on E-commerce Traveloka (Case Study: Traveloka Users in the District of Manokwari). *Cakrawala Management Business Journal,* 2(1), 252-269. https://doi.org/10.30862/cm-bj.v2i1.17

Merkert, R., & Hakim, M.M. (2022). Travel agency transaction costs in airline value chains - A risk in distribution channels in South Asia? *Annals of Tourism Research,* 95, 103414. https://doi.org/10.1016/j.annals.2022.103414

Min, S., & Lee, S. (2020). A Study on the Behavior of the User according to the Distribution Development of Online Travel Agency. *Journal of Distribution Science,* 18(6), 25–35. https://doi.org/10.15722/jds.18.6.202006.25

Mosunmola, A., Omotayo, A., & Mayowa, A. (2018). Assessing the influence of consumer perceived value, trust and attitude on purchase intention of online shopping. *In Proceedings of the 9th International Conference on E-Education, E-Business, E-Management and E-Learning* (pp. 40-47). 10.1145/3183586.3183594

Murthy, M.K., & Varalakshmi, S. (2021). Determinants of Trust, Security, Privacy and Risk Factors in Embracing Online Banking. In Financial Inclusion in Emerging Markets. A Road Map for Sustainable Growth, 197-215. https://doi.org/10.1007/978-981-16-2652-4_10

Osei-Frimpong, K., Donkor, G., & Owusu-Frimpong, N. (2019). The impact of celebrity endorsement on consumer purchase intention: An emerging market perspective. *Journal of marketing theory and practice*, 27(1), 103-121.

Özdemir, E., & Sonmezay, M. (2020). The Effect of The E-Commerce Companies' Benevolence, Integrity and Competence Characteristics on Consumers' Perceived Trust, Purchase Intention and Attitudinal Loyalty. *Business and Economics Research Journal,* 11(3), 807-821. https://doi.org/10.20409/berj.2020.283

Rakhmada, F.A., & Hati, S.R.H. (2019). Antecedents of Behavioral Intentions on Online Travel Agent Company: Comparison between Generation X and Millennial. *IPTEK Journal of Proceedings Series,* (5), 123-132.

The Business Standard (2021). Online travel agencies to experience exponential growth: Stakeholders. *The Business Standard.* https://www.tbsnews.net/bangladesh/online-travel-agencies-experience-exponential-growth-stakeholders-213754 (Accessed on 5th August, 2023)

Sadiq, M., Dogra, N., Adil, M., & Bharti, K. (2022). Predicting online travel purchase behavior: The role of trust and perceived risk. *Journal of Quality Assurance in Hospitality & Tourism,* 23(3), 796-822. https://doi.org/10.1080/1528008x.2021.1913693

Setiawan, P., & Widanta, A. (2021). The effect of trust on travel agent online use: Application of the technology acceptance model. *International Journal of Data and Network Science,* 5(3), 173-182. https://doi.org/10.5267/j.ijdns.2021.6.015

Setyoparwati, I.C. (2019). Pengaruh Ability, Benevolence, Dan Integrity Terhadap Partisipasi E-Commerce (Studi Kasus Konsumen E-Commerce Di Indonesia). *Jurnal Manajemen dan Keuangan,* 8(2), 166-176. https://doi.org/10.33059/jmk.v8i2.1682

Srivastava, V., & Gupta, A.K. (2023). Price sensitivity, government green interventions, and green product availability triggers intention toward buying green products. *Business Strategy and the Environment, 32*(1), 802-819.

Su, L., Lian, Q., & Huang, Y. (2020). How do tourists' attribution of destination social responsibility motives impact trust and intention to visit? The moderating role of destination reputation. *Tourism Management,* 77, 103970.

Svare, H., Gausdal, A.H., & Möllering, G. (2020). The function of ability, benevolence, and integrity-based trust in innovation networks. *Industry and Innovation,* 27(6), 585-604. https://doi.org/10.1080/13662716.2019.1632695

Sun, W. (2021). Research on the construction of smart tourism system based on wireless sensor network. *Mathematical Problems in Engineering,* 2021, 1-8. https://doi.org/10.1155/2021/9950752

Uddin, M.A. (2020). Risk Perception & Trust towards E-Commerce in Bangladesh: Logistic Regression & Kano Model Approach. *Saudi Journal of Business and Management Studies.* https://doi.org/10.36348/sjbms.2020.v05i12.005

Wah, K.K., Omar, A.Z., Alnoor, A., & Alshamkhani, M.T. (2022). Technology application in tourism in Asia: Comprehensive science mapping analysis. *In Technology Application in Tourism in Asia: Innovations, Theories and Practices,* 53-66, Singapore: Springer Nature Singapore

Wang, L., Wan, J., Zhang, Y., Chen, S., Zhu, Z., & Tao, Y. (2021). Trustworthiness two-way games via margin policy in e-commerce platforms. *Applied Intelligence,* 1-19. https://doi.org/10.1007/s10489-021-02553-6

Wei, J. (2021). The impacts of perceived risk and negative emotions on the service recovery effect for online travel agencies: the moderating role of corporate reputation. *Frontiers in Psychology,* 12, 685351.

Wong, W.P., Tan, K., Inkgo, I.A., & Lim, B.C.Y. (2019). The effect of technology trust on customer E-Loyalty in online shopping and the mediating effect of trustworthiness. *Social Science Research Network.* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3446204

Yuen, Y.Y., Fong, Y.R., & Tan, K.S. (2022). Social Media Marketing Impact on Consumers' Online Purchase Intention. *Journal of Logistics, Informatics and Service Science,* 9(3), 45-52. https://doi.org/10.33168/LISS.2022.0304

Zahidah, S.R., & Rostiani, R. (2021). Trusting Online Reviews Enhances Intention to Book Online: The Perks of Seeking Information? *Journal Manajemen Bisnis,* 12(2), 142-161. https://doi.org/10.18196/mb.v12i2.10831

Zhang, C.B., & Li, Y.N. (2019). How social media usage influences B2B customer loyalty: roles of trust and purchase risk. *Journal of Business & Industrial Marketing,* 34(7), 1420-1433. https://doi.org/10.1108/jbim-07-2018-0211

THE INFLUENCE OF CULTURAL HERITAGE VALUES AND GASTRONOMY TOURISM ON CULTURAL IDENTITY IN PHUKET OLD TOWN, THAILAND

Thirachaya CHAIGASEM[*]
Khon Kaen University, Faculty of Business Administration and Accountancy, Khon Kaen, Thailand, e-mail: Thirachaya@kku.ac.th

Amarawadee KUMBOON
Rajamangala University of Technology Thanyaburi, Faculty of Liberal Arts, Pathum Thani, Thailand, e-mail: amarawadee_k@rmutt.ac.th

Abstract: The present study sought to examine the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand. The sample was 400 tourists chosen through accidental sampling; a questionnaire was distributed to them to collect the data. The results were analyzed through a statistical computer program that consists of factor analysis, exploratory factor analysis, confirmation factor analysis, and structural equation modeling. Research results in structural equation modeling show that there are two factors: cultural heritage value and gastronomy components, which will influence the cultural identities in Phuket Old Town, Thailand. The findings suggest that the final model can analyze to key activities four D's of Design to be sustainability for the cultural heritage values and gastronomy tourism in Phuket Old Town.

Key words: cultural heritage values, gastronomy tourism, cultural identity, cultural tourism, cultural heritage tourism

* * * * * *

INTRODUCTION

Gastronomy tourism is regarded as one of the types of tourism that has been growing in popularity in many countries. In fact, a number of tourist attractions across the globe have been using local food to encourage tourists since the food has its own unique features, has been inherited for centuries, and is vital for the livelihood and culture of people in communities. It serves to portray the uniqueness and culture of the tourists' destination, which encourages them to visit such a place for the first time, imprints them with an impression of the taste of the food, and finally drives them to revisit there. Consequently, provided that Thailand promotes tourism with local Thai cuisine, it will promote tourism proactively. This will be compliant with the government's policy, which places emphasis on food and tourism development, along with its public relations for Thai food at an international level (Chimbanrai and Vongsaroj, 2015).

Gastronomy tourism can act as a unique selling point for countries to strengthen their tourism image and promote their cultural heritage (Otengei and Changha, 2023). In addition, the Twelfth National Economic and Social Development Plan (2017-2021) mentions the promotion of Thai gastronomy tourism. Such promotion is driven in conjunction with the production development of the agricultural sector, or Food Innopolis, which aims to enable tourists to expose themselves to the local atmosphere and culture as part of authentic local tourism and simultaneously support environmentally friendly gastronomy tourism and healthy food. The movement to promote gastronomy tourism has been clearly projected in different ways, including by the Tourism Authority of Thailand and the Michelin Guide.

Thailand's creation of "the Michelin Guide Bangkok", hosting "the 4th UNWTO World Forum on Gastronomy Tourism" which was Asia's first international academic seminar on gastronomy tourism, organizing the food festival "Amazing Thai Taste Festival", or the latest campaign "Eat Local: Locallicious," which publicizes tourist routes to encourage people to try local cuisine Hence, gastronomy tourism has played a crucial role in the development of the tourism economy throughout the globe and in the country at local, regional, national, and international levels. "Food Tourism" is a novel type of tourism that has been gaining popularity among tourists (Wungrath, 2018).

UCCN (The UNESCO Creative City Network) was established in 2004 in order to strengthen collaboration among cities to use creativity for sustainable urban development. Currently, the network has 116 member cities with the mutual aim of drawing on creativity and culture as a strategy for local development and strong international collaboration. The creative cities integrate cultural heritage with modernity for creativity or inherit innovation from their original identity. As determined by UNESCO, the cities are to be chosen from urban or metropolitan areas, for those areas are hubs of science and are capable of driving the economy, society, and environment towards sustainable development. In particular, creative cities are classified into seven types as follows: 1. City of Literature; 2. City of Film; 3. City of Music; 4. City of Crafts and Folk Arts; 5. City of Design; 6. City of Media Art; and 7. City of Gastronomy. Phuket City Municipality was recognized as a city of gastronomy by UNESCO in 2015, being the first city in Thailand and ASEAN to be awarded with such a title and one of 18 cities of gastronomy in the world. In fact, the unique feature of Phuket lies

---

[*] Corresponding author

in its cultural diversity, particularly food culture such as Andaman seafood, Thai food, local Baba food, and the processed food industry. Its local food has its own identity and special recipes inherited from family members, and it uses only ingredients exclusively available in the province. The collaboration between the public and private sectors in Phuket is strong and can contribute to developing innovation in gastronomy and increasing economic values, which serve as vital factors in creative economic development based on cultural identity (Phuket Provincial Tourism and Sports, 2017). With Phuket being recognized as a city of gastronomy by UNESCO, it enables Phuket to develop its economy by building on gastronomy tourism businesses. In this context, this study investigates the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand.

LITERATURE REVIEW
1. Cultural Heritage Values

Cultural heritage is a social construct that changes over time and space in response to different social, economic, and cultural processes among others. cultural heritage value improves its capacity for continuity and adaptation to change over time as new heritage values emerge (Ginzarly and Srour, 2022) A sustainable use and preservation of historic buildings requires broad and long term compromises between social, economic and environmental aspects (Lingfors et al., 2019). The cultural values model helps categorize the sorts of benefits which cultural heritage provides to people. Several recent studies have attempted to bridge the gap or rather, fit the piece of the cultural values model in the ecosystem services concept (Reher, 2020). Historical value is the ability of a heritage asset to represent or stimulate a relationship or response to the past. It is the timing and layering of the traces that remain over time.

This value is based on antiquity and authenticity. Heritage reflects the culture that has been expressed at a particular time in a specific context. Heritage or social values cannot survive. Aesthetic value results from the pleasure and emotions felt when looking at cultural heritage assets. It is a subjective dimension. Another aspect of its artistic value and its contribution to the artistic development and perfection of its style is that it is formulated according to norms and has an objective dimension. Spiritual value refers to the fact that inherited property is associated with a spiritual or religious meaning, while intellectual or educational value is based on the fact that inheritance can be considered a document that can be taught. We are certain things and can therefore be beneficial to the development of society.

Economic value is the value derived from the possible commercial use of a resource, now or in the future. The use value of heritage assets refers to the goods and services that are obtained from their use. This is because these goods and services can be traded in the market. So it's easy to give a price. The inactive value that represents the existence of a heritage asset is pure and simple. Its existence is unknown and not used. Options' value is not easy to express in terms of price because it is an economic value that is not exchanged in the market. It represents the value it provides to the individual. (not benefiting from cultural or heritage activities) derived from the possibility or option of consuming heritage assets in the near or distant future. If desired, some of the values that we just classified as cultural values are also unused values. Use value usually falls under the category of economic value since a person is willing to pay money to obtain or protect something. Non-use value is generally divided into subcategories with the aim of highlighting characteristics that can drive economic decisions in heritage conservation (Vecco, 2018).

2. Components of Gastronomy Tourism

Considering all definitions of the gastronomy tourism components, a conclusion of the components of gastronomy tourism was drawn based on the concepts proposed by Stone et al. (2022), World Food Travel Association (2019), Smith and Xiao (2008), Canadian Tourism Commission (2002) and Puntien et al. (2017). In particular, their concepts were adapted to UNWTO and Basque Culinary Center's concept of gastronomy tourism (2019). Hence, it can be concluded that there are six components of gastronomy tourism as listed below.

1) Gastronomic heritage comprises the nature of food, heritage, and food resources, food culture of local areas, gastronomy tourism routes, community areas, recipes, and local food.

2) Gastronomic products, producers and food industries consist of gastronomy tourism products, certification of protected designation of origin (PDO), and protected geographical indication (PGI) which guarantee that the place of origin of the products is true as indicated on the label and that the products are of high quality according to the registered standard. The component in this category also includes production sites and concerned food industries.

3) The hospitality sector features catering and accommodation, gastronomy tourism services, events, and types of events.

4) Specialist trade covers product distribution channels, such as a community market and a walking street, and local products.

5) Events and activities comprise organization of events or activities which can present food products efficiently.

6) Venues for gastronomic education and research feature museums, places which provide knowledge about food products, university research centers, training centers, community enterprises, or organizations which offer training courses and knowledge about food.

3. Identities Construction

The circuit of culture is a foundation for developing theory on public relations that enlightens relevant practices globally (Curtin and Gaither, 2005). Hall and Gay (1996) explain that identity does not naturally exist or emerge on its own but is formed within culture at a particular period of time. In the meantime, culture itself is a social construct and not a static concept but a circuit, specifically referred to as a "circuit of culture", in which identity is produced to be consumed and regulated, and meanings are created through symbolic systems of representation that are associated with

diverse identity positions used to construct identity. Identity is a form of reflection as to "who I am," which is developed through one's interactions with others, self-reflection, and others' views towards him or her. Besides, one needs to present oneself or accept the identity of his or her choice. That is, it involves exploring what one's identity is, how it differs from that of others, and how it is perceived from others' perspectives and factor from Figure 1 was added to and adjusted by the author for the study instrument. Ayeni (2018) will apply the Circuit of Culture model to the promotional and publicity

efforts of Angelina Jolie and analyze several aspects of her activities that explain her efforts to create awareness for the plight of refugees. The circuit of culture elucidated the connections among practices and among arrangements of practices. Since it is designed to highlight the complex of processes to which practices give rise, the circuit of culture was also helpful in understanding which parts of a practice are more likely to influence the agents in others (Mora et al., 2019). Model of Tourism Production and Consumption in Nanjing Yunjin goes beyond the dual separation of production and consumption. Under the guidance of cultural reproduction theory, a research model of cultural production, consumption, and reproduction suitable for intangible cultural heritage tourism research has been developed. From the perspective of object and subject, it then analyzes and discusses the potential influencing factors of cultural tourism reproduction and consumption processes (Zhang et al., 2020). In order to generate hypotheses on the relationship between cultural heritage values, gastronomy tourism, and cultural identity in Phuket Old Town, the author of this literature study took into account variables pertaining to creating the

Figure 1. Circuit of Culture Model (Schmidt, 2016)

structural model of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand.

METHODS

In this study, a questionnaire was employed as an instrument to collect data among tourists who visited Phuket Old Town. The sample size for this study was 400 in total. The questionnaire was structured; the questions were closed-ended items, which allowed the respondents to express their opinions fully and the researcher to obtain the most accurate data. The questions were divided into five parts, as listed below. Part 1: Personal Information of the Respondents; Part 2: Cultural Heritage Values of the Phuket Old Town; Part 3: Gastronomy and Tourism Components of the Phuket Old Town; Part 4: Identity Construction of the Phuket Old Town; Part 5: Opinions and Suggestions. According to the literature review, the factors and items of cultural heritage values and gastronomy components of the Phuket Old Town are listed in Table 1.

Table 1. Factors and Items

Factors	Items
1. Cultural Heritage Values	IV: Identity Value
	ATV: Artistic and Technique Value
	RV: Rarity Value
	EV: Economic Value
	FV: Functional Value
	EDV: Education Value
	SV: Social Value
	PV: Political Value
2. Gastronomy Components	GASHER: Gastronomic Heritage
	GASPRO: Gastronomic products, producers and food industries
	HOSSEC: Hospitality sector
	SPETRA: Specialist trade
	EVENAC: Events and activities
	VEGAS: Venues for gastronomic education and research
3. Identities Construction	PROD: Production
	CONS: Consumption
	REGUL: Regulation
	REPRE: Representation

2. Conceptual research model and hypothesis

Hypotheses were developed according to the review of literature on the model of heritage-based gastronomy tourism in relation to the cultural identity in Phuket Old Town, Thailand, namely cultural heritage values, gastronomy tourism components, and identity. Below are the research hypotheses.

H₁: The cultural heritage values influence the identity of gastronomy tourism as a living cultural heritage in the Phuket old town, Thailand.

H₂: The gastronomy components influence the identity of gastronomy tourism as a living cultural heritage in Phuket Old Town, Thailand. Following hypothesis formulation, a conceptual research model was constructed according to the above hypotheses, and therefore the model could be drawn as shown in Figure 2.

3. Validity and Reliability Test

The forty of questionaries were improved by testing them out with tourists in Phuket Old Town. Therefore, the researcher tries to retrieve and analyze the data to ensure reliability, utilizing the method of calculating the number of sample questionnaires that are going to be used to test the data. In order to guarantee the quality of questionnaires, they are validated by using Cronbach's alpha to improve the reliability coefficient of internal consistency with the formula (Cronbach, 1970). From parts 2, 3, and 4 of the questionnaires, the Cronbach's alpha analysis indicated a value of 0.843.

4. Model Development

The model development using by input the the quantitative data to statistical computer programs, consisting of the SPSS program and the AMOS program. The exploratory factor analysis was the first statistical technique to categorize the exogenous factors or items of the

Figure 2. The research hypothesis

model and then test the model fit using a measurement model (confirmation factor analysis). Finally, a model was formulated from measurement models and endogenous factors toward a fit model. (Adapt from Hai et al., 2023; Potjanajaruwit, 2023; Prayitno et al., 2023; Sutiadiningsih et al., 2023).

RESULTS

1. Exploratory factor Analysis

Exploratory factor analysis of cultural heritage value in the computer program of SPSS receives the data input with Kaiser-Meyer-Olkin (KMO) at 0.660 (KMO > 0.6) and Bartlett's test of sphericity at 0.00 (sig.) (Tabachnick et al., 2013). Then the reliability of each factor was examined. In Part 2, there were 8 items, and according to Table 2, factor loading for the cultural heritage value of the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand, Led the categorizing of the factors into 3 groups, The first group of factors consists of variables ATV, IV, and FV, so the researcher named this group "Identity Value". The second group of factors consisted of variables EV, PV, and EDV, whose names were "Economic and Political Value". The last group of factors consisted of variables RV and SV, whose name is "Social Value". Exploratory Factor Analysis of Cultural Heritage Value: The computer program of SPSS receives the data input with Kaiser-Meyer-Olkin (KMO) at 0.789 (KMO > 0.6) and Bartlett's test of sphericity at 0.00 (sig.) (Tabachnick et al., 2013). Then the reliability of each factor was examined.

In Part 2, there were 8 items, and according to Table 3, factor loading for the cultural heritage value of the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand, Led the categorizing of the factors into two groups, The first group of factors consists of the variables GASHER, EVENAC, SPETRA, and GASPRO. The second group of factors consisted of the variables HOSSEC and VEGAS. The researcher named each group of factors: the first group being "Gastronomic Heritage" and the second group being "Hospitality Sector".

Table 2. Factor loading for exploratory factor analysis of the cultural heritage value of the model
of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand

Item	Factor			Cronbach's α	
	1	2	3		
ATV	.791	-.130	-.355	.819	.872
IV	.766	-.165	-.345		
FV	.753	-.076	-.363		
EV	.146	.773	-.032	.813	
PV	.226	.757	.088		
EDV	.133	.661	-.106		
RV	.570	-.020	.720	.817	
SV	.586	-.126	.696		

Table 3. Factor loading for exploratory factor analysis of the gastronomy component of the
model of living heritage pattern and gastronomy tourism on cultural identity in Phuket Old Town, Thailand

Item	Factor		Cronbach's α	
	1	2		
GASHER	.890	.069	.893	.829
EVENAC	.888	.095		
SPETRA	.864	.158		
GASPRO	.802	.185		
HOSSEC	.125	.905	.803	
VEGAS	.136	.903		

2. Confirmatory Factor Analysis

Confirmatory analysis of the cultural heritage value of the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand, was conducted to confirm whether or not the variable

categorization that had separated the factors into three groups was model-fit. The first group of factors was "Identity Value", the second group was "Economic and Politic Value", and the last group was "Social Value". After entering the data into the computer program "AMOS". the researcher found the output did not fit the model.

Therefore, model improvement was necessary, and an examination of Modification Indices (MI) revealed relations between some pairs of analyzed variables. As a result, the researcher omitted variables "ATV" and "EDV". The results perfectly fit the model, and the value of the chi-square was 9.643, df = 6, p =.141 (>.05), CMIN/DF = 1.607, GFI =.992, RMSEA =.039 (<.08) (Arbuckle, 2011). The 1st order confirmatory factor of cultural heritage value is represented in Figure 3, and the 2nd order confirmatory factor of cultural heritage value is shown in Figure 4.

Confirmatory Analysis of the gastronomy component of the model of living heritage pattern and gastronomy tourism on cultural identity in Phuket Old Town, Thailand, was conducted to confirm whether or not the variable categorization that had separated the factors into two groups was model fit. The first group of factors was Gastronomic Heritage, and the second group was Hospitality Sector. After entering the data into the AMOS program, the researcher found that the output did not fit the model. Therefore, model improvement was necessary, and an examination of Modification Indices (MI) revealed relations between some pairs of analyzed variables. As a result, the researcher omitted the variable "GASPRO". The results perfectly fit the model, and the value of the chi-square was 5.365, df = 4, p =.252 (>.05), CMIN/DF = 1.341, GFI =.995, RMSEA =.029 (<.08) (Arbuckle, 2011). The 1st order confirmatory factor of components of gastronomy is represented in Figure 5, and the 2nd order confirmatory factor of components of gastronomy is shown in Figure 6.
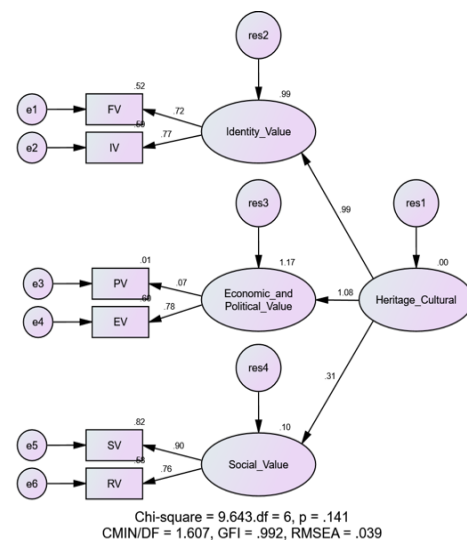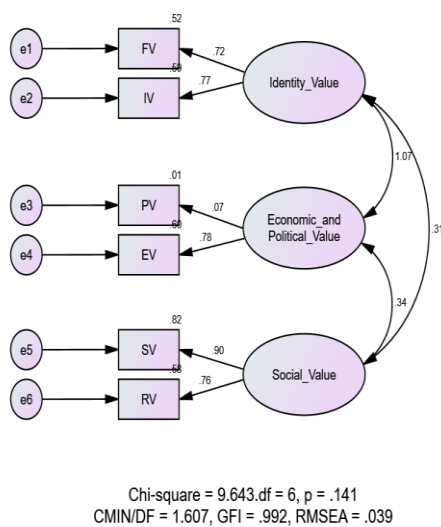
Figure 3. The 1st order confirmatory factor of cultural heritage value; Figure 4. 2nd order confirmatory factor of cultural heritage value
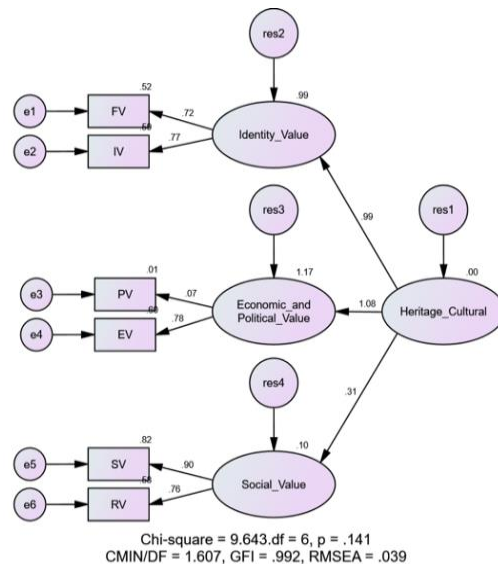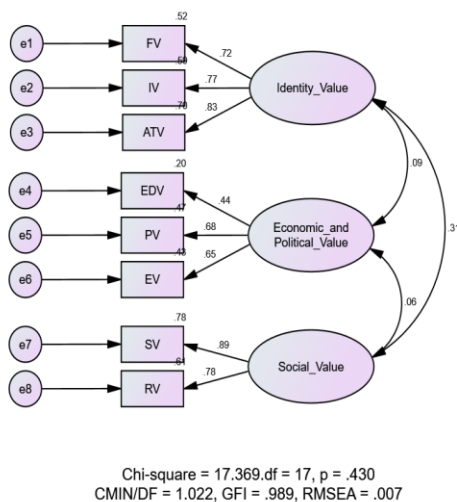
Figure 5. The 1st order confirmatory factor of components of gastronomy; Figure 6. 2nd order confirmatory factor of components of gastronomy

3. Structural Model

The influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand. The structural model (Byrne, 2010) depicts the 'impact' of factors or latent variables on other factors in empirical data obtained from the sample group. To corroborate the outcome, the structural model was compared to a model fit. According, the comparison revealed a goodness of fit at CMIN - p (Chi-square Probability Level) > 0.05,

CMIN/DF (Relative Chi-square) < 3, GFI (Goodness of Fit Index) >.90, RMSEA (Root Average Square Error of Approximation) < .08 (Arbuckle, 2011). The analysis of the structural model is as follows:

Table 4 shows the standardized residual covariances of the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand. Reveals the observable values of the structural residual covariances of each pair of latent variables at +2 to -2. Therefore, it can be said that these effective indicators (Hair et al., 2010).

Table 5 above shows the regression weights and significance of the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand. Each factor and variable has an effect on each other, as suggested in the hypothesis with statistical significance at 0.05, *** P-value<0.001, with an acceptance as follows: 1) Cultural heritage values that have an influence on Identity Construction (P-value = .026). 2) Gastronomic heritage has an influence on Identity Construction (P-value = .734). Table 6. Standardized regression weights of the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand That indicates the influence of standardized regression weight between factors and factors, and factors and variables in the structural model.

Table 4. The standardized residual covariance of the model of cultural heritage
values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand

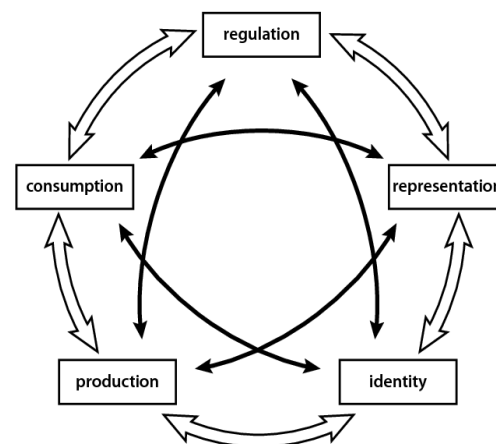|	PV	SPETRA	GASHER	PROD	CONS	SV	RV
PV	.000						
SPETRA	-.624	.000					
GASHER	-.477	.000	.000				
PROD	-1.222	-.327	.304	-.040			
CONS	.377	.252	-.367	-.048	-.039		
SV	-.001	-.317	-1.115	-1.715	-.762	.000	
RV	.005	.594	-.118	-.486	.960	.056	.000

Table 5. Regression Weight

Factors (Cause – Effect)			Estimate	S.E.	C.R.	P	Hypothesis
Identity Construction	<---	Cultural Heritage Value	.071	.032	2.220	.026	Accepted
Identity Construction	<---	Gastronomic Heritage	.495	.032	15.599	***	Accepted
RV	<---	Cultural Heritage Value	.832	.059	14.108	***	Accepted
SV	<---	Cultural Heritage Value	1.000				
CONS	<---	Identity Construction	1.000				
PROD	<---	Identity Construction	1.106	.077	14.353	***	Accepted
GASHER	<---	Gastronomic Heritage	1.000				
SPETRA	<---	Gastronomic Heritage	1.027	.054	18.879	***	Accepted
Identity	<---	Cultural Heritage Value	1.080	.082	13.133	***	Accepted

Table 6. Standardized regression weights of the model of cultural
heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand

Factors (Cause – Effect)			Estimate
Identity Construction	<---	Value	.082
Identity Construction	<---	Gastronomic Heritage	.977
RV	<---	Cultural Heritage Value	.754
SV	<---	Cultural heritage Value	.645
CONS	<---	Identity Construction	.744
PROD	<---	Identity Construction	.753
GASHER	<---	Gastronomic Heritage	.865
SPETRA	<---	Gastronomic Heritage	.835
PV	<---	Cultural heritage Value	1.039

Table 7. The result of hypothesis testing of the model

Hypothesis	Relationship	Standardized Path Coefficient	Result	Significant (p)
H1	Cultural Heritage Value ---> Identity Construction	0.07	Supported	0.26
H2	The Gastronomy Component ---> Identity Construction	0.49	Supported	.***

Result of hypothesizing and testing the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand According to hypothesized testing, which is shown in Table 7and summarized as follows:

1) Cultural heritage value has an influence on the condition of identity construction with statistical significance (Sig H1).

2) The gastronomy component has an influence on the condition of identity construction with statistical significance (Sig H2).

The final model of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand in Figure 7, the result is shown as Chi-square = 18.458, df = 12, p = .102 (>.05), CMIN/DF = 1.538, GFI =.987, and RMSEA 0.037 as follows:

1) Cultural Heritage value factor consists of 3 variables: 1) Social value (SV) yields the greatest weight at 1.0, 2) Rarity value (RV) yields the second greatest weight at 0.83, and 3) Political Value (PV) yields the second greatest weight at 1.0.

2) Gastronomic Heritage factor consists of 2 variables: 1) Gastronomic heritage (GASHER) yields the greatest weight at 1.0, and 2) Special trade (SPETRA) yields the second greatest weight at 1.03.

3) Identity Construction factor consists of 2 variables: 1) Consumption (CONS) yields the greatest weight at 1.0, and 2) Productivity (PROD) yields the second greatest weight at 1.11.
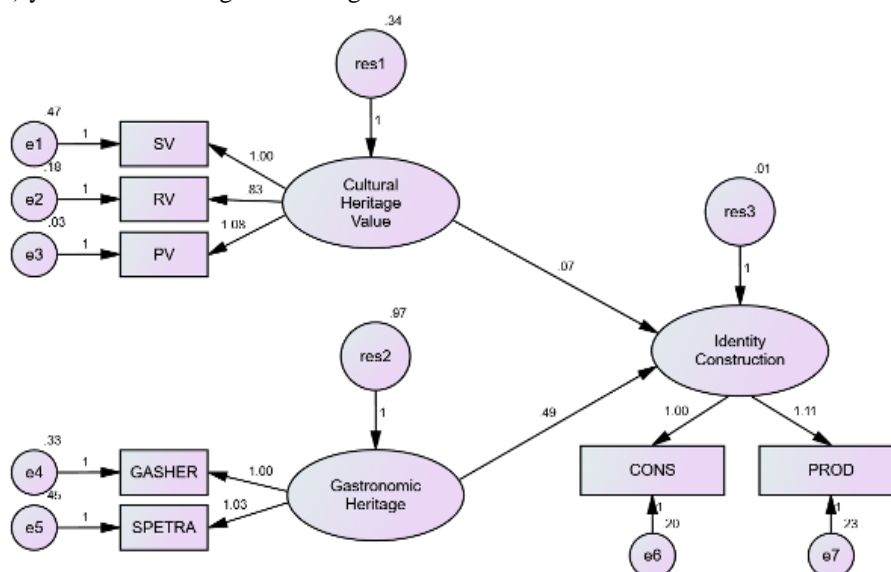
Chi-square = 18.458.df = 12, p = .102
CMIN/DF = 1.538, GFI = .987, RMSEA = .037

Figure 7. The Structural Model

CONCLUSION

This research presented the influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand. The researcher collected 400 samples of tourists in Phuket Old Town and selected the data to confirm the model. Therefore, the model was developed by computer statistical programs SPSS and AMOS and used statistical techniques including EFA, CFA, and structure models. Finally, three factors can be distinguished: 1) the cultural heritage value 2) The gastronomy component is modified to be gastronomic heritage; and 3) Identity construction is followed by minorities. The influence of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand Therefore, it can be summarized in Figure 8. The summarized model can be analyzed by key activities, the four D's of design, or double diamond (UK Design Council, n.d.), to be sustainable for the living heritage pattern and gastronomy tourism:

Figure 8. The Model of cultural heritage values and gastronomy tourism on cultural identity in Phuket Old Town, Thailand

1) Discover to survey and find the problem that concerns multiculturalism in Phuket Old Town is important to success preservation with the food, cultural and traditional to the new generation awareness with the value from ancestors and ability to transmit and uphold the ancient recipes through generation within their families and communities with creativity and sustainability.

2) Define is to identify the problem and gather the knowledge and contents of living heritage to select the key factors to analyze and synthesize the direction of a new generation easily accessible via a creative platform. This process must include a survey of more samples of them to find their needs and a discussion with those who are concerned with the contents, including government agencies, the private sector, and local communities, to consult on solutions and development.

3) Develop a process after surveying the new generation about the problem with the living heritage pattern; therefore, the easiest way to access it is through technology. The technology is the good platform to transmit the knowledge and contents that preserve the heritage, and the good way is the game of gastro diplomacy. The gastronomy game is to preserve culture and construct identities via the new consumer broadcast worldwide.

4) Deliver is transmitting the Gastro Game with knowledge and contents to construct perceptions and identities from the cultural heritage value and gastronomy of the local communities to the representation of the consumer as a soft power and motivate tourists who visit the Phuket Old Town to try the real culinary and get new experiences of technology and life.

REFERENCES

Arbuckle, L.J. (2011). *IBM SPSS Amos 20 User's Guide. U.S.A*.: IBM Corporation.

Ayeni, O. (2018). The dynamics of circuit of culture model in promoting Angelina Jolie's humanitarian activities. *Studies in Media and Communication*, 6(2), 12-19. https://doi.org/10.11114/smc.v6i2.3493

Byrne, B. M. (2010). *Structural Equation Modeling with AMOS, basic concepts, applications and programming*. New York: Routledge Taylor & Francis Group, 15-63.

Chimbanrai, H., & Vongsaroj, (2015). Potential of Local Food and Guidelines for Tourism Promotion through Local Food of Nan Province. *Journal of International and Thai Tourism*. 11(1), 37-53. (in Thailand). https://so02.tci-thaijo.org/index.php/jitt/article/view/65741/53743

Cronbach, L.J. (1970). *Essentials of Psychological Test*. 5 th ed. New York: Harper Collins.

Curtin, P.A., & Gaither, T.K. (2005). Privileging identity, difference, and power: The Circuit of Culture as a basis for public relations theory. *Journal of Public Relations Research*, 17(2), 91-115. https://doi.org/10.1207/s1532754xjprr1702_3

Ginzarly, M., & Srour, F.J. (2022). Cultural heritage through the lens of COVID-19. *Poetics*, 92, 101622.

Hai, N.C., Tuan, P.V., Le, V.T.P., & Tan, T.H. (2023). Factors Affecting The Policy of Training and Fostering Civil Servants of Khmer Ethnic Minorities in The Mekong Delta, Vietnam. *GeoJournal of Tourism and Geosites*, 46(1), 163–173. https://doi.org/10.30892/gtg.46118-1012

Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate Data Analysis*. 7 th ed. Harlow: Pearson Education.

Hall, S., & du Gay, P. (1996). *Questions of Cultural Identity*. London: Sage Publications, 87-107.

Lingfors, D., Johansson, T., Widén, J., & Broström, T. (2019). Target-based visibility assessment on building envelopes: Applications to PV and cultural-heritage values. *Energy and Buildings*, 204, 109483. https://doi.org/10.1016/j.enbuild.2019.109483

Mora, E., Noia, E., & Turrini, V. (2019). Practice theories and the "Circuit of Culture": Integrating approaches for studying material culture. *Sociologica*, 13(3), 59-86. https://doi.org/10.6092/issn.1971-8853/9531

Otengei, S.O., & Changha, G. (2023). Resident loyalty formation for the survival of African- ethnic restaurants during COVID-19: the adaptive capabilities logic. *Journal of Hospitality and Tourism Insights*, 6(1), 52-69. https://doi.org/10.1108/JHTI-07-2021- 0159

Phuket Provincial Tourism and Sports. (2017). *Strategic Plan, Phuket: City of Gastronomy* 2017-2021. Phuket Provincial Tourism and Sports Office ,Thailand. (in Thailand). https://www.phuket.go.th/webpk/file_data/gastronomy/01.pdf

Potjanajaruwit, P. (2023). The Effect of E-Service Quality on The Competitive Advantages of Tourism and Hotel Businesses in Thailand. *GeoJournal of Tourism and Geosites*, 47(2), 363–369. https://doi.org/10.30892/gtg.47201-1033

Prayitno, G., Dinanti, D., Wisnu Adrianto, D., Rahmawati, R., Auliah, A., & Eka Wardhani, L. (2023). The Influence of Social Capital In Improving The Quality of Life of The Community In Sidomulyo Tourism Village, Indonesia. *GeoJournal of Tourism and Geosites*, 46(1), 208–217. https://doi.org/10.30892/gtg.46123-1017

Puntien, S., Chantachon, S., & Koseyayothin, M. (2017). Thai Culinary Tourism: An Approach to the Development and Troubleshooting for Tourism Management in Watershed Provinces of Thailand Central Region Based on Creative Economy. Princess of Naradhiwas University. *Journal of Humanities and Social Sciences*, 5(2), 184–195. https://so05.tcithaijo.org/index.php/pnuhuso/article/view/133587

Reher, G.S. (2020). What is value? Impact assessment of cultural heritage. *Journal of Cultural Heritage Management and Sustainable Development*, 10(4), 429-436.

Schmidt, T. (2016). The circuit of culture: A model for journalism history. *CM Communication and Media*, 11(36), 71-88. https://doi.org/10.1108/JCHMSD-10-2019-0128

Smith, S.L., & Xiao, H (2008). Culinary tourism supply chains: A preliminary examination. Journal of travel research, 46(3), 289-299.

Stone, M.J., Migacz, S., & Sthapit, E. (2022). Connections between culinary tourism experiences and memory. *Journal of Hospitality & Tourism Research*, 46(4), 797-807.

Sutiadiningsih, A., Purwidiani, N., Dewi, I.H.P., Hamdani, A.T., & Tho Le, H. (2023). Gastronomic Experience as A Motivation for Tourists to Choose Tourist Destinations in Indonesia and Vietnam. *GeoJournal of Tourism and Geosites*, 47(2), 424–431. https://doi.org/10.30892/gtg.47208-1040

Tabachnick, B.G., Fidell, L.S., & Ullman, J.B. (2013). *Using multivariate statistics 6th ed*. Boston, MA, pearson, 497-516.

UK Design Council (n.d.). *Design methods for developing services*. 6-9, Design Council, London, United Kingdom. https://www.designcouncil.org.uk/fileadmin/uploads/dc/Documents/DesignCouncil_Design%2520methods%2520for%2520developing%2520services.pdf

Vecco, M. (2018). *Value and values of cultural heritage*. Cultural Heritage. 30-31. Routledge: London, UK.

World Food Travel Association. (2019). *State of the Food Travel Industry Report*. Oregon, United States.

World Tourism Organization and Basque Culinary Center. (2019). *Guidelines for the Development of Gastronomy Tourism*, UNWTO, Madrid, Spain.

Wungrath, J. (2018). *Lanna Tourism Enclave: Wellness Tourism and Gastronomy Tourism Issue*. Center of Tourism Research and Development, Social Research Institute, Chiang Mai University, Thailand.

Zhang, K., Zhang, M., Law, R., Chen, X., & Wang, Q. (2020). Impact model of tourism production and consumption in Nanjing Yunjin: The perspective of cultural heritage reproduction. *Sustainability*, 12(8), 3430. https://doi.org/10.3390/su12083430

MANGROVE ECOTOURISM RESEARCH PROGRESS, TRENDS, AND UPDATES: A BIBLIOMETRIC ANALYSIS BASED ON THE SCOPUS AND WEB OF SCIENCE DATABASES

Khusnul Bayu AJI[*]

Tour and Travel Business, Department of Foreign Languages, Arts, and Cultural Management, Vocational College,
Universitas Gadjah Mada, Yogyakarta, Indonesia, e- mail: khusnulbayuaji@ugm.ac.id

Elvis SALOUW

Department of Architecture and Planning, Faculty of Engineering, Universitas Gadjah Mada,
Yogyakarta, Indonesia, e-mail: elvis.salouw@mail.ugm.ac.id

Irfan R. DARAJAT

Archives and Records Management, Department of Foreign Languages, Arts, and Cultural Management, Vocational College,
Universitas Gadjah Mada, Yogyakarta, Indonesia, e-mail: irfan.rizky.d@mail.ugm.ac.id

Nuryuda IRDANA

Tour and Travel Business, Department of Foreign Languages, Arts, and Cultural Management, Vocational College,
Universitas Gadjah Mada, Yogyakarta, Indonesia, e-mail: nuryuda@ugm.ac.id

Wiwik SUSHARTAMI

Tourism Study Program, Faculty of Cultural Sciences, Universitas Gadjah Mada, Yogyakarta
Indonesia, e-mail: sushartami@ugm.ac.id

Abstract: Using bibliometric analysis, this study aims to examine the progress, trends, and updates of mangrove ecotourism research within tourism studies. The primary data for this study were collected from the Scopus database with 306 publications and the Web of Science (WoS) database with 585 publications of mangrove ecotourism scientific documents published until the end of 2022. The results show that the first publication on mangrove ecotourism in the Scopus database was identified in 1992, while the first documents on the topic were included in the WoS database six years earlier, in 1986. The prominent keywords of mangrove ecotourism topics shared by publications in the Scopus and WoS databases were predominantly related to environmental and sustainability issues, such as conservation, biodiversity, and sustainable development. Based on geographical distribution, Asian countries and institutions have dominated recent publications on mangrove ecotourism. This means that the geographical distribution of publications on mangrove ecotourism is strongly influenced by the geographical distribution of mangrove ecosystems, which are mostly found in Asia.

Key words: Mangrove, ecotourism, bibliometrics analysis, Scopus, Web of Science (WoS)

* * * * * *

INTRODUCTION

Mangroves cover 13,760,000 ha of coastal land worldwide, especially along tropical and subtropical shorelines and river estuaries (Bunting et al., 2018; Ochoa-Gómez et al., 2019; Trialfhianty et al., 2022). Mangroves, which serve as tourist attractions, are considered capable of attracting tourists in tens to hundreds of millions, with a financial turnover of billions of dollars (Spalding and Parrett, 2019). In general, various recreational activities developed at mangrove-based tourism sites attract tourists with a wide range of visits and recreational spending durations, ranging from single-day trips to overnight boat tours, with a focus on wildlife, bird watching, and fishing (Avau et al., 2011). Approximately 3,945 mangrove tourist attractions are identified across the globe, stretching from the Caribbean, North America, Central America, South America, East Africa, Central Africa, West Africa, the Middle East, South Asia, East Asia, South East Asia, and the Pacific in 93 countries (Spalding and Parrett, 2019).

Those mangrove tourist attractions are commonly managed under an ecotourism approach because they are protected due to the fact that mangroves are pivotal coastal elements that provide numerous ecosystem services and perform crucial ecological functions (Barbier et al., 2011; Friess, 2017; Kauffman et al., 2020). In general, ecotourism is widely considered a sustainable alternative for mangrove conservation as well as poverty alleviation for locals (Santos et al., 2017). Prior studies have shown that mangrove ecosystems are capable of significantly absorbing and storing carbon - three times more than other ecosystems—making this function critical for climate change mitigation and adaptation

---

[*] Corresponding author

(Alongi, 2014; Donato et al., 2011; Howard et al., 2017; Kauffman et al., 2020; Murdiyarso et al., 2015; Mursyid et al., 2021; Ward et al., 2016). Mangroves, on the other hand, are thought to be marine habitats, sedimentation regulators in downstream areas, able to withstand waves, storms, and even tsunamis (Barbier et al., 2011; Friess, 2016; Kauffman et al., 2020). Besides playing an important role in providing environmental services and tourism-related utilization, mangrove ecosystems are constantly assumed to have high socio-economic potential for other objectives (Friess, 2016, 2017; Hakim et al., 2017; Mursyid et al., 2021). For recent decades, local communities have routinely used mangrove products on a small scale for charcoal, building materials, fishing gear, firewood, and a variety of other non-timber products, such as tannin, medicinal products, and saps (Kusmana, 2018; Mursyid et al., 2021).

Furthermore, mangrove ecotourism is commonly defined as nature-based tourism which occurs in a mangrove ecosystem, are primarily learning-focused in terms of the interaction between the tourist and these natural attractions, and are projected to be environmentally and socio-culturally sustainable (Fennell and Weaver, 2005; Weaver, 2002; Weaver, 2001; Weaver and Lawton, 2007). It means that mangrove ecotourism is nature-based travel that conserves the mangrove environment, supports the prosperity of the local communities surrounding the mangrove ecosystem, and includes mangrove interpretation and education (Björk, 2000; Shasha et al., 2020).

Despite the fact that the definition of mangrove ecotourism is still associated with the notion of ecotourism in general, there are some notes that describe mangrove ecotourism, for example, the studies of Friess (2017), which mention that mangrove ecotourism is one of the neo-liberal economic tools that have been promoted for mangrove conservation alongside Corporate Social Responsibility (CSR) and Payment for Ecosystem Services (PES). The proliferation of mangroves that are used for ecotourism attraction has encouraged numerous scientific articles that discuss the mangrove ecosystem in relation to the tourism industry (Kanniah et al., 2015; Marasinghe et al., 2021; Mehvar et al., 2018; Mendoza-González et al., 2012; Murtini et al., 2018; Putri et al., 2020; Rudiastuti et al., 2018; Ryan et al., 2012; Salam et al., 2000; Samonte-Tan et al., 2007; Spalding and Parrett, 2019; Windevoxhel et al., 1999). Meanwhile, on the other hand, the rapid growth of the digital platforms and internet has created new opportunities for data processing and analysis, such as bibliometric (Salouw et al., 2023), including for mangrove ecotourism discussion. A bibliometric analysis is a quantitative examination method that focuses on documents, mostly scientific, such as articles and books, to uncover research categories, publication types, key research institutions, citation patterns, and countries, as well as keyword and title content analysis (Heersmink et al., 2011; Shasha et al., 2020).

Bibliometric analyses have the potential for creating a significant impact on both scholars and practitioners given that they provide a wider range of options for (re)designing their next steps in order to expedite advancement in certain disciplines or fields (Köseoglu et al., 2021; Zupic and Čater, 2015). Within tourism studies, bibliometric analysis is pivotal for external evaluation to investigate research quality, interest in impact and prestige factors, and the development of the field of study (Hall, 2011). Numerous studies on tourism-related topics using bibliometric analysis have been published in a variety of journals (Bhowmik, 2021; Comerio and Strozzi, 2019; de la Hoz-Correa et al., 2018; Garrigos-Simon et al., 2018, 2019; Hall, 2011; Jiang et al., 2019; Köseoglu, Sehitoglu, et al., 2016; Köseoglu, Rahimi, et al., 2016; Köseoglu, Sehitoglu, and Craft, 2015; Köseoglu, Sehitoglu, and Parnell, 2015; Mariani and Baggio, 2022; Niñerola et al., 2019; Pathmanandakumar et al., 2021; Rodríguez-López et al., 2020; Salouw et al., 2023; Sánchez et al., 2017; Senbeto et al., 2021; Shasha et al., 2020; Vishwakarma and Mukherjee, 2019; Wong et al., 2021), and they always provide new perspectives to the debates and discussions within tourism studies (Salouw et al., 2023).

Most of these studies discuss particular topics and issues related to tourism within specific timeframes using bibliometric analysis, such as quality in tourism (Garrigos-Simon et al., 2019), tourism and sustainability (Garrigos-Simon et al., 2018; Niñerola et al., 2019), climate change and coastal tourism (Pathmanandakumar et al., 2021), tourism crisis and disaster management (Jiang et al., 2019), economic impact of tourism (Comerio and Strozzi, 2019), higher tourism education (Simsek and Kalipci, 2023), gender perspectives in tourism (Figueroa-Domecq et al., 2015; Kabil et al., 2022), tourism knowledge (Köseoglu et al., 2021), contemporary tourism research (Yuan et al., 2015), religious tourism and pilgrimage (Durán-Sánchez et al., 2018), cross-border tourism (Salouw et al., 2023), sport tourism and sustainability (Kumar et al., 2023), wellness tourism (Polat and Köseoglu, 2022), wine tourism (Sánchez et al., 2017), and medical tourism (de la Hoz-Correa et al., 2018).

Several previous studies have also focused on examining ecotourism topics and issues using bibliometric analysis. For instance, firstly, Liu and Li (2020) investigated research trends in ecotourism using bibliometric analysis on 2,531 scientific publications related to ecotourism from Web of Science (WoS) databases from 1990 to 2016. The results suggest that *Tourism Management* was the most productive journal, whereas the Chinese Academy of Sciences was the most prolific contributor among the research institutions. Meanwhile, authors from the United States have published articles more frequently than those from any other country. China, the United States, and South Africa are the top three countries in ecotourism research case studies. It also revealed that the primary focus of ecotourism research was conservation; protected areas were the primary study objects, and sustainable tourism was the primary goal.

Secondly, Shasha et al. (2020) employed bibliometric analysis to uncover dynamic trends, academic collaboration, and research hotspots relevant to ecotourism, published between 2001 and 2018 in the Scopus and Web of Science (WoS) databases. According to these findings, the total number of relevant papers has increased continuously. The *Journal of Hospitality and Tourism Management*, *Annals of Tourism Research*, *Conservation Biology*, and *Biological Conservation* are all important journals. The Chinese Academy of Science is the most influential institution, with the most publications and worldwide co-authorship. Furthermore, research keywords such as eco-tourism, management, biodiversity, national parks, sustainability, and sustainable tourism were identified.

Thirdly, Khanra et al. (2021) performed a bibliometric analysis to examine the present knowledge regarding ecotourism from a total of 878 articles published in six reputable journals, which are the *Annals of Tourism Research*, the *Journal of Travel Research*, *Tourism Management*, the *International Journal of Contemporary Hospitality Management*, the *International Journal of Hospitality Management*, and the *Journal of Sustainable Tourism*, between 1990 and 2019. The result shows that there are four main clusters as thematic areas of ecotourism research publication, namely: a) ecological preservation of tourist destinations; b) carbon footprint from tourist mobility; c) protecting residents' interests in tourist destinations; and d) tourist attitudes and behaviour towards sustainability. Fourthly, Hasana et al. (2022) employed bibliometric analysis to quantitatively evaluate publications on ecotourism in protected areas based on 1182 research articles published in the Scopus database between 2002 and 2020. The majority of ecotourism research articles are published in the United States, the United Kingdom, Australia, South Africa, Canada, and China, according to the data. The primary research subjects of publications on ecotourism in protected areas are conservation, visitor management, and community. As a result, some contentious topics regarding ecotourism and its relationship to protected areas, dominated by human-wildlife conflict, gender, and climate change, have attracted the attention of scholars worldwide. Fifthly, Singh et al. (2022) used bibliometric analysis to determine publication trends and conceptual, intellectual, and collaborative structures related to ecotourism issues, particularly in the *Journal of Ecotourism*. The findings reveal that five and three clusters were discovered by co-word and co-citation analysis, respectively. The collaboration structure demonstrated good collaboration between authors in the *Journal of Ecotourism*, with collaborative research accounting for 70% of the work accomplished.

Given the preceding explanation, despite the publication of numerous bibliometric studies on tourism-related themes, including discussions of ecotourism in general, very few bibliometric analyses of mangrove ecotourism publications in particular have been executed. In parallel with these circumstances, this study aims to explore research progress, trends, and updates related to mangrove ecotourism publications using bibliometric analysis methods by visiting the Scopus and WoS databases, as no previous studies have been conducted before. This effort is important for determining the extent to which discussions on mangrove ecotourism have been drawn, which will help direct future research on this topic, considering mangrove ecotourism is a global phenomenon that has occurred worldwide.

MATERIALS AND METHODS

Identifying and analysing published literature, both quantitatively and qualitatively, has become an important agenda for many disciplines (Keathley-Herring et al., 2016). Therefore, methods such as systematic literature review and bibliometric analysis have been routinely used to develop a greater understanding of a particular area of research (Keathley-Herring et al., 2016). The combination of systematic literature review and bibliometric analysis obviously has a substantial impact on increasing knowledge production while observing the evolution of a science (Salouw et al., 2023; Small, 1977), as provided by previous studies. This process can be conducted in various fields of science by applying rigorous analysis procedures to literary sources, such as magazines, journals, books, and various other written documents, to produce decent information (Keathley-Herring et al., 2016; Salouw et al., 2023).

For particular reasons, our study preferred bibliometric analysis over combining it with a systematic literature review. To begin, despite the fact that several literature review studies used a combination of the two procedures (systematic literature review and bibliometric analysis), there were certainly some indications that combining two analytical methodologies in one research may produce reader misunderstanding (Kabil et al., 2022; Khoo-Lattimore et al., 2019). As a result, rather than performing a systematic literature review, which might incorporate a meta-analysis in its setting, we chose bibliometric analysis and compensated by using more than one primary data source, which may help mitigate the drawbacks of a single study procedure (Kabil et al., 2022), such as Scopus and Web of Science (WoS).

Specific to bibliometric analysis, it is widely recognised as a cross-disciplinary research technique that relies on quantitative analysis with mathematical and statistical methods approaches (Liao et al., 2018; Merigó et al., 2015, 2016), to create a map of the structure and patterns of knowledge on data repositories as part of the development of a particular field of study (Liao et al., 2018; Salouw et al., 2023). In general, bibliometric analysis is thought to stem from the literature review method, which is carried out systematically, clearly, and repeatedly (Salouw et al., 2023). A variety of databases, including Scopus, Web of Science (WoS), PubMed, and ProQuest, may be employed to select appropriate information for bibliometric analysis (Alryalat et al., 2019; Rahman et al., 2023). As mentioned above, we employed multiple primary data sources to conduct a bibliometric analysis by visiting the Scopus and WoS databases to obtain relevant literature for the data studied, which focuses on mangrove ecotourism-related research.

With more than 20.000 journals provided, Scopus and WoS were chosen for this study because their databases are trusted and enabled us to obtain very proper data coverage as well as improved data quality, retrieval, and cleanliness (Mariani and Baggio, 2022; Wijayanti et al., 2023). Scopus is the first database used in this study, with 22,800 journals from 5,000 publishers worldwide, whose catalogue consists of various disciplines, ranging from environmental, biological, agricultural, and social sciences (Wijayanti et al., 2023). Subsequently, Web of Science (WoS) was the second database used in this study, which contains more than 33,000 journals in over 256 disciplines, including environmental studies, interdisciplinary social studies, development studies, and planning (Wijayanti et al., 2023).

We executed bibliometric analysis on three types of bibliometric variables, including: a) quantity indicators, for example, which refer to the output of journals or authors; b) quality indicators, which indicate the significance and influence of authors, publications, and journals; and c) structural indicators, which emphasise the relationship and interconnection of research topics, countries, and researchers (Durieux and Gevenois, 2010; Hasana et al., 2022). Furthermore, to perform bibliometric analysis, we followed the seven fundamental stages introduced by Oliveira et al.

(2019) to examine these three types of bibliometric variables, which included: 1) defining the field of study; 2) defining search platforms; 3) mining bibliometric data; 4) importing data; 5) analysing bibliometric data; 6) mapping the state of the art and identification, as well as grouping and analysing gaps and trends; 7) drawing conclusions. The following section is a practical explanation of each of these seven stages (Figure 1).
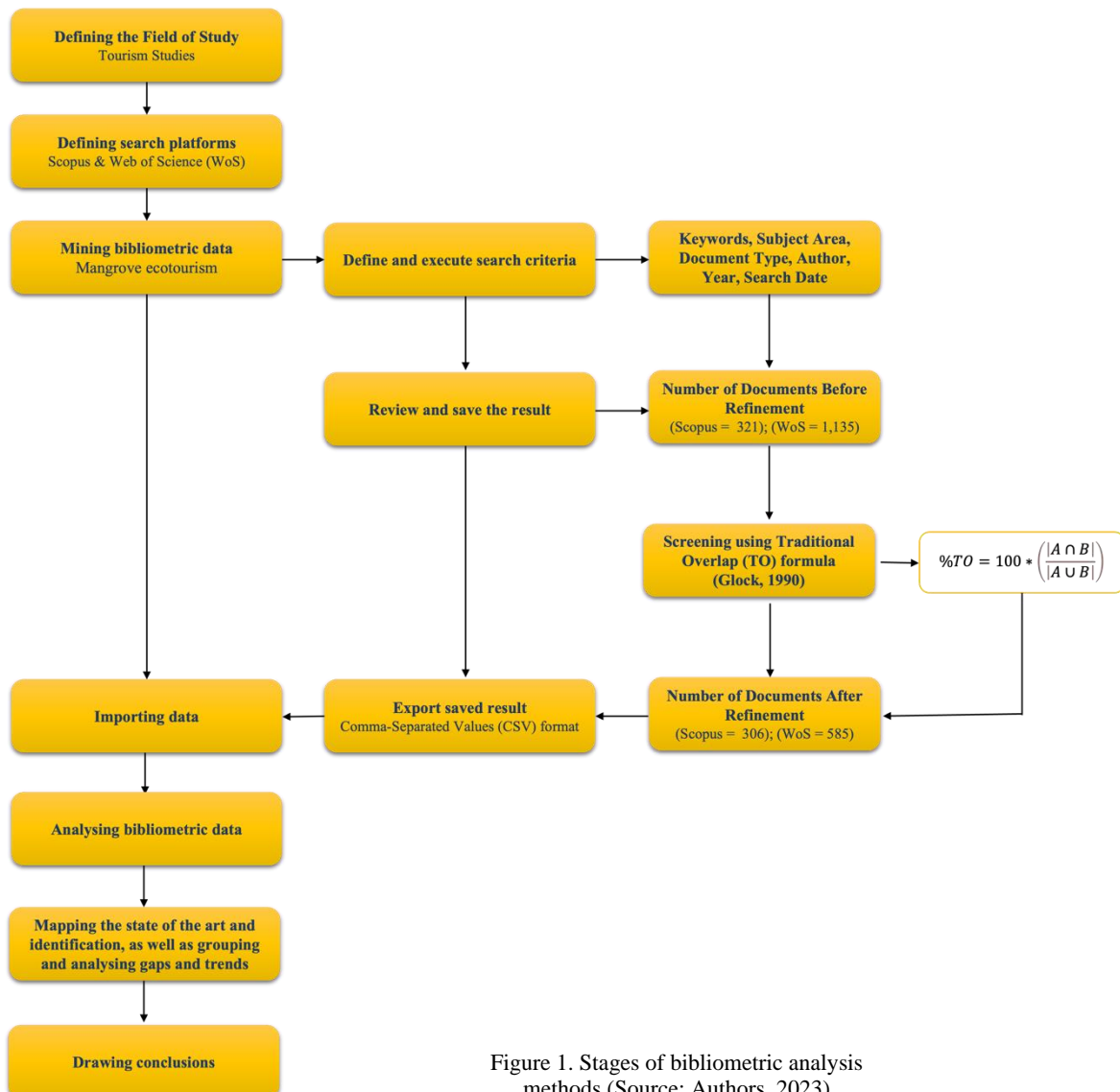
Figure 1. Stages of bibliometric analysis methods (Source: Authors, 2023)

1) Defining the field of study: The primary field of science for this research is tourism studies.

2) Defining search platforms: This study selected Scopus and Web of Science (WoS) as database platforms based on the feasibility and reliability of scientific articles used for data, the scope of the field of science, opportunities to improve data quality, and the convenience of accessing the data.

3) Mining bibliometric data: a) Define and execute search criteria

To select publications related to mangrove ecotourism, both in the Scopus and Web of Science (WoS) databases, we defined and executed search criteria, as shown in Table 1, as follows:

Table 1. Criteria for publications searching in the Scopus and Web of Science (WoS) databases

Criteria	Scopus	Web of Science (WoS)
Keywords	"mangrove" AND "ecotourism" OR "eco-tourism"	"Mangrove" AND "Ecotourism" OR "Eco-tourism")
Subject area	Environmental Science; Earth and Planetary Science; Agricultural and Biological Science; Social Science; Business, Management, and Accounting; Engineering, Economics, Econometrics, and Finance; Arts and Humanities; Multidisciplinary	Hospitality, Leisure, Sport, and Tourism; Forestry; Marine Biology; Management; Sustainability Science; Human Geography; Economics; Education and Educational Research; Environmental Sciences; Transportation; Bibliometrics, Scientometrics and Research Integrity
Document Type	Article, Book Chapter, Review, Conference Paper, Editorial	Article, Book Chapter, Review, Conference Paper, Editorial
Author	Exclude anonymous and undefined document	Exclude anonymous and undefined document
Year	Exclude 2023 – onwards	Exclude 2023 – onwards
Search date	May 10, 2023	May 10, 2023

b) Review and save the result

In order to review the literature obtained, the search is strictly limited to English-language scientific documents published until late 2022. The first phase of data collection involves the exclusion of articles that do not contain mangroves as research locations or as research objects related to 'ecotourism' or 'eco-tourism'. Moreover, it is usual procedure in bibliometric study, according to Köseoglu et al. (2021), to exclude particular categories of items from the analysis for particular reasons, such as the fact that not all scientific publications represent verified knowledge and have complete bibliographic records. In this paper, for example, we eliminated books from the dataset because they typically contain more extensive and broader contents (Chou and Ma, 2010) than journal articles, book chapter, review, conference paper or editorial. Table 2 depicts the comparative findings before and after refining. It illustrates distinctions in the quantity of preliminary and refined search results based on criteria, including subject area, document type, author and year.

Table 2. Comparative findings before and after refinement in Scopus and Web of Science (WoS) databases (Source: Authors, 2023)

Scopus		Web of Science (WoS)	
Number of Findings Before Refinement	Number of Findings After Refinement	Number of Findings Before Refinement	Number of Findings After Refinement
(n = 321)	(n = 306)	(n = 1,135)	(n = 585)

Given this paper combines two databases, Scopus and WoS, Meyer's Index was employed to examine the database search results in order to remove singularity and overlap. According to Meyer et al. (1983), it is also known as a "relative index of singularities," and it is used to determine how adequately a database covers a subject. A distinctive document is incredibly valuable, and its value decreases gradually when there are duplicates (weight = 0.5), triplicates (weight = 0.3), and others. The higher the index, the greater the singularity, implying more distinct documents.

$$\text{Meyer's Index} = \frac{\sum \text{Sources*Weight}}{\text{Total Sources}}$$

* $\sum$ Sources*Weight = total number of documents or sources multiplied by the rate of duplication

Furthermore, for calculating database overlap, this article adopted Gluck's (1990) Traditional Overlap (TO) formula between two secondary databases A and B as:

$$\%TO = 100 * \left(\frac{|A \cap B|}{|A \cup B|} \right)$$

* %TO = percentage of the ratio of the number of documents at the intersection of two secondary databases to the number at their union; $|A \cap B|$ = the intersection of documents between database A and database B; $|A \cup B|$ = the union of documents between database A and database B.

The higher the TO value, the greater the similarity between the databases. A coefficient of 0.15, for example, reflects a 15% similarity level; yet, there is an 85% difference. The Relative Overlap (RO) is a metric applied to assess the coverage of a database, as well as its relationship to another (Bearman and Kunberger, 1977; Hood and Wilson, 2003).

$$\%\text{Overlap in A} = 100 * \left(\frac{|A \cap B|}{|A|} \right) \qquad \%\text{Overlap in B} = 100 * \left(\frac{|A \cap B|}{|B|} \right)$$

*A = Database A; B = Database B; %Overlap in A = the percentage of overlap documents or sources in database A; %Overlap in B = the percentage of overlap documents or sources in database A; $|A \cap B|$ = the intersection of documents between source A and source B.

c) Export saved result :Following the completion of the review and saving of the result in terms of a literature search, the next step is to import the library source metadata into Comma-Separated Values (CSV) format in order to ensure and improve data quality, including removing duplication. To this end, the Mendeley software is employed for data compilation and virtual file cabinets.

4) Importing data:After determining the criteria, the recorded data is then exported to the VOSViewer program, which is a valuable software designed for constructing and viewing bibliometric maps (Van Eck and Waltman, 2010).

5) Analysing bibliometric data: Analysing bibliometric data can be perceived as an operational endeavour to examine saved data by investigating research information quantitatively involving three types of bibliometric variables, such as quantity, quality, and structural indicators.

6) Mapping the state of the art and identification, as well as grouping and analysing gaps and trends

The operationalization of the VOSViewer programme allows for mapping the state of the art and identification, as well as grouping and analysing gaps and trends. In practise, the VOSViewer programme operates by analysing authors, countries, institutions, article keywords, timelines, and interactions. Subsequently, distance-based maps—in which the distance between two items on a map reflects the intensity of their relationship—and graph-based maps—in which the distance between the two items does not have to indicate the strength of their relationship (Van Eck and Waltman, 2010)— are generated depending on the investigation's results.

7) Drawing conclusions: This step refers to extracting and interpreting information that was implied or inferred according to the analysis. In this step, we also attempted to delve into the findings in order to provide insight based on the study's findings while outlining issues that may be addressed in the future, both conceptually and practically, particularly in the context of mangrove ecotourism.

FINDINGS AND DISCUSSION
1. Publication progress of mangrove ecotourism over the year
There are differences in the publication of mangrove ecotourism in Scopus and the Web of Science (WoS). For

example, in terms of quantity, the WoS database contains more mangrove ecotourism publications than the Scopus database does. Moreover, since the publication of mangrove ecotourism, WoS has consistently recorded more documents than Scopus in terms of number. Nevertheless, both the Scopus and WoS databases suggest that publications on mangrove ecotourism have increased significantly during the last five years. The largest number of publications related to the topic from the two databases was recorded in 2021.

Figure 2 shows the publication progress of mangrove ecotourism over the years in the Scopus and WoS databases. The first mangrove ecotourism publications were indexed in the Scopus database in 1992, while the earliest documents relating to the topic were included in the WoS database six years earlier, in 1986. The finding shows that the mainstreaming of the ecotourism concept, including its deployment for mangrove ecosystem study, has a connection to the term, which first appeared in academic literature and was promoted by Ceballos-Lascurain in the mid-1980s (Diamantis, 1999; Donohoe and Needham, 2006; Weaver, 2001, 2002). Although some argue that the term "ecotourism" or "eco-tourism" originally emerged in 1973 (Shasha et al., 2020), it was later continued by Parks Canada, which polarised ecotourism by publishing a 16-page guidebook titled "Ecotour of the Rideau Canal" in 1978 (McKercher, 2010).
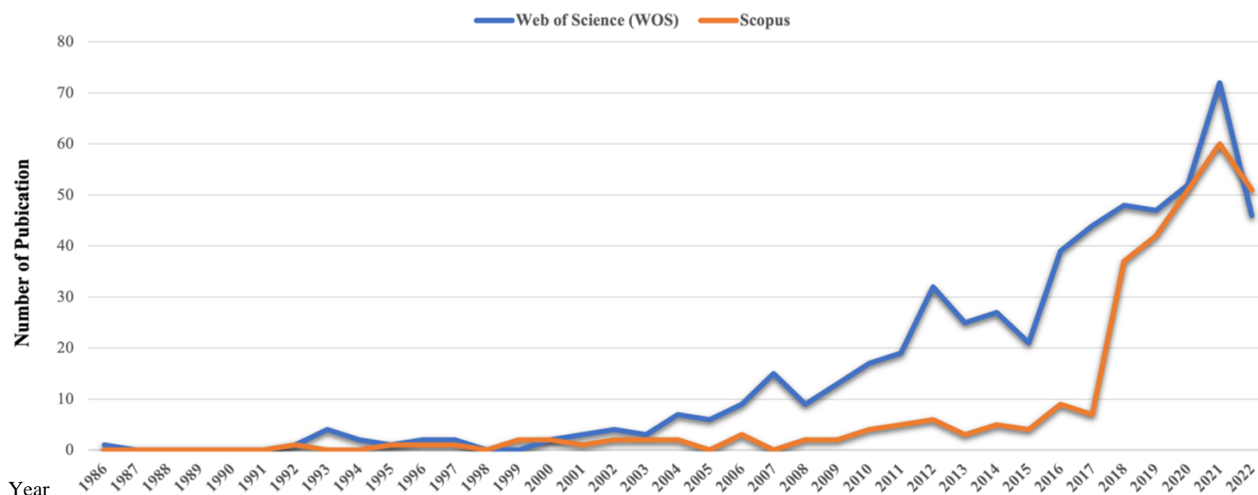
Figure 2. Publication progress related to mangrove ecotourism in the Scopus and Web of Science (WoS) databases (Source: Authors, 2023)

The number of mangrove ecotourism publications was relatively small until the early 2000s, but increased significantly around the 2010s. This circumstance is inextricably related to the worldwide issue of using mangroves as carbon sinks, which coincides with the global agenda of dealing with the impacts of climate change. In addition, the discourse on the blue economy is also considered an influential base for increasingly massive writings or publications on mangrove ecotourism. For example, in the 2010s, after Gunter Pauli published a book entitled The Blue Economy: 10 Years, 100 Innovations, 100 Million Jobs, international organisations such as the World Bank launched Problue, a Blue Economy-based programme. One of the focal points of the programme is the long-term growth of crucial oceanic sectors such as tourism. Mangroves are receiving attention in this setting because they contribute to the attraction of marine tourism.

Furthermore, the number of studies on the topic fell significantly between 2021 and 2022. This condition influenced by the fact that since the start of the pandemic, which began in 2020 and generally ended in 2022, there has been an increase in research focusing on the COVID-19 pandemic and its impact on the tourism industry, motivated by uncertainty about the future of tourism and the need to respond to the new challenges facing the industry (Menon et al., 2022; Utkarsh and Sigala, 2021; Viana-Lora and Nel-lo-Andreu, 2022). Most of the research is concentrated on assessing the risk of contagion in the tourism industry and developing strategies to recover activity in the general landscape (Viana-Lora and Nel-lo-Andreu, 2022), with very few exceptions focusing on mangrove ecotourism. As a result, scientific publications on mangrove ecotourism decreased dramatically during that period.
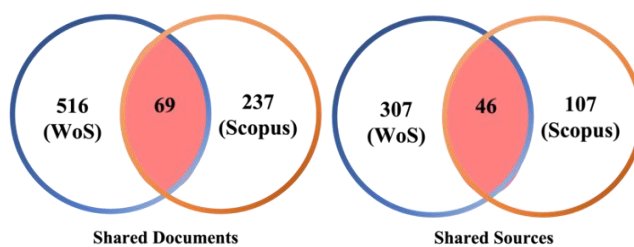
Figure 3. Number of shared documents and sources in the Scopus and Web of Science (WoS) databases (Source: Authors, 2023)

2. Singularity and overlap

According to the comparative findings of the literature search in Table 1, 306 documents from 153 sources related to mangrove ecotourism were identified in the Scopus database, following the refinement process until late 2022. However, the Web of Science (WoS) database has published more documents associated with the topic of mangrove

ecotourism, totaling 585 from 353 sources after the refinement procedure. After all necessary calculations, it was discovered that 69 documents overlapped (found in both databases). Additionally, these were perceived as duplicates, representing 23% and 12% of the Scopus and WOS databases, respectively. The remaining were non-duplicates, of which 237 (77%) and 516 (88%) were obtained from Scopus and WOS, respectively.

Figure 3 shows the number of shared documents and sources in the Scopus and Web of Science (WoS) databases related to mangrove ecotourism publications. Furthermore, according to the formula used in this study, 8% was obtained as the Traditional Overlap (TO) calculation based on Gluck (1990), which is shown as follows:

Table 3. Singularity database (Source: Authors, 2023)

Databases	% of single document/source		Meyer's Index	
	Documents	Sources	Documents	Sources
Scopus	82%	78%	0.37	0,69
WoS	88%	30%	0.56	1,46

$$\%TO=100\left(\frac{Scopus \cap WoS}{Scopus \cup WoS}\right)=>\%TO=\frac{69}{306+585-9}=>\%TO=8\%$$

* %TO = the percentage of the ratio of the number of documents at the intersection of two secondary databases to the number at their union; |Scopus∩WoS| = the intersection of documents between Scopus and WoS; | Scopus∪WoS | = the union of documents between Scopus and WoS

Based on to the calculation, only 8% of the documents in the two databases are similar in terms of content. In other words, 92% of the documents are distinct and exist only in one database. This demonstrates that significant gaps in terms of number occurred in scientific documents on mangrove ecotourism listed in Scopus and the WoS database.

To gain more information regarding singularity and overlap, a relative overlap formula was employed to determine the proportion of Scopus coverage for WOS and vice versa:

$$\% \text{ TO WoS}=100*\left(\frac{|Scopus \cap WoS|}{WoS}\right)=>\%TO\text{ WoS}=100*\left(\frac{69}{585}\right)=12\%$$

$$\% \text{ TO Scopus}=100*\left(\frac{|Scopus \cap WoS|}{Scopus}\right)=>\%TO\text{ Scopus}=100*\left(\frac{69}{306}\right)=23\%$$

* % TO WoS = the percentage of the traditional overlap in WoS; |Scopus∩WoS| = the intersection of documents between Scopus and WoS; % TO Scopus = percentage of the traditional overlap in Scopus

Scopus covers 12% of documents in WOS, while 23% of documents in the Scopus database are covered by WoS. This indicates that the WoS database has more unique documents and covers numerous sources in the context of mangrove ecotourism publications. This finding provides a significant distinction from several previous studies that reported that the singularity of Scopus is higher than WoS. For example, in research publications regarding wine tourism from Sánchez et al., 2017, tourism innovation from Durán-Sánchez et al., 2019 and community-based tourism from Álvarez-García et al., 2018.

3. Co-occurrence of keywords in mangrove ecotourism

The co-occurrence of keywords in bibliometrics analysis is beneficial for displaying particular topics of study in advanced manner while providing information about documents in the database (Garrigos-Simon et al., 2019; Sánchez et al., 2017). In this sense, the idea is that the co-occurrence of keywords describes the contents of the documents in a file, leading to the premise that each research field may be characterised by a list of its most important keywords (de la Hoz-Correa et al., 2018). In this study, from a total of 1,716 keywords on Scopus and 2,040 keywords on the Web of Science (WoS) database, the top ten keywords related to mangrove ecotourism publications can be seen in Table 4, as follows:

Table 4. Co-occurrence of keywords in mangrove ecotourism scope (Source: Author's elaboration, 2023)

R	Scopus			Web of Science (WoS)		
	Keywords	F	C (%)	Keywords	F	C (%)
R1	ecotourism	105	6,12	eco-tourism	123	5,03
R2	mangrove	88	5,13	ecotourism	110	4,50
R3	ecosystems	51	2,97	conservation	77	3,15
R4	biodiversity	44	2,56	tourism	74	3,02
R5	forestry	34	1,98	mangrove	62	2,53
R6	sustainable development	34	1,98	sustainability	44	1,80
R7	conservation	33	1,92	sustainable development	37	1,51
R8	mangrove forest	32	1,86	biodiversity	33	1,35
R9	ecology	28	1,63	protected areas	29	1,19
R10	mangrove ecosystems	27	1,57	ecosystem services	28	1,14

*R = Rank; F = Frequency (number of occurrences of keywords); C = Coverage (percentage coverage of keywords in database).

The first rank of the top ten keywords related to mangrove ecotourism publications on Scopus and WoS is substantially identical, namely "ecotourism" or "eco-tourism". In general, keywords intersecting with environmental issues dominated the top ten prominent keywords identified in both Scopus and the WoS databases. This is reflected in keywords such as

"mangrove ecosystems", "ecology", "forestry", "protected areas", and "ecosystem services". Furthermore, the same important keywords documented by the Scopus and WoS database underline the main topic of discussion on environmental issues, with terms such as "conservation" and "biodiversity" being used. Apart from keywords related to environmental issues, "sustainability" and "sustainable development" are frequently encountered in publications on mangrove ecotourism. This implies that sustainability and sustainable development, particularly in the tourism sector, are the primary frameworks employed by many scholars worldwide as a theoretical foundation for studying mangrove ecotourism. In other words, sustainability or sustainable development is a 'buzzword' approach in the study of mangrove ecotourism.

On the other hand, this condition is inseparable from the ontological position of ecotourism, which is widely articulated as a derivative of the concept of sustainable tourism (Fennell and Dowling, 2003). However, for decades, ecotourism has been widely regarded as important for protecting fragile ecosystems as it can generate revenue for the protection of natural resources while also promoting viable economic development for local communities, improving ecological and cultural sensitivity, instilling environmental awareness in the travel industry, satisfying and educating tourists, and, some claim, contributing to building world peace (Demir et al., 2016; Honey, 2008:4). Unsurprisingly, the sustainability of mangrove ecosystems is a fundamental concern in many studies on mangrove ecotourism.

Furthermore, the employment of the sustainability paradigm in mangrove ecotourism research is inextricably linked to the fact that mangrove ecosystems have been lost and harmed for centuries because of human exploitation (Feller et al., 2017). It was initially predicted that by the end of the twentieth century, 35% of the natural mangrove area would have already been lost (Valiela et al., 2001). Mangroves were also considered to be losing 1–3% of their area globally per year, with substantial regional variation (FAO, 2007). Nevertheless, mangrove loss in the early twenty-first century has been considerably less than predicted (Spalding et al., 2010), with a global-scale remote sensing study reveals that yearly rates of mangrove deforestation averaged 0.2-0.7% between 2000 and 2012 (Hamilton and Casey, 2016). This situation emerged as a result of various countries introducing conservation and sustainable forest management legislation and pursuing community-based management in order to reduce mangrove deforestation rates (Feller et al., 2017; Friess et al., 2016). In light of that context, sustainability or sustainable development paradigms are frequently incorporated into mangrove studies, including in the context of mangrove ecotourism studies.

4. Most prolific and influential authors

In this section, we attempted to highlight the most prolific and influential authors based on the number of scientific documents they have written and their citations. According to the findings, the Scopus database contains 930 authors who write about mangrove ecotourism. Meanwhile, the number of authors in the Web of Science (WoS) database on mangrove ecotourism is higher, with 1,776 authors. The majority of authors (88.9% and 97.5%, respectively) have only one document published in both the Scopus and WoS databases. This condition is affected by the unique characteristics of mangrove ecotourism as an interdisciplinary field that combines the aspects of ecology, tourism, economics, and social sciences. As a result, authors from different disciplines may collaborate only in a single study, contributing their expertise to the overall understanding of the subject. Subsequently, the ten most productive researchers on the topic of mangrove ecotourism, as shown in Table 5, are as follows:

Table 5. Most influential and prolific authors (Source: Author's elaboration, 2023)

R	Scopus				Web of Science (WoS)			
	Author	TC	F	TC/F	Author	TC	F	TC/F
R1	Dahdouh-Guebas, F.	142	5	28,40	Dahdouh-Guebas, F.	104	4	26,00
R2	Ghosh, A.	41	4	10,25	Thompson, B.S.	98	4	24,50
R3	Bahar, A.	15	4	3,75	Satyanarayana, B.	85	3	28,33
R4	Fattah, M.	15	8	1,88	Carvache-Franco, M.	40	3	13,33
R5	Ginantra, I.K.	13	5	2,60	Ghosh, A.	19	3	6,33
R6	Joni, M.	13	5	2,60	Kusmana, C.	12	3	4,00
R7	Massiseng, A.N.A.	12	4	3,00	Ma, Sheng-Quan	8	3	2,67
R8	Effendi, I.	10	4	2,50	Dehoorne, O.	7	4	1,75
R9	Intyas, C.A.	8	5	1,60	Harahab, N.	7	3	2,33
R10	Muksin, I.K.	8	4	2,00	Singgalen, Y.A.	7	3	2,33

*R = rank; F = frequency (number of articles); TC = Total Citation (number of citations received by authors);
TC/F = Average citations received by authors

The top ten most prolific and influential authors, as shown in Table 5, contributed 12.68% and 5.64% of the documents in the Scopus and WoS databases regarding mangrove ecotourism, respectively. All the authors included are researchers and are strongly associated with universities worldwide. In general, these authors share research interests and expertise in the natural sciences, including biology, zoology, geography, forestry, oceanography, fisheries, and marine sciences. Because only 8% of the documents in the Scopus and WoS databases related to mangrove ecotourism are similar in terms of content, only two authors are listed in both databases as the most prolific and influential authors on the subject, namely, Farid Dahdouh-Guebas and Aditya Ghosh. Farid Dahdouh-Guebas is the most contributing researcher, with five Scopus publications and four WoS publications on mangrove ecotourism research domains. However, Farid Dahdouh-Guebas was not always the first author to publish scientific research on mangrove ecotourism. Following further examination, his mangrove ecotourism research was usually conducted in collaboration with other scholars. Despite the fact that Farid

Dahdouh-Guebas has consistently published numerous scientific works in broad contexts regarding mangroves, such as mangrove vegetation dynamics, mangrove ethnobiology, and mangrove ecosystem management and governance.

5. Geographical distribution of publication

The geographical distribution of publications in this study explains the origin of mangrove ecotourism research. According to the findings, there are disparities in country/region of origin in mangrove ecotourism research. Table 6 summarises the top ten countries/regions in Scopus and the WoS databases that contributed to the research on mangrove ecotourism.

Table 6. Countries/Regions with the most publications on mangrove ecotourism topic (Source: Author's elaboration, 2023)

R	Scopus					Web of Science (WoS)				
	Country /Region	F	TC	C/F	Coverage %	Country/Region	F	TC	C/F	Coverage %
R1	Indonesia	150	793	5,29	49,02	China	122	995	8,16	20,85
R2	Malaysia	45	411	9,13	14,71	Indonesia	72	453	6,29	12,31
R3	India	21	1209	57,57	6,86	United States	45	1287	28,60	7,69
R4	United States	12	1618	134,83	3,92	Malaysia	39	314	8,05	6,67
R5	Thailand	10	77	7,70	3,27	Australia	27	640	23,70	4,62
R6	United Kingdom	10	169	16,90	3,27	India	25	169	6,76	4,27
R7	Bangladesh	9	30	3,33	2,94	United Kingdom	22	929	42,23	3,76
R8	China	8	38	4,75	2,61	Canada	18	167	9,28	3,08
R9	Belgium	7	156	22,29	2,29	South Africa	17	250	14,71	2,91
R10	Mexico	7	59	8,43	2,29	Taiwan	16	103	6,44	2,74

*R = rank; F = frequency (number of articles); TC = Total Citation
(number of citations received by authors); TC/F = Average citations received by authors

Based on the Scopus database, Indonesia is the country of origin for the most research on mangrove ecotourism, accounting for 49.02% of all documents. Meanwhile, China ranks top in the WoS database as the country of creation for studies on mangrove ecotourism, with 20.85% coverage from all publications. Nonetheless, papers from the United States continue to receive the most citations, with 1,618 and 1,287 in the Scopus and WoS databases, respectively. In addition, only six countries/regions have the most Scopus and WoS publications on mangrove ecotourism issues.

The six countries are spread across Asia, North America, and Europe, including: a) Indonesia; b) Malaysia; c) China; d) India; e) the United States; and f) the United Kingdom (Figure 4). Furthermore, The finding in Table 8 is relatively similar to the analysis presented by Liu and Li (2020), which highlighted that from 1990 to 2016, the ten countries producing the most ecotourism publications in general were a) the United States; b) China; c) the United Kingdom; d) Australia; e) Canada; f) South Africa; g) Brazil; f) Malaysia; h) Spain; and i) Taiwan. This means that United States-based authors dominate publications related to ecotourism in general, because scholars from the country have studied ecotourism extensively and collaborated with more than 20 countries authors to publish important works in ecotourism issues (Singh et al., 2022). Meanwhile, the majority of these countries and regions are among the top ten countries and regions with the most publications on mangrove ecotourism topics. Only Brazil and Spain were excluded from this list.
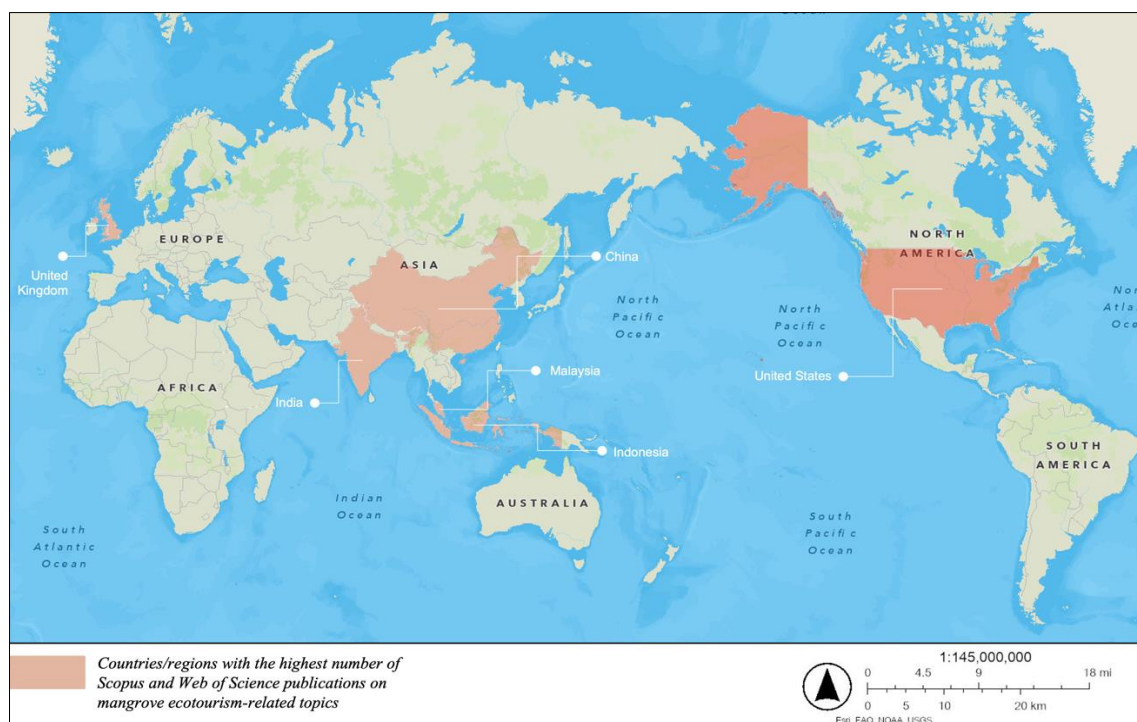
Figure 4. Map of countries/regions with the highest number of Scopus and Web of Science (WoS) publications on mangrove ecotourism-related topics (Source: Authors using QGIS 3.28. Software, 2023)

This study additionally employed an evaluation of the number of documents and citations in institutions besides the countries/regions of origin to further investigate the geographical distribution of publications on mangrove ecotourism research. Interestingly, Asian universities in Malaysia, Thailand, China, Taiwan, and Indonesia contribute to the top ten institutions with the most publications on mangrove ecotourism issues in both the Scopus and WoS databases.

Universiti Malaya in Malaysia has the most publications on mangrove ecotourism in the Scopus database, with six documents. Meanwhile, the Chinese Academy of Sciences, China has the most publications on mangrove ecotourism-related issues in the WoS database, with nine documents. This finding is closely similar to an article from Liu and Li (2020), who argued that the Chinese Academy of Sciences, China, produced the most ecotourism research papers in general between 1990 and 2016, with 31 documents. Meanwhile, according to the Scopus and WoS databases, only a few institutions outside of Asia are ranked in the top ten institutions for publications on mangrove ecotourism, including: a) University of Plymouth and Plymouth Marine Laboratory, United Kingdom; b) Université Libre de Bruxelles, Belgium; and c) University of Johannesburg, South Africa. For more details, Table 7 shows the most prolific institutions in the world that publish academic documents on mangrove ecotourism topics.

Table 7. Institutions with the most publications on mangrove ecotourism topic (Source: Author's elaboration, 2023)

R	Scopus				Web of Science (WoS)			
	Institution	F	TC	C/F	Institution	F	TC	C/F
R1	Universiti Malaya	6	21	3,5	Chinese Academy of Sciences	9	333	37,0
R2	Prince of Songkla University	2	13	6,5	Bogor Agricultural University	7	326	46,6
R3	Universiti Putra Malaysia	2	12	6	Universiti Teknologi Malaysia	5	89	17,8
R4	University of Plymouth	2	7	3,5	Université Libre de Bruxelles	5	74	14,8
R5	Playmouth Marine Laboratory	2	7	3,5	University of Johannesburg	5	71	14,2
R6	Peking University Shenzhen Graduate School	2	4	2	Sun Yat-Sen University	5	66	13,2
R7	Lampung University	2	3	1,5	Universiti Kebangsaan Malaysia	7	52	7,4
R8	Central Police University Taiwan	2	3	1,5	Universiti Putra Malaya	5	43	8,6
R9	University of Riau	2	2	1	China University of Geosciences	5	21	4,2
R10	Gadjah Mada University	2	2	1	Diponegoro University	5	6	1,2

* R = Rank; F = Frequency (number of articles); TC = Total Citation (number of citations received by country); C/F = Average citations received by institution; C = Coverage (percentage coverage paper by a country in database)

In fact, Asia has the world's largest mangrove area, which is intrinsically associated with Asian institutions playing an influential role in publishing academic publications on mangrove ecotourism. South and Southeast Asia are home to 41.4% of the world's mangroves, covering approximately 8 million hectares (Kathiresan and Bingham, 2001; Spalding, 1997). To be more specific, major mangrove forests are currently found in India, Bangladesh, Malaysia, Myanmar, Vietnam, Thailand, the Philippines, and Indonesia, which have the world's largest mangrove cover, accounting for up to half of Asia's mangroves with 3.3 million ha (Alongi, 2015; Donato et al., 2011; Mursyid et al., 2021). This finding implies that the production of knowledge, evidenced by published scientific articles or documents, is closely related to the proximity to the object or locus of research. The geographical distribution of publications on mangrove ecotourism is strongly influenced by the geographical distribution of mangroves and mangrove ecosystems. Our finding also confirms Wardle et al.'s (2021) statement that the majority of the sites studied related to ecotourism issues in general are located in developing countries.

6. Most cited documents

This section explains the most frequently referenced documents on mangrove ecotourism identified in the Scopus and Web of Science (WoS) databases. Most cited documents are vital to debate to determine which scientific publications, based on total citations, are the most significant in the field of study. Surprisingly, there were significant differences between the most cited documents in Scopus and the WoS database on mangrove ecotourism publications. As a result, this study attempted to divide the most referenced documents into two categories rather than striving to incorporate them so that the distinctions discovered could be examined further. On the other hand, most of the top ten most-referenced publications in the Scopus and WoS databases are journal articles. Only one document has a different type, which is a book chapter.

Tables 8 and 9 list the top ten prominent documents in the mangrove ecotourism domains in terms of citations in the Scopus and WoS databases, respectively. Of the 10 most frequently cited documents in both the Scopus and WoS databases, only a few were older than 20 years. In general, they address the discussion on mangrove ecosystem utilisation, including ecotourism objectives and their correlation with environmental issues. The ten most frequently cited documents in the context of mangrove ecotourism studies use a variety of methods, including quantitative and qualitative literature reviews, participatory reflection and action, stakeholder analysis, Q methodology, participatory Multi-criteria Decision Analysis (MCDA), exploratory case studies, bibliometric analysis, spatial mapping, and social big data analysis. Furthermore, because only 8% of the documents in the two databases are similar in terms of content, only one of the top ten most referenced documents in both the Scopus and WoS databases is the same: a publication from Murdiyarso et al. (2015), published in the Nature Climate Change journal.

The article generally examined the potential of Indonesia's ecosystem-service mangrove forests for climate change mitigation, one of which intersects with the commercial use of mangrove forests for tourism. This article is ranked second in the Scopus and WoS databases, with 411 and 324 total citations, respectively. The findings obviously suggest that the other nine most-referenced documents in the Scopus and WoS databases are substantially different.

Table 8. Most Cited Documents in the Scopus Database (Source: Authors elaboration based on Scopus database, 2023)

Rank	Authors (year)	Document Type	Source (SJR Rank)	Total Citation	Methodology	Results
R1	Kathiresan and Bingham (2001)	Book Chapter	Advances in Marine Biology (Q4)	1094	Descriptive analysis, Qualitative literature review	Mangroves play vital ecological roles. In addition to serving as an important fishery resource, mangroves may be developed as a source of high-value commercial items, including through ecotourism.
R2	Murdiyarso et al. (2015)	Article Journal	Nature Climate Change (Q1)	411	Conceptual article, Quantitative literature review	The conservation of carbon-rich mangroves in the Indonesian archipelago should be a high priority component of climate-change mitigation strategies. Some points were correlated with ecotourism initiatives.
R3	Praveena et al. (2008)	Article Journal	International Journal of Environmental Research (Q2)	57	Descriptive statistics, Geo-accumulation index	The Mengkaboong Lagoon mangrove habitat is essential for a variety of activities, including ecotourism. The Mengkabong mangrove sediment was unpolluted, according to geo-accumulation index calculations.
R4	Chong (2006)	Article Journal	Aquatic Ecosystem Health and Management (Q3)	55	Qualitative literature review	In Malaysia, mangrove habitats are frequently used in unsustainable practises, particularly when converted for agriculture, aquaculture, urban, and industrial development. On the other hand, ecotourism is considered a method of gaining public support for conservation and responsible utilisation.
R5	Satyanarayana et al. (2012)	Article Journal	Ambio (Q1)	52	Participatory reflection and action, Stakeholder analysis	Peri-urban and urban populations have varied usage of mangrove resources, knowledge of mangroves, and perceptions of ecosystem dynamics. Recent agenda items for ecotourism purposes in the Tanbi Wetland National Park (TWNP), Gambia, have gained positive responses from stakeholders.
R6	Thompson et al. (2017)	Article Journal	Journal of Sustainable Tourism (Q1)	47	Exploratory case study	The research shows that the normative approach, which serves as the framework for how ecotourism should be practiced, must be balanced with various understandings, motivations, and capacities of ecotourism entrepreneurs based on empirical conditions, as well as the effectiveness of the system of governance.
R7	Thompson and Friess (2019)	Article Journal	Journal of Environmental Management (Q1)	41	Participatory Multi-criteria Decision Analysis (MCDA)	Stakeholder preferences in managing and conserving mangrove ecosystems emphasize various approaches, including PES, ecotourism, biocharcoal, and NTFP enterprises, rather than a single approach such as PES alone.
R8	Ochoa-Gómez et al. (2019)	Article Journal	Forest Ecology and Management (Q1)	37	Quantitative assessment	Ecosystem Services (ESs) provided by mangrove wetlands in La Paz Bay, Mexico were identified in this study, including ecotourism and providing (fisheries) services.
R9	Salam et al. (2000)	Article Journal	Anatolia: An International Journal of Tourism and Hospitality Research (Q1)	37	Conceptual article, Qualitative literature review	Ecotourism has enormous potential to support the Sundarbans mangrove forest, a UNESCO World Heritage Site, achieve sustainability.
R10	Hugé et al. (2016)	Article Journal	Journal of Environmental Management (Q1)	35	Interviews, Semi-quantitative Q methodology	Mangrove management is viewed differently by different parties in Peninsular Malaysia. The three main discourses on mangrove management, namely a) the optimisation discourse; b) the 'change for the better' discourse, which focuses on increasingly participatory management and ecotourism; and c) the conservative 'business as usual' discourse, all have different perspectives on criteria regarding to: a) resource systems; b) resource units; and c) users.

Table 9. Most Cited Documents in the Web of Science (WoS) Database
(Source: Authors elaboration based on Web of Science (Wos) database, 2023)

Rank	Authors (year)	Document Type	Source (SJR Rank)	Total Citation	Methodology	Results
R1	D'Amato et al. (2017)	Article Journal	Journal of Cleaner Production (Q1)	437	Bibliometric analysis	The geographical distributions of three concepts, namely Circular Economy (CE), Bioeconomy (BE), and Green Economy (GE), differ, with Chinese supremacy in CE research, a significant European BE focus, and a main global reach for GE. In terms of the social dimension, the Green Economy includes additional aspects at the local level (for example, ecotourism and education).
R2	Murdiyarso et al. (2015)	Article Journal	Nature Climate Change (Q1)	324	Conceptual article, Quantitative literature review	The conservation of carbon-rich mangroves in the Indonesian archipelago should be a high priority component of climate-change mitigation strategies. Some points were correlated with ecotourism initiatives.
R3	Airoldi et al. (2005)	Article Journal	Coastal Engineering (Q1)	267	Conceptual article, Qualitative literature review	The expansion of coastal defence structures may have a significant impact on regional species diversity by lowering isolation barriers, facilitating the spread of non-native species, and increasing habitat heterogeneity. In some cases, this may increase habitat complexity and foster diverse assemblages for ecotourism.

Rank	Authors (year)	Document Type	Source (SJR Rank)	Total Citation	Methodology	Results
R4	Hunter and Shaw (2007)	Article Journal	Tourism Management (Q1)	205	Conceptual article, Quantitative literature review	According to the ecological footprint as key indicator of sustainable tourism, some ecotourism products are claimed to have the ability to contribute positively to global resource conservation.
R5	Wang et al. (2006)	Article Journal	Environmental Monitoring and Assessment (Q2)	171	Spatial mapping, Quantitative assessment	Sanjiang Plain, as the inland freshwater wetland area, has remarkable scenery and a distinct cultural tradition that cannot be found in other locations. In this area, ecotourism may be an appropriate decision to boost the regional economy.
R6	Mbaiwa (2003)	Article Journal	Journal of Arid Environments (Q1)	160	Qualitative analysis	Because foreign ownership dominates the Okavango Delta (eco)tourism industry, it can be classified as enclave tourism or internal colonialism. Enclave tourism raises social and environmental concerns, such as operators' desire to maximize profits in a short period, even at the expense of ecology.
R7	Lu and Li (2006)	Article Journal	Aquaculture (Q1)	152	Qualitative literature review	It would be beneficial to exploit and conserve rice and fish farming as ecotourism resources in order to increase the income of farmers while also conserving and developing this important indigenous agro-culture.
R8	Tu et al. (2018)	Article Journal	Habitat International (Q1)	149	Field survey, Participatory rural appraisal	Huangshandian village has experienced many industrial developments since 2000, ranging from traditional agriculture to primary processing and eco-tourism. Traditional agricultural production is gradually losing its function, and industrial production, ecological culture, and other multifunctional rural values have emerged.
R9	Seaman (2007)	Article Journal	Hydrobiologia (Q1)	121	Conceptual article, Qualitative literature review	Artificial habitats in marine ecosystems can be applied to various objectives, including biological conservation and enhancement, as well as social and economic development, one of which is ecotourism.
R10	Kim et al. (2019)	Article Journal	Tourism Management (Q1)	83	Social big data analysis	Social big data analysis, such as using geo-referenced images from Flickr data, may contribute to improving protected area management by evaluating nature-based tourism in protected areas, including those used for ecotourism.

CONCLUSION

Mangrove ecotourism discussions in the Scopus database began in 1992, while those in the Web of Science (WoS) database started six years earlier, in 1986. The finding shows that the conceptual lens of ecotourism associated with mangrove ecosystems has existed concurrently since the concept's booming in the mid-1980s. Mangrove ecotourism research has increased over the last five years, culminating in 2021. Unlike previous studies that employed similar methods, the results of this study revealed that the share of documents regarding mangrove ecotourism in the Scopus and WoS databases was only eight percent. This means that the vast majority of scientific publications in the Scopus and WoS databases are separate from one another. In this sense, the WoS database has more unique documents and more sources than Scopus in the context of mangrove ecotourism publications.

The most cited documents in the Scopus and WoS databases on mangrove ecotourism publications were significantly different. Only one of the top ten most referenced documents in both the Scopus and WoS databases was the same. Subsequently, the majority of the top ten most-referenced publications in the Scopus and WoS databases are journal articles. Only one document has a different type, which is a book chapter. On the other hand, keywords intersecting environmental and sustainability issues dominated the top ten prominent keywords identified in both Scopus and WoS databases related to mangrove ecotourism publications. Conservation, biodiversity, protected areas, ecology, forestry, ecosystem services, and sustainable development were among the keywords. The keywords that most predominantly emerge in mangrove ecotourism publications are in line with the global discourse on the urgency of preserving mangrove ecosystems, which, according to several scientific papers and research, are deteriorating or even being harmed by human exploitation.

Furthermore, the Scopus database contains 930 authors who write about mangrove ecotourism, based on the findings. The number of authors is lower compared to the Web of Science (WoS) database, which has 1,776 authors. The vast majority of the authors (88.9% and 97.5%, respectively) have only one publication in both the Scopus and WoS databases. So far, Farid Dahdouh-Guebas is the most contributing researcher, with five Scopus publications and four WoS publications on mangrove ecotourism research domains. Meanwhile, in the context of geographical distribution, only six countries/regions have the most Scopus and WoS publications on mangrove ecotourism research. The six countries are spread across Asia, North America, and Europe, including: a) Indonesia; b) Malaysia; c) China; d) India; e) the United States; and f) the United Kingdom. In the Scopus database, Indonesia has the highest number of scientific documents regarding mangrove ecotourism, whereas China holds the most in the WoS database.

Subsequently, Universiti Malaya in Malaysia has the most publications, with six publications on mangrove ecotourism in the Scopus database. Meanwhile, the Chinese Academy of Sciences in China has the most publications in the WoS database on mangrove ecotourism-related concerns, with nine documents. Finally, this study has limitations because it only employed data from English-language scientific publications.

The authors suggest that future research on mangrove ecotourism using similar methods may accommodate academic works that are not limited to English-language publications.

REFERENCES

Airoldi, L., Abbiati, M., Beck, M.W., Hawkins, S.J., Jonsson, P.R., Martin, D., Moschella, P.S., Sundelöf, A., Thompson, R.C., & Åberg, P. (2005). An ecological perspective on the deployment and design of low-crested and other hard coastal defence structures. *Coastal Engineering*, *52*(10–11), 1073–1087. https://doi.org/10.1016/j.coastaleng.2005.09.007

Alongi, D.M. (2014). Carbon cycling and storage in mangrove forests. *Annual Review of Marine Science*, *6*, 195–219. https://doi.org/10.1146/annurev-marine-010213-135020

Alongi, D.M. (2015). The impact of climate change on mangrove forests. *Current Climate Change Reports*, *1*(1), 30–39. https://doi.org/10.1007/s40641-015-0002-x

Alryalat, S.A.S., Malkawi, L.W., & Momani, S.M. (2019). Comparing bibliometric analysis using Pubmed, Scopus, and Web of Science databases. *Journal of Visualized Experiments*, *2019*(152). https://doi.org/10.3791/58494

Álvarez-García, J., Durán-Sánchez, A., & del Río-Rama, M. de la C. (2018). Scientific coverage in community-based tourism: Sustainable tourism and strategy for social development. *Sustainability (Switzerland)*, *10*(4). https://doi.org/10.3390/su10041158

Avau, J., Cunha-Lignon, M., De Myttenaere, B., Godart, M.F., & Dahdouh-Guebas, F. (2011). The commercial images promoting Caribbean mangroves to tourists: Case studies in Jamaica, Guadeloupe and Martinique. *Journal of Coastal Research*, *64*, 1277–1281.

Barbier, E.B., Hacker, S.D., Kennedy, C., Koch, E.W., Stier, A.C., & Silliman, B.R. (2011). The value of estuarine and coastal ecosystem services. *Ecological Monographs*, *81*(2), 169–193. https://doi.org/10.1890/10-1510.1

Bearman, T.C., & Kunberger, W.A. (1977). *A study of coverage overlap among fourteen major science and technology abstracting services*. National Federation of Abstracting and Indexing Services.

Bhowmik, P. (2021). Heritage tourism: A bibliometric review. *Anatolia*, *32*(3), 387–403. https://doi.org/10.1080/13032917.2021.1875250

Björk, P. (2000). Ecotourism from a conceptual perspective, an extended definition of a unique tourism form. *International Journal of Tourism Research*, *202*(2), 189–202.

Bunting, P., Rosenqvist, A., Lucas, R.M., Rebelo, L.M., Hilarides, L., Thomas, N., Hardy, A., Itoh, T., Shimada, M., & Finlayson, C.M. (2018). The global mangrove watch - A new 2010 global baseline of mangrove extent. *Remote Sensing*, *10*(10). https://doi.org/10.3390/rs10101669

Chong, V.C. (2006). Sustainable utilization and management of Mangrove ecosystems of Malaysia. In *Aquatic Ecosystem Health and Management*, 9(2), 249–260). Michigan State University Press. https://doi.org/10.1080/14634980600717084

Chou, L.Y., & Ma, Z. (2010). An author-based citation and co-citation analysis on tourism research: 1998-2007. *Asia Pacific Management Review*, *15*(4), 585–600.

Comerio, N., & Strozzi, F. (2019). Tourism and its economic impact: A literature review using bibliometric tools. *Tourism Economics*, *25*(1), 109–131. https://doi.org/10.1177/1354816618793762

D'Amato, D., Droste, N., Allen, B., Kettunen, M., Lähtinen, K., Korhonen, J., Leskinen, P., Matthies, B.D., & Toppinen, A. (2017). Green, circular, bio economy: A comparative analysis of sustainability avenues. *Journal of Cleaner Production*, *168*, 716–734. https://doi.org/10.1016/j.jclepro.2017.09.053

De la Hoz-Correa, A., Muñoz-Leiva, F., & Bakucz, M. (2018). Past themes and future trends in medical tourism research: A co-word analysis. *Tourism Management*, *65*, 200–211. https://doi.org/10.1016/j.tourman.2017.10.001

Demir, S., Esbah, H., & AKGÜN, A.A. (2016). Quantitative SWOT analysis for prioritizing ecotourism-planning decisions in protected areas: Igneada case. *International Journal of Sustainable Development and World Ecology*, *23*(5), 456–468. https://doi.org/10.1080/13504509.2015.1136709

Diamantis, D. (1999). The concept of ecotourism: Evolution and trends. *Current Issues in Tourism*, *2*(2–3), 93–122. https://doi.org/10.1080/13683509908667847

Donato, D.C., Kauffman, J.B., Murdiyarso, D., Kurnianto, S., Stidham, M., & Kanninen, M. (2011). Mangroves among the most carbon-rich forests in the tropics. *Nature Geoscience*, *4*(5), 293–297. https://doi.org/10.1038/ngeo1123

Donohoe, H.M., & Needham, R.D. (2006). Ecotourism: The evolving contemporary definition. *Journal of Ecotourism*, *5*(3), 192–210. https://doi.org/10.2167/joe152.0

Durán-Sánchez, A., Álvarez-García, J., del Río-Rama, M. de la C., & Oliveira, C. (2018). Religious tourism and pilgrimage: Bibliometric overview. *Religions*, *9*(9). https://doi.org/10.3390/rel9090249

Durán-Sánchez, A., Álvarez -García, J., del Río-Rama, M. de la C., & Rosado-Cebrián, B. (2019). Science mapping of the knowledge base on tourism innovation. *Sustainability (Switzerland)*, *11*(12). https://doi.org/10.3390/SU11123352

Durieux, V., & Gevenois, P.A. (2010). Bibliometric indicators: Quality masurements of sientific publication. *Radiology*, *255*(2), 342–351. https://doi.org/10.1148/radiol.09090626

FAO. (2007). The World's Mangroves 1980-2005. FAO Forestry Paper 153, Food and Agriculture Organization, Rome.

Feller, I.C., Friess, D.A., Krauss, K.W., & Lewis, R.R. (2017). The state of the world's mangroves in the 21st century under climate change. *Hydrobiologia*, *803*, 1–12. https://doi.org/10.1007/s10750-017-3331-z

Fennell, D., & Weaver, D. (2005). The ecotourium concept and tourism-conservation symbiosis. *Journal of Sustainable Tourism*, *13*(4), 373–390. https://doi.org/10.1080/09669580508668563

Fennell, D., & Dowling, R.K. (2003). *Ecotourism Policy and Planning*. CABI Publishing.

Figueroa-Domecq, C., Pritchard, A., Segovia-Pérez, M., Morgan, N., & Villacé-Molinero, T. (2015). Tourism gender research: A critical accounting. *Annals of Tourism Research*, *52*, 87–103. https://doi.org/10.1016/j.annals.2015.02.001

Friess, D.A. (2016). Mangrove forests. *Current Biology*, *26*(16), R746–R748. https://doi.org/10.1016/j.cub.2016.04.004

Friess, D.A. (2017). Ecotourism as a tool for sustainable development. *Sumatra Journal of Disaster, Geography and Geography Education*, *1*(1), 24–35. https://doi.org/10.35808/ersj/802

Friess, D.A., Thompson, B.S., Brown, B., Amir, A.A., Cameron, C., Koldewey, H.J., Sasmito, S.D., & Sidik, F. (2016). Policy challenges and approaches for the conservation of mangrove forests in Southeast Asia. *Conservation Biology: The Journal of the Society for Conservation Biology*, *30*(5), 933–949. https://doi.org/10.1111/cobi.12784

Garrigos-Simon, F.J., Narangajavana-Kaosiri, Y., & Lengua-Lengua, I. (2018). Tourism and sustainability: A bibliometric and visualization analysis. *Sustainability (Switzerland)*, *10*(6), 1–23. https://doi.org/10.3390/su10061976

Garrigos-Simon, F.J., Narangajavana-Kaosiri, Y., & Narangajavana, Y. (2019). Quality in tourism literature: A bibliometric review. *Sustainability (Switzerland)*, *11*(14), 1–22. https://doi.org/10.3390/su11143859

Gluck, M. (1990). A review of journal coverage overlap with an extension to the definition of overlap. *Journal of the American Society for Information Science*, *41*(1), 43–60. https://doi.org/10.1002/(SICI)1097-4571(199001)41:1<43::AID-ASI4>3.0.CO;2-P

Hakim, L., Siswanto, D., & Makagoshi, N. (2017). Mangrove conservation in East Java: The ecotourism development perspectives. *Journal of Tropical Life Science*, *7*(3), 277–285. https://doi.org/10.11594/jtls.07.03.14

Hall, C.M. (2011). Publish and perish? Bibliometric analysis, journal ranking and the assessment of research quality in tourism. *Tourism Management*, *32*(1), 16–27. https://doi.org/10.1016/j.tourman.2010.07.001

Hamilton, S.E., & Casey, D. (2016). Creation of a high spatio-temporal resolution global database of continuous mangrove forest cover for the 21st century (CGMFC-21). *Global Ecology and Biogeography*, *25*(6), 729–738. https://doi.org/10.1111/geb.12449

Hasana, U., Swain, S.K., & George, B. (2022). A bibliometric analysis of ecotourism: A safeguard strategy in protected areas. *Regional Sustainability*, *3*(1), 27–40. https://doi.org/10.1016/j.regsus.2022.03.001

Heersmink, R., van den Hoven, J., van Eck, N.J., & van den Berg, J. (2011). Bibliometric mapping of computer and information ethics. *Ethics and Information Technology*, *13*(3), 241–249. https://doi.org/10.1007/s10676-011-9273-7

Honey, M. (2008). *Ecotourism and Sustainable Development: Who Owns Paradise?* Island Press. https://doi.org/10.1016/s0261-5177(00)00045-5

Hood, W.W., & Wilson, C.S. (2003). Overlap in bibliographic databases. *Journal of the American Society for Information Science and Technology*, *54*(12), 1091–1103. https://doi.org/10.1002/asi.10301

Howard, J., Sutton-Grier, A., Herr, D., Kleypas, J., Landis, E., Mcleod, E., Pidgeon, E., & Simpson, S. (2017). Clarifying the role of coastal and marine systems in climate mitigation. *Frontiers in Ecology and the Environment*, *15*(1), 42–50. https://doi.org/10.1002/fee.1451

Hugé, J., Vande Velde, K., Benitez-Capistros, F., Japay, J.H., Satyanarayana, B., Nazrin Ishak, M., Quispe-Zuniga, M., Mohd Lokman, B.H., Sulong, I., Koedam, N., & Dahdouh-Guebas, F. (2016). Mapping discourses using Q methodology in Matang Mangrove Forest, Malaysia. *Journal of Environmental Management*, *183*, 988–997. https://doi.org/10.1016/j.jenvman.2016.09.046

Hunter, C., & Shaw, J. (2007). The ecological footprint as a key indicator of sustainable tourism. *Tourism Management*, *28*(1), 46–57. https://doi.org/10.1016/j.tourman.2005.07.016

Jiang, Y., Ritchie, B.W., & Benckendorff, P. (2019). Bibliometric visualisation: an application in tourism crisis and disaster management research. *Current Issues in Tourism*, *22*(16), 1925–1957. https://doi.org/10.1080/13683500.2017.1408574

Kabil, M., Ali, M.A., Marzouk, A., & Dávid, L.D. (2022). Gender Perspectives in Tourism Studies: A Comparative Bibliometric Analysis in the MENA Region. *Tourism Planning and Development*, 1–23. https://doi.org/10.1080/21568316.2022.2050419

Kanniah, K.D., Sheikhi, A., Cracknell, A.P., Goh, H.C., Tan, K.P., Ho, C.S., & Rasli, F.N. (2015). Satellite images for monitoring mangrove cover changes in a fast growing economic region in southern Peninsular Malaysia. *Remote Sensing*, *7*(11), 14360–14385. https://doi.org/10.3390/rs71114360

Kathiresan, K., & Bingham, B.L. (2001). Biology of Mangroves and Mangrove Ecosystems. In *Advances in Marine Biology*, *40*, 1–171.

Kauffman, J.B., Adame, M.F., Arifanti, V.B., Schile-Beers, L.M., Bernardino, A.F., Bhomia, R.K., Donato, D.C., Feller, I.C., Ferreira, T.O., Jesus Garcia, M. del C., MacKenzie, R.A., Megonigal, J.P., Murdiyarso, D., Simpson, L., & Hernández Trejo, H. (2020). Total ecosystem carbon stocks of mangroves across broad global environmental and physical gradients. *Ecological Monographs*, *90*(2). https://doi.org/10.1002/ecm.1405

Keathley-Herring, H., Van Aken, E., Gonzalez-Aleu, F., Deschamps, F., Letens, G., & Orlandini, P.C. (2016). Assessing the maturity of a research area: bibliometric review and proposed framework. *Scientometrics*, *109*(2), 927–951. https://doi.org/10.1007/s11192-016-2096-x

Khanra, S., Dhir, A., Kaur, P., & Mäntymäki, M. (2021). Bibliometric analysis and literature review of ecotourism: Toward sustainable development. *Tourism Management Perspectives*, *37*(November 2020). https://doi.org/10.1016/j.tmp.2020.100777

Khoo-Lattimore, C., Mura, P., & Yung, R. (2019). The time has come: a systematic literature review of mixed methods research in tourism. *Current Issues in Tourism*, *22*(13), 1531–1550. https://doi.org/10.1080/13683500.2017.1406900

Kim, Y., Kim, C., Lee, D.K., Lee, H., & Andrada, R.I.T. (2019). Quantifying nature-based tourism in protected areas in developing countries by using social big data. *Tourism Management*, *72*, 249–256. https://doi.org/10.1016/j.tourman.2018.12.005

Köseoglu, M.A., Mehraliyev, F., Xiao, H., & King, B. (2021). Tourism knowledge: Its creation and dissemination by region. *Anatolia*, *34*(2), 190–209. https://doi.org/10.1080/13032917.2021.2005647

Köseoglu, M.A., Rahimi, R., Okumus, F., & Liu, J. (2016). Bibliometric studies in tourism. *Annals of Tourism Research*, *61*, 180–198. https://doi.org/10.1016/j.annals.2016.10.006

Köseoglu, M.A., Sehitoglu, Y., & Craft, J. (2015). Academic foundations of hospitality management research with an emerging country focus: A citation and co-citation analysis. *International Journal of Hospitality Management*, *45*, 130–144. https://doi.org/10.1016/j.ijhm.2014.12.004

Köseoglu, M.A., Sehitoglu, Y., & Parnell, J.A. (2015). A bibliometric analysis of scholarly work in leading tourism and hospitality journals: the case of Turkey. *Anatolia*, *26*(3), 359–371. https://doi.org/10.1080/13032917.2014.963631

Köseoglu, M.A., Sehitoglu, Y., Ross, G., & Parnell, J.A. (2016). The evolution of business ethics research in the realm of tourism and hospitality: A bibliometric analysis. *International Journal of Contemporary Hospitality Management*, *28*(8), 1598–1621. https://doi.org/10.1108/IJCHM-04-2015-0188

Kumar, S., Valeri, M., Kumar, V., Kumar, S., & Bhatt, I.K. (2023). Mapping the Research Trends on Sports Tourism and Sustainability: A Bibliometric Analysis". In Valeri, M. (Ed.) *Sport and Tourism (New Perspectives in Tourism and Hospitality Management)*, Emerald Publishing Limited, Bingley, 1-22. https://doi.org/10.1108/978-1-83753-240-720231001

Kusmana, C. (2018). Mangrove plant utilization by local coastal community in Indonesia. *IOP Conference Series: Earth and Environmental Science*, *196*(1). https://doi.org/10.1088/1755-1315/196/1/012028

Liao, H., Tang, M., Luo, L., Li, C., Chiclana, F., & Zeng, X.J. (2018). A bibliometric analysis and visualization of medical big data research. *Sustainability (Switzerland)*, *10*(1), 1–18. https://doi.org/10.3390/su10010166

Liu, S., & Li, W.Y. (2020). Ecotourism research progress: A bibliometric analysis during 1990–2016. *SAGE Open*, *10*(2). https://doi.org/10.1177/2158244020924052

Lu, J., & Li, X. (2006). Review of rice-fish-farming systems in China - One of the Globally Important Ingenious Agricultural Heritage Systems (GIAHS). *Aquaculture*, *260*(1–4), 106–113. https://doi.org/10.1016/j.aquaculture.2006.05.059

Marasinghe, S., Perera, P., Simpson, G.D., & Newsome, D. (2021). Nature-based tourism development in coastal wetlands of Sri Lanka: An Importance–Performance analysis at Maduganga Mangrove Estuary. *Journal of Outdoor Recreation and Tourism*, *33*(October 2020), 100345. https://doi.org/10.1016/j.jort.2020.100345

Mariani, M., & Baggio, R. (2022). Big data and analytics in hospitality and tourism: a systematic literature review. *International Journal of Contemporary Hospitality Management*, *34*(1), 231–278. https://doi.org/10.1108/IJCHM-03-2021-0301

Mbaiwa, J.E. (2003). The socio-economic and environmental impacts of tourism development on the Okavango Delta, north-western Botswana. *Journal of Arid Environments*, *54*(2), 447–467. https://doi.org/10.1006/jare.2002.1101

McKercher, B. (2010). Academia and the Evolution of Ecotourism. *Tourism Recreation Research*, *35*(1), 15–26. https://doi.org/10.1080/02508281.2010.11081615

Mehvar, S., Filatova, T., Dastgheib, A., de Ruyter van Steveninck, E., & Ranasinghe, R. (2018). Quantifying economic value of coastal ecosystem services: A review. *Journal of Marine Science and Engineering*, *6*(1). https://doi.org/10.3390/jmse6010005

Mendoza-González, G., Martínez, M.L., Lithgow, D., Pérez-Maqueo, O., & Simonin, P. (2012). Land use change and its effects on the value of ecosystem services along the coast of the Gulf of Mexico. *Ecological Economics*, *82*, 23–32. https://doi.org/10.1016/j.ecolecon.2012.07.018

Merigó, J.M., Cancino, C.A., Coronado, F., & Urbano, D. (2016). Academic research in innovation: a country analysis. *Scientometrics*, *108*(2), 559–593. https://doi.org/10.1007/s11192-016-1984-4

Merigó, J.M., Mas-Tur, A., Roig-Tierno, N., & Ribeiro-Soriano, D. (2015). A bibliometric overview of the Journal of Business Research between 1973 and 2014. *Journal of Business Research*, *68*(12), 2645–2653. https://doi.org/10.1016/j.jbusres.2015.04.006

Meyer, D.E., Mehlman, D.W., Reeves, E.S., Origoni, R.B., Evans, D., & Sellers, D.W. (1983). Comparison Study of Overlap Among 21 Scientific Databases in Searching Pesticide Information. *On-Line Review*, *7*(1), 33–43. https://doi.org/10.1108/eb024120

Menon, D., Gunasekar, S., Dixit, S.K., Das, P., & Mandal, S. (2022). Present and prospective research themes for tourism and hospitality education post-COVID19: A bibliometric analysis. *Journal of Hospitality, Leisure, Sport and Tourism Education*, *30*. https://doi.org/10.1016/j.jhlste.2021.100360

Murdiyarso, D., Purbopuspito, J., Kauffman, J.B., Warren, M.W., Sasmito, S.D., Donato, D.C., Manuri, S., Krisnawati, H., Taberima, S., & Kurnianto, S. (2015). The potential of Indonesian mangrove forests for global climate change mitigation. *Nature Climate Change*, *5*(12), 1089–1092. https://doi.org/10.1038/nclimate2734

Mursyid, H., Daulay, M.H., Pratama, A.A., Laraswati, D., Novita, N., Malik, A., & Maryudi, A. (2021). Governance issues related to the management and conservation of mangrove ecosystems to support climate change mitigation actions in Indonesia. *Forest Policy and Economics*, *133*. https://doi.org/10.1016/j.forpol.2021.102622

Murtini, S., Kuspriyanto, & Kurniawati, A. (2018). Mangrove area development strategy wonorejo as ecotourism in surabaya. *Journal of Physics: Conference Series*, *953*(1). https://doi.org/10.1088/1742-6596/953/1/012174

Niñerola, A., Sánchez-Rebull, M.V., & Hernández-Lara, A.B. (2019). Tourism research on sustainability: A bibliometric analysis. *Sustainability (Switzerland)*, *11*(5), 1–17. https://doi.org/10.3390/su11051377

Ochoa-Gómez, J.G., Lluch-Cota, S.E., Rivera-Monroy, V.H., Lluch-Cota, D.B., Troyo-Diéguez, E., Oechel, W., & Serviere-Zaragoza, E. (2019). Mangrove wetland productivity and carbon stocks in an arid zone of the Gulf of California (La Paz Bay, Mexico). *Forest Ecology and Management*, *442*, 135–147. https://doi.org/10.1016/j.foreco.2019.03.059

Oliveira, O.J., Francisco da Silva, F., Juliani, F., César Ferreira Motta Barbosa, L., & Vieira Nunhes, T. (2019). Bibliometric method for mapping the state-of-the-art and identifying research gaps and trends in literature: An essential instrument to support the development of scientific projects. *Scientometrics Recent Advances*, 1–20. https://doi.org/10.5772/intechopen.85856

Pathmanandakumar, V., Chenoli, S.N., & Goh, H.C. (2021). Linkages between climate change and coastal tourism: A bibliometric analysis. *Sustainability (Switzerland)*, *13*(19), 1–21. https://doi.org/10.3390/su131910830

Polat, E., & Köseoglu, M.A. (2022). Wellness tourism scholarship: A research agenda. *Journal of Hospitality and Tourism Insights*. https://doi.org/10.1108/jhti-05-2022-0186

Praveena, S.M., Ahmed, A., Radojevic, M., Abdullah, M.H., & Aris, A.Z. (2008). Heavy metals in mangrove surface sediment of Mengkabong Lagoon, Sabah: Multivariate and geo-accumulation index approaches. *International Journal of Environmental Research*, *2*(2), 139–148.

Putri, A.E., Khadijah, U.L.S., & Novianti, E. (2020). Community empowerment in the development of mangrove tourism in batu karas of pangandaran, West Java. *Geojournal of Tourism and Geosites*, *31*(3), 972–978. https://doi.org/10.30892/gtg.31306-529

Rahman, T., Zudhy Irawan, M., Noor Tajudin, A., Rizka Fahmi Amrozi, M., & Widyatmoko, I. (2023). Knowledge mapping of cool pavement technologies for urban heat island Mitigation: A Systematic bibliometric analysis. In *Energy and Buildings*, 291. Elsevier Ltd. https://doi.org/10.1016/j.enbuild.2023.113133

Rodríguez-López, M.E., Alcántara-Pilar, J.M., Del Barrio-García, S., & Muñoz-Leiva, F. (2020). A review of restaurant research in the last two decades: A bibliometric analysis. *International Journal of Hospitality Management*, *87*(April), 102387. https://doi.org/10.1016/j.ijhm.2019.102387

Rudiastuti, A.W., Munawaroh, Setyawan, I.E., & Pramono, G.H. (2018). Coastal management strategy for small island: Ecotourism potency development in Karimata Island, West Kalimantan. *IOP Conference Series: Earth and Environmental Science*, *148*(1). https://doi.org/10.1088/1755-1315/148/1/012013

Ryan, C., Ninov, I., & Aziz, H. (2012). Ras Al Khor-Eco-tourism in constructed wetlands: Post modernity in the modernity of the Dubai landscape. *Tourism Management Perspectives*, *4*, 185–197. https://doi.org/10.1016/j.tmp.2012.08.006

Salam, M.A., Lindsay, G.R., & Beveridge, M.C.M. (2000). Eco-tourism to protect the reserve mangrove forest the Sundarbans and its flora and fauna. *Anatolia: An International Journal of Tourism and Hospitality Research*, *11*(1), 56–66.

Salouw, E., Aji, K.B., & Tahalea, S.P. (2023). Cross-Border Tourism : What We Can Learn So Far from Eminent Scientific Publications Using Bibliometric Analysis. *International Journal of Sustainable Development and Planning*, *18*(2), 457–464.

Samonte-Tan, G.P.B., White, A.T., Tercero, M.A., Diviva, J., Tabara, E., & Caballes, C. (2007). Economic valuation of coastal and marine resources: Bohol Marine Triangle, Philippines. *Coastal Management*, 35(2–3), 319–338. https://doi.org/10.1080/08920750601169634

Sánchez, A.D., de la Cruz Del Río Rama, M., & García, J.Á. (2017). Bibliometric analysis of publications on wine tourism in the databases Scopus and WoS. *European Research on Management and Business Economics*, 23(1), 8–15. https://doi.org/10.1016/j.iedeen.2016.02.001

Santos, L.C.M., Gasalla, M.A., Dahdouh-Guebas, F., & Bitencourt, M.D. (2017). Socio-ecological assessment for environmental planning in coastal fishery areas: A case study in Brazilian mangroves. *Ocean and Coastal Management*, 138, 60–69. https://doi.org/10.1016/j.ocecoaman.2017.01.009

Satyanarayana, B., Bhanderi, P., Debry, M., Maniatis, D., Foré, F., Badgie, D., Jammeh, K., Vanwing, T., Farcy, C., Koedam, N., & Dahdouh-Guebas, F. (2012). A socio-ecological assessment aiming at improved forest resource management and sustainable ecotourism development in the mangroves of Tanbi Wetland National Park, the Gambia, West Africa. *Ambio*, 41(5), 513–526. https://doi.org/10.1007/s13280-012-0248-7

Seaman, W. (2007). Artificial habitats and the restoration of degraded marine ecosystems and fisheries. *Hydrobiologia*, 580(1), 143–155. https://doi.org/10.1007/s10750-006-0457-9

Senbeto, D.L., Köseoglu, M.A., & King, B. (2021). Hospitality and Tourism Scholarship in Africa: A Literature-Based Agenda for Future Research. *Journal of Hospitality and Tourism Research*, 1–24. https://doi.org/10.1177/10963480211011540

Shasha, Z.T., Geng, Y., Sun, H., Musakwa, W., & Sun, L. (2020). Past, current, and future perspectives on eco-tourism: A bibliometric review between 2001 and 2018. *Environmental Science and Pollution Research*, 27(19), 23514–23528. https://doi.org/10.1007/s11356-020-08584-9

Simsek, E.K., & Kalipci, M.B. (2023). A bibliometric study on higher tourism education and curriculum. *Journal of Hospitality, Leisure, Sport and Tourism*, 33. https://doi.org/10.1016/j.jhlste.2023.100442

Singh, R., Sibi, P.S., & Sharma, P. (2022). Journal of ecotourism: A bibliometric analysis. *Journal of Ecotourism*, 21(1), 37–53. https://doi.org/10.1080/14724049.2021.1916509

Small, H.G. (1977). A co-citation model of a scientific specialty: A longitudinal study of collagen research. *Social Studies of Science*, 7(2), 139–166. https://doi.org/10.1177/030631277700700202

Spalding, M. (1997). The global distribution and status of mangrove ecosystems. *International News Letter of Coastal Management-Intercoast Network*, 20–21.

Spalding, M., Kainuma, M., & Collins, L. (2010). *World Atlas of Mangroves*. Earthscan.

Spalding, M., & Parrett, C.L. (2019). Global patterns in mangrove recreation and tourism. *Marine Policy*, 110, 103540. https://doi.org/10.1016/j.marpol.2019.103540

Thompson, B.S., & Friess, D.A. (2019). Stakeholder preferences for payments for ecosystem services (PES) versus other environmental management approaches for mangrove forests. *Journal of Environmental Management*, 233, 636–648. https://doi.org/10.1016/j.jenvman.2018.12.032

Thompson, B.S., Gillen, J., & Friess, D.A. (2018). Challenging the principles of ecotourism: insights from entrepreneurs on environmental and economic sustainability in Langkawi, Malaysia. *Journal of Sustainable Tourism*, 26(2), 257–276. https://doi.org/10.1080/09669582.2017.1343338

Trialfhianty, T.I., Muharram, F.W., Suadi, Quinn, C.H., & Beger, M. (2022). Spatial multi-criteria analysis to capture socio-economic factors in mangrove conservation. *Marine Policy*, 141. https://doi.org/10.1016/j.marpol.2022.105094

Tu, S., Long, H., Zhang, Y., Ge, D., & Qu, Y. (2018). Rural restructuring at village level under rapid urbanization in metropolitan suburbs of China and its implications for innovations in land use policy. *Habitat International*, 77, 143–152. https://doi.org/10.1016/j.habitatint.2017.12.001

Utkarsh, & Sigala, M. (2021). A bibliometric review of research on COVID-19 and tourism: Reflections for moving forward. *Tourism Management Perspectives*, 40. https://doi.org/10.1016/j.tmp.2021.100912

van Eck, N.J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

Valiela, I., Bowen, J.L., & York, J.K. (2001). Mangrove forests: One of the world's threatened major tropical environments. *BioScience*, 51(10), 807–815. https://doi.org/10.1641/0006-3568(2001)051[0807:MFOOTW]2.0.CO;2

Viana-Lora, A., & Nel-lo-Andreu, M.G. (2022). Bibliometric analysis of trends in COVID-19 and tourism. *Humanities and Social Sciences Communications*, 9(1). https://doi.org/10.1057/s41599-022-01194-5

Vishwakarma, P., & Mukherjee, S. (2019). Forty-three years journey of Tourism Recreation Research: a bibliometric analysis. *Tourism Recreation Research*, 44(4), 403–418. https://doi.org/10.1080/02508281.2019.1608066

Wang, Z., Zhang, B., Zhang, S., Li, X., Liu, D., Song, K., Li, J., Li, F., & Duan, H. (2006). Changes of land use and of ecosystem service values in Sanjiang Plain, Northeast China. *Environmental Monitoring and Assessment*, 112(1–3), 69–91. https://doi.org/10.1007/s10661-006-0312-5

Ward, R.D., Friess, D.A., Day, R.H., & Mackenzie, R.A. (2016). Impacts of climate change on mangrove ecosystems: a region by region overview. *Ecosystem Health and Sustainability*, 2(4). https://doi.org/10.1002/ehs2.1211

Wardle, C., Buckley, R., Shakeela, A., & Castley, J.G. (2021). Ecotourism's contributions to conservation: Analysing patterns in published studies. *Journal of Ecotourism*, 20(2), 99–129. https://doi.org/10.1080/14724049.2018.1424173.

Weaver, D. (2001). Ecotourism as mass tourism: Contradiction or reality? *Cornell Hotel and Restaurant Administration Quarterly*, 104–112.

Weaver, D. (2002). Asian ecotourism: Patterns and themes. *Tourism Geographies*, 4(2), 153–172. https://doi.org/10.1080/14616680210124936

Weaver, D.B., & Lawton, L.J. (2007). Twenty years on: The state of contemporary ecotourism research. *Tourism Management*, 28(5), 1168–1179. https://doi.org/10.1016/j.tourman.2007.03.004

Wijayanti, T., Salleh, N.H.M., Hashim, N.A., Mohd Saukani, M.N., & Abu Bakar, N. (2023). The feasibility of rural tourism in fostering real sustainable development in host communities. *Geojournal of Tourism and Geosites*, 46(1), 336–345. https://doi.org/10.30892/gtg.46137-1031

Windevoxhel, N.J., Rodríguez, J.J., & Lahmann, E.J. (1999). Situation of integrated coastal zone management in Central America: Experiences of the IUCN wetlands and coastal zone conservation program. *Ocean and Coastal Management*, 42(2–4), 257–282. https://doi.org/10.1016/S0964-5691(98)00057-X

Wong, A.K.F., Köseoglu, M.A., & Kim, S. (Sam). (2021). Creation and dissemination of hospitality and tourism research outputs in the new millennium. *International Journal of Contemporary Hospitality Management*, 33(2), 377–401. https://doi.org/10.1108/IJCHM-05-2020-0493

Yuan, Y., Gretzel, U., & Tseng, Y.H. (2015). Revealing the nature of contemporary tourism research: Extracting common subject areas through bibliographic coupling. *International Journal of Tourism Research*, 17(5), 317–431. https://doi.org/10.1002/jtr

Zupic, I., & Čater, T. (2015). Bibliometric methods in management and organization. *Organizational Research Methods*, 18(3), 429–472. https://doi.org/10.1177/1094428114562629

WORKPLACE SEXUAL HARASSMENT AND WITHDRAWAL BEHAVIORS AMONG FEMALE WORKERS IN JORDANIAN HOTELS, THE MEDIATING ROLE OF EMOTIONAL EXHAUSTION

Hakam S. SHATNAWI[*]

Department of Hotel Management, Faculty of Tourism and Hotel Management, Yarmouk University,
Irbid, Jordan, e-mail: hakamss@yu.edu.jo

Omar A. ALANANZEH

Department of Hotel Management, Faculty of Tourism and Hotel Management, Yarmouk University,
Irbid, Jordan, e-mail: o.ananzeh@yu.edu.jo

Fakhrieh DARABSEH

Department of Travel and Tourism, Faculty of Tourism and Hotel Management, Yarmouk University,
Irbid, Jordan, e-mail: fdarabseh@yu.edu.jo

Ra'ed MASA'DEH

Department of Management Information Systems, School of Business, The University of Jordan,
Amman, Jordan, e-mail: r.masadeh@ju.edu.jo

Abstract: This study explores the connection between workplace sexual harassment and the tendency of female hotel workers in Jordan to withdraw from their jobs, with a specific focus on the role of emotional exhaustion. The study involved female employees from five-star hotels in Amman, Jordan, using a convenience sampling approach, and collected 203 valid responses, achieving an 87% response rate. Using Structural Equation Modeling (SEM), the research found that sexual harassment and emotional exhaustion directly and positively affected withdrawal behaviors. Notably, sexual harassment had a substantial positive impact on emotional exhaustion. However, the study found that emotional exhaustion did not mediate the relationship between sexual harassment and withdrawal behaviors. The coefficients of determination (R^2) for emotional exhaustion and withdrawal behaviors were 0.780 and 0.841, respectively. This study underscores the prevalence of sexual harassment in Jordanian hotel workplaces, especially among female employees. It highlights that sexual harassment significantly contributes to emotional exhaustion among female workers, which, in turn, affects their inclination to leave their jobs. This emphasizes the importance of maintaining motivated and engaged female employees within the hospitality industry.

Key words: Sexual Harassment, Withdrawal Behaviors, Emotional Exhaustion, Hotel, Jordan

* * * * * *

INTRODUCTION

Sexual harassment is unwanted sexual behavior (Ram et al., 2016). Sexual harassment is a pervasive issue that affects workplaces worldwide (Cho, 2002). Following the #MeToo movement, the issue of sexual harassment in the workplace has received increased attention (Martinmaki et al., 2023), and the International Labor Organization has recognized it as a global phenomenon (Beghini, 2021). Notably, the Middle East and North Africa region has been identified as the least advanced in terms of legislation addressing sexual harassment in the workplace (Alquisi and Sryreh, 2015). In Jordan, the legal framework does not provide a clear definition of sexual harassment. However, acts and behaviors falling within the scope of sexual harassment are criminalized under laws related to immoral acts (Al-Nabilsi et al., 2017). Certain workplace environments, such as hotels, can make female employees more vulnerable to sexual harassment (Cho, 2002), where the hotel sector places a high value on customer satisfaction, which can put employees under pressure to tolerate unethical behavior (Gilbert et al., 1998). Furthermore, variables such as late-night shifts, uniform requirements, and the expectation of an attractive appearance within the hotel lead to an environment in which sexual harassment is more visible (Ali et al., 2015).

Jordan is a stable country and a preferred destination (Shatnawi et al., 2019). Human resources play an important role in the success of the hospitality sector (Al-Makhadmeh et al., 2022); however, the hospitality industry in Jordan continues to have a quite low female presence in various tourism activities; the percentage of female workers in the sector is still around 12%, despite efforts by state institutions and NGOs aiming to increase women's involvement in the labor market. Where 1,252 women work in travel and tourism offices, 2,364 women work in hotels, and 2,425 women work in tourist restaurants (Jordanian Ministry of Tourism & Antiquities, 2022). The low rate of female involvement in Jordan's hospitality industry may be attributed to a number of factors, some of which are cultural or societal in origin, while others are related to the

---

[*] Corresponding author

work environment peculiar to this sector. Despite evidence showing a connection between sexual harassment and female employees leaving their jobs, Jordan hasn't conducted its own study on the subject. Addressing the issue of sexual harassment in the workplace is crucial for ensuring the well-being of employees and fostering a safe and inclusive work environment. Efforts to raise awareness, strengthen legislation, and implement preventive measures are essential to combating this pervasive problem and protecting the rights and dignity of all workers, regardless of gender.

The purpose of this study is to examine the prevalence of sexual harassment among female employees in the Jordanian hospitality industry as well as how it affects women's risk of experiencing considerable Job Withdrawal and job exhaustion.

By recognizing the reality of sexual harassment in this context, actionable steps can be taken to address the problem and make the workplace a safer and more welcoming place for female employees. This, in turn, can then help increase the engagement and retention of women in Jordan's hospitality industry. Understanding the link between sexual harassment, emotional exhaustion, and Job Withdrawal is crucial for addressing the underlying issues and putting effective interventions in place. The study's findings will assist policymakers, organizations, and stakeholders develop strategies and policies that mitigate sexual harassment and foster a supportive and friendly work environment for female employees. Therefore, by reducing the incidence of sexual harassment and alleviating emotional exhaustion, it is possible to take action in order to improve employment environments and increase the retention of women in the hospitality sector.

LITERATURE REVIEW
Workplace Sexual Harassment

Sexual harassment in the hospitality sector is considered an ongoing problem and a legal issue because it violates the Labor and Anti-Discrimination Law and the Occupational Safety Law (Nimri et al., 2021) and is one of the documented phenomena in many countries around the world (Brown and Osman, 2017), and sexual harassment is also considered an explicit threat that affects competitive advantage (Alrawadieh et al., 2019). Sexual harassment is a form of violence since it violates a woman's right to maintain her bodily integrity as well as her psychological and social safety (Fitzgerald et al., 1995; Ram et al., 2016). Therefore, managing sexual harassment in the workplace is extremely important (Pearlman and Bordelon, 2022).

Gilbert et al. (1998) defined sexual harassment as any infringement of a woman's privacy, whether by sight, hearing, or bodily touch. Zhu et al. (2019), however, have stressed that sexual harassment is an unwanted sexual action directed against another person, and hence it may occur in both men and women. According to Cho (2002) and Martinmaki et al. (2023), sexual harassment is any unwelcome sexual activity, whether physical, verbal, or with particular signals, that has a detrimental influence on workers' performance at work. Welsh (1999), he indicated that sexual harassment falls into two categories: hostile environment harassment and quid pro quo. While Fitzgerald et al. (1995), placed harassing behavior in a model of three categories, namely: sexual coercion, unwanted sexual attention, and gender harassment (Cortina and Areguin, 2021) .

Tony's (2021) study, which aimed to uncover issues related to harassment in Egyptian Hotels The study showed that more than half of the study sample were exposed to harassment, and the effects of harassment were a decrease in self-confidence, a loss of desire to work, and a decrease in job performance. According to a study by Wziak-Biaowolska (2020), conducted in developing countries, sexual harassment has a negative impact on both the quantity and quality of employment. The study made an interesting observation about how sexual harassment influenced employees' intentions to quit the workplace but did not affect decisions to quit. Harassment can occur anywhere, including the workplace, and can take the form of gender discrimination and the exploitation of power imbalances between men and women in order to achieve sexual benefits and goals, or the exploitation of a position within a workplace by a man in order to receive sexual pleasure in exchange for intimidation or enticement (Clarke, 2021).

The researchers from the preceding study found that sexual harassment in the workplace is sexually provocative activity directed from one person to another. It can take many forms, including verbal and physical. This harassment may be apparent, direct, or implicit, and it may be an abuse of the harasser's power and authority over the victim.

Sexual harassment issues started to emerge and worsen with the increase of women working in combination with men in all fields, especially with the overall decline in morality in Arab societies, along with a decline in religious and moral principles brought on by changes in lifestyle (Al-Matalkah and Alkhatibyeh, 2017). Lee's 2023 study focused on the idea that the large ratio of males in the workplace with extended working hours resulted in an increased chance of sexual harassment instances. According to Burn's (2019) study, socialization processes that encourage male dominance, as well as the societal and cultural acceptability of violence against women, are the root causes of sexual harassment. The Marn (2021) research found that the level of sexual harassment among low-paid female workers had reached the point of explicit sexual offers, and it showed the need for a real shift in how this vulnerable population is supported and dealt with. In view of the prevalence of sexual harassment, Worke's 2021 study on perceptions and experiences of sexual harassment among female hotel workers in Ethiopia, a low-income nation, emphasized the importance of undertaking campaigns to raise awareness, pre-service education, and training. The same applies to the Al-Bahri study, 2023, which confirmed that studying the phenomenon of sexual harassment contributes to providing a warm environment in which order and stability prevail and indicated the lack of mechanisms to control harassment with the aim of reducing its practice. Shahinaz (2015) emphasized that by understanding the socio-cultural context, we can work towards addressing and preventing sexual harassment, promoting gender equality, and creating safer and more inclusive environments for all individuals.

Based on the "vulnerable victim" theory, McLaughlin et al. (2012) and Aksonnit (2014) reported that those with less social and cultural authority, as well as less organizational power, are more prone to sexual harassment. Not to mention that the girls preferred to remain silent out of fear and shame for what the harassed victim might experience from members of her society in what society refers to as a scandal due to the prevalent custom in some societies regarding sexual harassment

cases, which condemned the girl even if she was a victim (Cho, 2002). Arab societies, in particular, have a propensity to stigmatize conversations regarding sexual harassment since they perceive it as an insult to working women's reputations and a dishonor (Alquisi and Sryreh, 2015). The prevalence of sexual harassment in the dark is further exacerbated by this attitude in society, leaving victims without proper support (Wasti et al., 2000). Additionally, some researchers pointed out the shortcomings in the laws governing the issue of sexual harassment as well as the difficulties in establishing facts supporting the crime of sexual harassment (Liao et al., 2016). The work environment in the hotel industry is distinct from that of other businesses due to the high amount of social contact (Gilbert et al., 1998). The harasser's audacity was fueled by the relationship between hotel service production and customer contentment, as well as the commonly held assumption that the customer is always right (Poulston, 2008). This also helped with the unusual working hours, which required female employees to be present at night and at nightclubs, as well as dealing with some alcoholics, tempting fashion, and a beautiful look (Browne, 2008; Eller, 1990; and Cho, 2002). She was also involved in this because of the informal working conditions and the presence of individuals with low incomes and no education (Jung and Yoon, 2019).

Emotional Exhaustion

There are three sub-components of job burnout; the only one of the three elements that has been researched as a separate construct is "emotional exhaustion" (Bui et al., 2019). Emotional exhaustion is the primary cause of job burnout, the initial stage of the process, and the most blatant sign of burnout, according to Lammers et al. (2013). According to Maslach et al. (2001) and Bilal et al. (2022), emotional exhaustion is a quick and immediate psychological response to stress and shocks. Maslach et al. (2001), Maslach and Jackson (1981), and Chen et al. (2023a), among others, claim that emotional exhaustion is a psychological syndrome that results from significant physical, affective, and behavioral stress.

Emotional exhaustion is frequently associated with jobs that require a high level of interpersonal connection. This includes industries such as hotels, where staff frequently interact with a diverse spectrum of people on a daily basis (Chen et al., 2023a). Employees in the hotel sector constantly interact with guests, coworkers, and superiors, and they may encounter a variety of demands and obstacles as a result of these interactions (Wittmer and Martin, 2010). The quality of the services that employees deliver to their clients determines how well the hospitality business will do, and it is also one of the most stressful workplaces. As a result, the hospitality sector faces numerous difficulties today, the most significant of which is a labour shortage and the inability to keep talented employees (Grobelna, 2021).

Withdrawal Behavior

Withdrawal behavior in the workplace refers to actions taken by employees that create a psychological or physical distance between themselves and their work environment (Khawaja et al., 2022). Functional withdrawal specifically relates to the existence of a gap between the employee and the organization due to negative attitudes held by the worker towards their work (Mursi, 2014). The employee's withdrawal behavior is a reaction to his dissatisfaction with his job (Erdemli, 2015). Withdrawal behavior is several behaviors (Liu et al., 2019), and many experts (Abuzied and Al-Romeedy, 2022; Erdemli, 2015) agree that withdrawal behavior can be classified into types, namely psychological withdrawal and physical withdrawal. It is worth noting here that the first stage of functional withdrawal is psychological withdrawal.

According to Cropanzano et al. (1997), psychological withdrawal is the presence of an employee's body in the workplace but his thoughts elsewhere. It is also characterized by a reduction in effort, wasting work time, and indifference. Physical withdrawal reflects the employee's entire separation from the organization and manifests itself as tardiness, absenteeism, and leaving work (León and Morales, 2018). According to Lehman and Simpson (1992), it starts with psychological withdrawal behavior and then progresses to behavioral withdrawal and escalates, respectively, until the conclusion. According to Koslowsky (2009) the most typical type of job withdrawal is the gradual one, which begins with psychological withdrawal, progresses to being late for work, and eventually culminates with abandoning the actual job. The theory of reasoned action holds that intention precedes a behavioral act, and those who think about quitting their jobs are frequently the best and most qualified ones with the ability to obtain new employment (Shapira-Lishchinsky and Even-Zohar, 2011).

Employee retention is crucial (Xuecheng and Iqbal, 2022), and opt-out behaviors are a significant expense for many firms (Lobene and Meade, 2013). Employee withdrawal from work, whether physical or psychological, is one of the severe difficulties with high expenses for institutions, with the financial impact of withdrawal behavior estimated to be around $200 billion a year in the United States (Pokharel and Sharma, 2020). Withdrawal has an impact on organizational performance since it causes a lack of attention to work and a decline in quality. It also affects organizational efficiency and makes it more difficult for the organization to achieve its objectives (Ababneh et al., 2023). And the study of Abuzied and Al-Romeedy (2022) indicated that there is an effect of job burnout on job withdrawal, and the motives of workers towards withdrawal from work may arise as a result of work conflicts and sexual harassment (Mursi, 2014). The Chen (2023b) study, which investigated the topic through a survey of six Chinese hotels, also found that sexual harassment undermined organizational identification, leading to an increase in workers' behaviors to quit their employment.

FRAMEWORK AND RESEARCH HYPOTHESES
Research Framework

Drawing upon the insights gleaned from the preceding literature review, a research model was constructed, and its schematic structure is portrayed in Figure 1. This framework elucidates the causal association between sexual harassment, which serves as the independent variable, and withdrawal behaviors, which function as the dependent variable. Additionally, the framework delineates the mediating influence of emotional exhaustion in the relationship between the independent and dependent variables.

Sexual Harassment and Emotional Exhaustion

People can experience sexual harassment in a variety of contexts, including the workplace, educational institutions, public venues, and social settings (Benya et al., 2018). Sexual harassment refers to any unwanted or inappropriate sexual approaches, requests for sexual favours, or other verbal or physical sexual activity that makes the situation for the person experiencing it unpleasant or intimidating (Jung and Yoon, 2020a; Gilbert et al., 1998). Hutagalung and Ishak (2012) Noted

Figure 1. Research model

that prolonged stress, especially stress brought on by sexual harassment, frequently results in emotional weariness. like that Bui et al. (2019) observed that sexual harassment can have a very negative effect on a person's emotional stability and mental health. Mathews et al. (2019) also noted that Increased anxiety and sadness can result from ongoing sexual harassment. The person could feel helpless, guilty, ashamed, and self-conscious, all of which over time can lead to emotional exhaustion. Timmerman and Bajema (1999) argued that Sexual harassment victims may feel self-blame and remorse, wondering if they somehow initiated the harassment or if they ought to have acted otherwise. These emotions may increase their emotional load and make them feel worn outd. Reguera et al. (2021) observed that workplace sexual harassment can have a detrimental effect on productivity, career advancement, and job happiness. A person's emotional and mental resources may be depleted as a result of dealing with the persistent impacts of harassment, such as fear, worry, and low self-esteem, making it harder for them to perform at their best (Houle et al., 2011). Establishing safe and respectful work environments that address and prevent sexual harassment is the duty of both employers and institutions (Laband and Lentz, 1998). Lessening the incidence of harassment and its psychological effects on people can be achieved by putting policies into place, offering training, and building a supportive culture (Hsu et al., 2019).

In light of the aforementioned information, the following hypothesis is proposed:

H1: Sexual Harassment significantly and positively influences Emotional Exhaustion.

Sexual Harassment and Withdrawal Behavior

According to Sliter et al. (2012), withdrawal behaviors include excused or unexplained physical absence from the workplace, such as absence, tardiness, leaving early, and the goal to avoid or leave that organization. In the hospitality industry according to study findings by Khawaja et al. (2022), workplace stresses and withdrawal behavior have a favorable and substantial link. Ram (2018) stated that the negative impacts of sexual harassment on employees include withdrawal behavior and psychological upset. According to Jung and Yoon (2020b), respondents who experienced sexual harassment had a greater turnover intention and rate of absenteeism than those who did not. Withdrawal behavior refers to actions or attitudes that reflect an employee's disengagement or detachment from their job (Abuzied and Al-Romeedy, 2022). These behaviors often stem from various underlying factors such as job dissatisfaction, burnout, and sexual harassment can contribute to these behaviors (Nicole Salvaggio et al., 2011). When employees experience sexual harassment, they may demonstrate and engage in withdrawal behaviors as a coping mechanism or as a way to distance themselves from the uncomfortable situation (Glomb et al., 1999). These behaviors can be indicative of withdrawal behavior in the workplace (Abuzied and Al-Romeedy, 2022). For example, employees who experience sexual harassment may want to avoid the harasser or the workplace altogether, which leads to thoughts of absence (Erdemli, 2015). also, leaving the work station frequently may be a way to avoid the harasser or find temporary relief from the distressing situation (Berdahl, 2007). In addition, it can be employees experiencing sexual harassment may find it difficult to concentrate on their work, leading them to spend more time on personal matters as a form of escapism. also, persistent thoughts of leaving the job may arise due to the desire to escape the harassment and find a safer and more supportive work environment (Baker, 2016; Berdahl and Aquino, 2009). In light of the aforementioned information, the following hypothesis is proposed: Therefore, the following hypothesis is proposed:

H2: Sexual Harassment Significantly and Positively Influences Withdrawal Behavior.

Emotional Exhaustion and Withdrawal Behavior

Burnout has been found by Scanlan and Still (2013) to be a direct predictor of turnover intention. According to a study conducted by (Kyei-Poku, 2019), stress or weariness were linked to stronger intent to leave an organization. Withdrawal Behaviors are often more strongly related to emotional exhaustion (Maslach et al., 2001). Maslach and Jackson (1981) reported that burnout inventory was also related to Withdrawal Behavior.

Deery et al. (2002); Malakh-Pines et al. (1981) found their burnout or tedium measure to be associated with a form of withdrawal behavior. In other words, when individuals experience high levels of emotional exhaustion, they are more likely to engage in withdrawal behaviors such as absenteeism, lateness, or avoiding social interactions at work.

As reported by (Lazaro et al., 1984) the links between burnout and job withdrawal behaviors are sufficiently apparent that items evaluating the behaviors are sometimes incorporated into burnout measures.

Based on the nature of these two variables, we can formulate the following hypothesis:

H3. Emotional exhaustion has a positive impact on withdrawal behavior.

Emotional Exhaustion as a mediator between sexual harassment and withdrawal behaviors

Job burnout has been dubbed the greatest occupational risk of the twenty-first century (Maslach and Leiter, 2016).
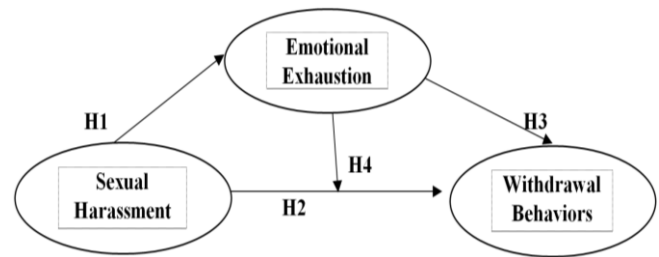
Previous study has revealed that hotel employees suffer from higher levels of emotional exhaustion (Baquero, 2023). Ali et al. (2020), discovered that emotional exhaustion fully mediated the relationship between workload and job performance. Furthermore, it has been demonstrated that both physical and emotional exhaustion have a detrimental influence on work. According to Huang et al. (2011); Leiter and Maslach (2005) occupational stress causes burnout, which consequently has detrimental physical and psychological effects on the individual. Employees who suffer from bullying or other abusive behavior initially feel emotionally exhausted, which leads to a desire to leave (Schaufeli et al., 2009; Tang and Schmitz, 2001). Sexual harassment causes lasting tension and worry (Jung et al., 2016). In other words, sexual harassment causes unpleasant feelings in workers, which causes emotional tiredness. Workers who experience emotional exhaustion exhibit more withdrawal symptoms (Srivastava and Agarwal, 2020). The most serious impact of such negative feelings resulting from emotional exhaustion is the withdrawal behaviors (Wu et al., 2017). In addition, Van Jaarsveld et al. (2010); Koon and Pun, (2018) studies shown emotional exhaustion to be a powerful mediator in the link between consumer and employee incivility.

Given the link between emotional exhaustion and increased withdrawal behaviors, it can be assumed that it plays a role in the interaction between sexual harassment and withdrawal behaviors. If sexual harassment leads to increased emotional exhaustion, withdrawal behaviors will also be affected (Linos et al., 2022). Emotional exhaustion might be a moderating factor in the relationship between sexual harassment and withdrawal behaviors. As a result, the researchers hypothesize that emotional exhaustion mediates the link between sexual harassment and withdrawal behaviors.

H4. Emotional Exhaustion mediates the relationship between sexual harassment and withdrawal behaviors.

RESEARCH METHODOLOGY

Figure 2 is a flowchart that summarizes the workflow of the methodologies adopted in these investigations.

Participants and Procedure

The researchers utilized a technique known as convenience sampling. Participants were chosen based on their availability and willingness to participate. The study focused on female staff working in Amman's five-star hotels. A pilot study was carried out, with 35 randomly selected female hotel staff participating. The pilot study results demonstrated that the survey questions had strong internal consistency reliability, which implies that they consistently measured the same underlying construct. The main study employed a self-administered survey approach. This study took place across several months, from January 2023 to June 2023, with a two-week break between each interval. The survey asked about demographics, independent variables (factors being examined), moderating variables (factors that may influence the connection between other variables), and dependent variables.

203 valid responses were received from the contacted respondents. This resulted in an 87% response rate, showing that a sizable proportion of those contacted took part in the study.

Figure 2. Research process (Source: suggested by the author)

Study Measure

Data acquisition was carried out through a questionnaire that was crafted in both Arabic and English languages. Consequently, the survey items employed in this study were drawn and adapted from prior literature. These items were assessed using a five-point Likert scale, spanning from 1 (never) to 5 (always), encompassing the domains of sexual harassment, emotional exhaustion, and withdrawal behavior. Sexual harassment was measured using a measure based on the Sexual Experiences Questionnaire for the Department of Defense (SEQ-DoD), which Stark et al. (2022) shortened to a 16-item scale. Then the questionnaire was modified by the researchers in this study to be valid for measuring workplace sexual harassment. To examine withdrawal behavior, Khawaja et al. (2022) developed a 12-item scale. Al-Badarneh et al. (2019) created a seven-item scale to assess emotional exhaustion. Then the items were modified by the researchers in this study to be valid for measuring withdrawal behavior and emotional exhaustion for Female Workers in hotels.

Data Analysis and Results

Descriptive analysis was employed to describe the sample's characteristics, the responses to the questionnaires, and the independent and dependent variables. Furthermore, reliability and validity analyses were conducted, and SEM analysis was used to test the research hypotheses. Table (1) displays the measured constructs as well as the items used to measure each construct.

Respondents' Profile

Figure 3 shows the response to the question, "How long have you been working in the hospitality industry?" The answers show that (38.4) percent have work experience ranging from (1 - 3) years, while (16.3) percent have work experience spanning more than 6 years. Regarding the participants' department questions "What department do you work in at the hotel?". The statistics show that (39.9) percent work in the housekeeping department, while 15.8 percent work in the
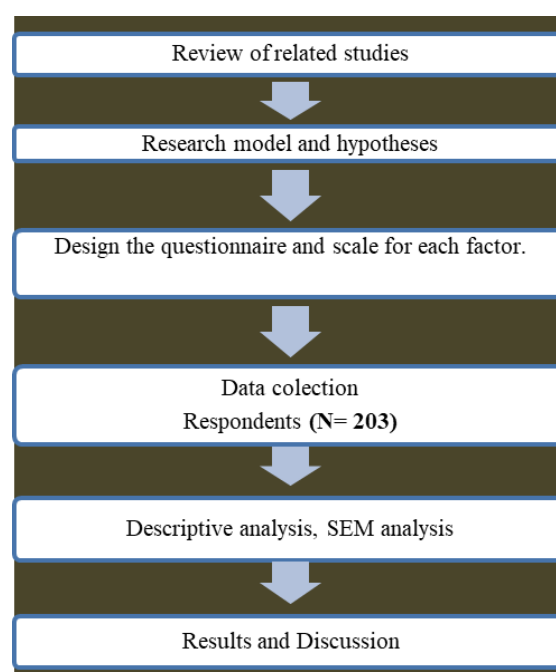
front office department. Concerning the response to the question "Are you exposed to sexual harassment at work?" the answers show that (44.3) percent have often experienced sexual harassment, while (13.8) percent have rarely experienced it.

Table 1. Constructs and Measurement Items

Constructs		Measurement items
Sexual Harassment (SH)	SH1	Have you been treated differently because you are female?
	SH2	Have you ever been offered sexually suggestive material?
	SH3	Have sexually offensive comments ever been made in your presence?
	SH4	Criticized you or treated you with disdain because you are a female?
	SH5	Have you been repeatedly exposed to sexual stories or jokes that were offensive to you?
	SH6	Have you received unwanted efforts to engage you in a sexual conversation?
	SH7	Have you heard insulting comments about your looks, body, or sexual activities?
	SH8	**Have you ever been humiliated or offended by sexual gestures or body language?**
	SH9	Have you ever faced unwanted requests for love or sexual connection despite your best efforts to fend them off?
	SH10	Have you been asked for a meeting, drinks, dinner, etc. despite the fact that you replied "No"?
	SH11	Have you been touched in a way that has made you feel uneasy?
	SH12	Have you ever been subjected to unwelcome efforts to kiss, fondle, or stroke you?
	SH13	Have you ever felt like you were being bribed into engaging in sexual activity?
	SH14	Have you ever felt threatened with some sort of retaliation for not being sexually cooperative?
	SH15	Have you ever been harassed because you rejected an offer of sex?
	SH16	Have you ever been promised better treatment or quicker promotions in exchange for sexual cooperation?
Emotional Exhaustion (EE)	EE1	I believe I have lost interest in my profession.
	EE2	I feel spiritually exhausted by the end of the working day.
	EE3	I can't do this job for even another day.
	EE4	My shifts at work drained my energy.
	EE5	I'm worn out from my current job.
	EE6	My profession has restrictions on me.
	EE7	**I feel mentally and emotionally worn out at work.**
Withdrawal Behaviors (WB)	**WB1**	**Are you being absentminded at work?**
	WB2	Do you often talk about issues unrelated to work with colleagues at work?
	WB3	Do you leave your place of employment for trivial reasons?
	WB4	Do you often find yourself daydreaming at work?
	WB5	Do you spend work time on personal matters?
	WB6	Do you put less effort into your job than you should?
	WB7	Do you have thoughts of leaving your current job?
	WB8	Do you pass on your responsibilities to others?
	WB9	Do you leave work early without permission?
	WB10	Do you lunch or rest for longer than is permitted?
	WB11	Do you take equipment without permission?
	WB12	Do you snooze through timework?
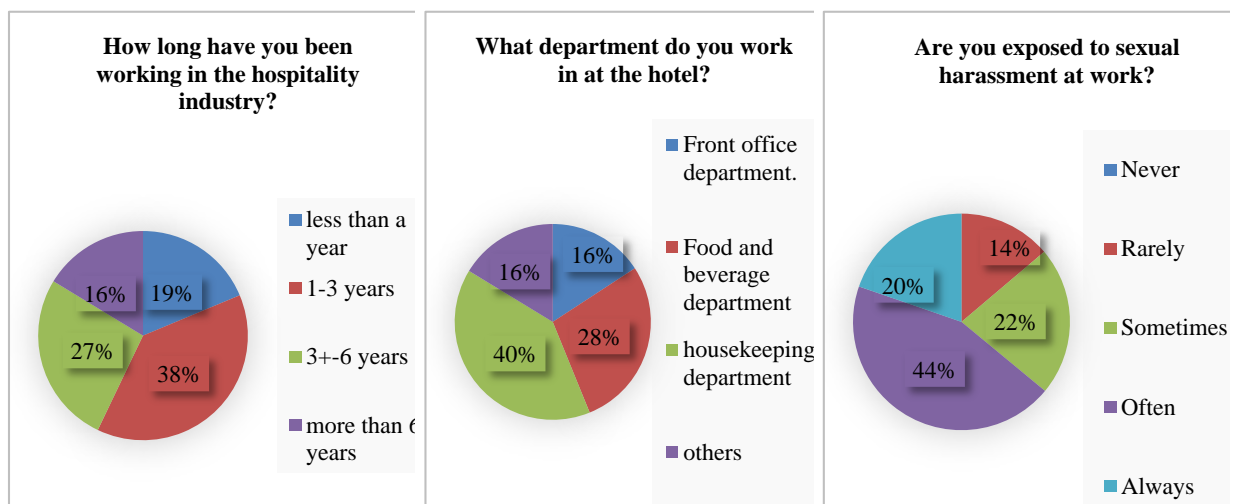
Figure 3. Description of the Respondents' Profiles

Descriptive Analysis

Researchers can learn about the broad trends and variations in participant responses and attitudes by measuring the mean and standard deviation for each survey question. Understanding the data's central tendency and the degree to which individual responses depart from the mean is aided by this information (Pallant, 2005; Sekaran and Bougie, 2013). In other words, a small standard deviation indicates that a group of numbers is closely clustered around or close to the mean, whereas a large standard deviation suggests the opposite. The level of each item was established using the formula below: (highest point on the Likert scale to lowest point on the Likert scale)/number of levels used = (5-1)/5=0.80, where (1-1.80)

denotes "very low," (1.81-2.60) "low," (2.61-3.40) "moderate," and (3.41-4.20) "high," and (4.21-5) represents "very high." The items were being ordered based on their means. Tables 2 and 3 show the results.

Table 2. Mean and Standard Deviation of the study's variables

Sexual Harassment	Mean	SD	Level	Order
SH1	4.2660	.91639	Very high	2
SH2	3.0099	.86167	Moderate	11
SH3	3.7685	1.15209	high	4
SH4	2.9261	.76395	Moderate	12
SH5	3.0985	1.01481	Moderate	10
SH6	4.0690	.79924	high	3
SH7	3.3941	.95044	Moderate	8
SH8	**4.4581**	**.91304**	**Very high**	**1**
SH9	3.5961	.71365	high	6
SH10	2.7094	1.12543	Moderate	15
SH11	2.8867	.96573	Moderate	13
SH12	2.5567	.97518	low	16
SH13	3.7438	.79191	high	5
SH14	2.7685	1.16915	Moderate	14
SH15	3.1527	.95510	Moderate	9
SH16	3.4828	.91384	high	7
Emotional Exhaustion	**Mean**	**SD**	**Level**	**Order**
EE1	3.8867	1.04454	high	3
EE2	3.4926	1.37650	high	5
EE3	2.7931	1.25333	Moderate	6
EE4	2.5813	1.28858	low	7
EE5	3.5123	.92469	high	4
EE6	3.8916	.84904	high	2
EE7	**3.9754**	**1.19586**	**high**	**1**
Withdrawal Behaviors	**Mean**	**SD**	**Level**	**Order**
WB1	**4.0443**	**1.01132**	**high**	**1**
WB2	3.8818	.94702	high	4
WB3	3.8177	1.02507	high	5
WB4	3.6355	1.28013	high	6
WB5	3.5074	1.39081	high	7
WB6	3.9261	1.41402	high	3
WB7	3.9606	1.08474	high	2
WB8	2.8424	1.01219	Moderate	11
WB9	2.9458	1.11338	Moderate	9
WB10	3.0640	1.00041	Moderate	8
WB11	2.4384	1.16462	low	12
WB12	2.8621	1.17763	Moderate	10

Table 3. Overall mean and standard deviation of the study's variables

Type of Variable	Variables	Mean	Standard Deviation (SD)	Level
Independent Variables	**Sexual Harassment**	3.3679	.56699	Moderate
Mediating Variable	**Emotional Exhaustion**	3.4476	.79370	high
Dependent Variable	**Withdrawal Behaviors**	3.4105	.76074	high

Measurement Model

The results of a Confirmatory Factor Analysis (CFA) that was conducted to assess the properties of a measurement instrument used in the study indicate most of the items have factor loadings exceeding 0.50, which is generally considered an acceptable threshold. where the factor loadings and the strength of the relationship between each observed item (question) and its underlying latent construct (factor) are explained. Nine items with low factor loadings were eliminated from the analysis (SH4 = 0.344, SH8 = 0.093, SH10 = 0.153, SH11 = 0.478, SH12 = 0.218, EE3 = 0.494, EE6 = 0.285, WB2 = 0.178, and WB9 = 0.289), and that's to improve the model fit and enhance convergent validity. Items with low factor loadings (below 0.50) can indicate that they are not strongly associated with the intended construct and might not be providing accurate measurements (Bagozzi and Yi, 1988; Creswell, 2009). As it appears from the results of the analysis shown in Table (4), the composite reliability values (which are closely related to Cronbach's alpha) exceed 0.60, indicating a high level of consistency within the latent variables. where Cronbach's Alpha assesses how well the items within a scale (factor) correlate with each other. In this study's analysis, since each AVE value exceeded 0.50, this indicates strong convergent validity, where an Average Variance Extracted (AVE) value exceeding 0.50 suggests that more variance is due to the construct itself than measurement error (Bagozzi and Yi, 1988; Hair et al., 2010). Based on the analysis shown in the table (4), the measurement model demonstrates good properties in terms of factor loadings, internal consistency (Cronbach's alpha and composite reliability), and convergent validity (AVE), and these findings suggest that the measurement instrument is reliable and valid for assessing the constructs of interest.

Table 4. Properties of the final measurement model

CI	FL	(SE)	(SMC)	(EV)	(CA)	(CR)*	(AVE)**
Sexual Harassment					0.905	0.92	0.54
SH 1	0.797	***	0.635	0.305			
SH 2	0.626	0.077	0.392	0.449			
SH 3	0.924	0.090	0.853	0.194			
SH 5	0.766	0.086	0.587	0.423			
SH 6	0.672	0.070	0.452	0.348			
SH 7	0.543	0.087	0.295	0.633			
SH 9	0.642	0.063	0.413	0.298			
SH 13	0.559	0.072	0.313	0.429			
SH 14	0.840	0.096	0.706	0.400			
SH 15	0.659	0.084	0.434	0.514			
SH 16	0.505	0.084	0.255	0.619			
Emotional Exhaustion					0.909	0.89	0.61
EE 1	0.862	***	0.743	0.279			
EE 2	0.861	0.079	0.741	0.489			
EE 4	0.755	0.082	0.569	0.711			
EE 5	0.868	0.053	0.753	0.210			
EE 7	0.791	0.074	0.626	0.533			
Withdrawal Behaviors					0.898	0.91	0.50
WB 1	0.691	***	0.477	0.532			
WB 3	0.529	0.107	0.280	0.357			
WB 4	0.591	0.134	0.349	0.620			
WB 5	0.820	0.148	0.672	0.432			
WB 6	0.822	0.150	0.676	0.445			
WB 7	0.852	0.116	0.725	0.321			
WB 8	0.585	0.106	0.342	0.671			
WB 10	0.697	0.105	0.486	0.512			
WB 11	0.713	0.123	0.508	0.664			
WB I2	0.573	0.123	0.328	0.289			

* Composite Reliability = $(\Sigma Li)^2 / ((\Sigma Li)^2 + \Sigma Var (Ei))$; ** Average Variance Extracted = $\Sigma Li^2 / (\Sigma Li^2 + \Sigma Var (Ei))$
Caption: Cronbach Alpha(CA), Composite Reliability(CR), Average Variance Extracted (AVE), Error Variance: EV
Square Multiple Correlation: SMC, Constructs and Indicators: CI, Factor Loadings: FL and Std. Error: SE

Structural Model

The SEM analysis revealed that Sexual Harassment directly, positively, and significantly affected Emotional Exhaustion (β = 0.883, t = 26.738, p = 0.000); thus, H1 was supported. Also, H2, and H3 were supported. Results found that Sexual Harassment directly, positively, and significantly affected Withdrawal Behaviors (β = 0.727, t = 12.172, p = 0.000), besides Emotional Exhaustion on Withdrawal Behaviors (β = 0.210, t = 3.510, p = 0.000). Furthermore, the coefficient of determination (R^2) for the research endogenous variables for Emotional Exhaustion, and Withdrawal Behaviors were 0.780, and 0.841 respectively, which indicates that the model does account for the variation of the proposed model. To test the mediating effects of Emotional Exhaustion, the study looked at both the direct effect of Sexual Harassment on Withdrawal Behaviors; and its indirect effect through the mediatory path of Emotional Exhaustion. It was found that Emotional Exhaustion did not mediate the relationship between Sexual Harassment and Withdrawal Behaviors. Thus, H4 was not supported.

Table 5. Summary of proposed results for the theoretical model

Research Proposed Paths	Coefficient Value	t-value	p-value	Empirical Evidence
H1: SH → EE	0.883	26.738	0.000	Supported
H2: SH → WB	0.727	12.172	0.000	Supported
H3: EE → WB	0.210	3.510	0.000	Supported
SH: Sexual Harassment; EE: Emotional Exhaustion; WB: Withdrawal Behaviors.				

Table 6. Mediating effect of perceived benefits

Hypothesis	From	Mediation	To	Direct Effect	Indirect Effect	Total Effect	Empirical Evidence
H4: SH → EE→ WB	SH	EE	WB	0.727	0.185	0.912	Not Supported

DISCUSSION

The objective of this research was to shed light on the prevalence of sexual harassment experienced by female hotel workers, a subject often concealed and rarely explored, especially within traditional Arab communities. Additionally, the study sought to delve into how this issue impacts the incidence of job exhaustion among female employees, ultimately leading to withdrawal behaviors from the hospitality industry. Upon analyzing the results obtained by asking the research participants, "Have you encountered instances of sexual harassment at your workplace?". It became evident that a significant 64% of the sample confirmed the presence of harassment within hotel settings, this result is consistent with earlier research on issues of harassment in Jordan conducted by the Jordanian National Commission for Women (JNCW) in 2017, in which 75.9% of study participants reported experiencing sexual harassment in various forms. This is also evident from the paragraph included in the questionnaire within the sexual harassment assessment axis, which states: "Have you

ever been humiliated or offended by sexual gestures or body language?", this paragraph received the highest approval rate. Most of the respondents expressed that they have experienced offense due to sexual gestures at some point in their career life. Such experiences led to feelings of discomfort, embarrassment, or even fear. Turning back to the discussion of these findings and the analysis that followed within the framework of the proposed theoretical model, it was evident that the first hypothesis, which postulated that sexual harassment has a considerable and positive influence on emotional exhaustion, was validated. This validation coincides with the conclusions drawn from (Jung and Yoon, 2020a; Bilal et al., 2022; Bui et al., 2019; Figueira and Alves, 2023) studies, which confirm that sexual harassment has a significant impact on emotional exhaustion. Indeed, there is a body of research that approves the influence of sexual harassment on emotional exhaustion.

Most of these studies have explored the relationship and found that experiencing sexual harassment may lead to emotional exhaustion and other negative psychological consequences. This relationship highlights the significance of addressing and avoiding sexual harassment in various environments, including workplaces and social sites. Furthermore, the results of the analysis lend support to the second hypothesis, suggesting that sexual harassment of female employees significantly influences their inclination to withdraw from their job, a correlation consistent with the following studies (Cortina and Areguin, 2021; Merkin, 2008; Touni and Mohamed Hussien, 2021; Salman et al., 2016).

The study findings also support the third hypothesis, which is consistent with the findings of previous studies (Srivastava and Agarwal, 2020; Khan et al., 2022; Mishra and Kumar, 2016; Jolly et al., 2022), which show that emotional exhaustion plays an important role in shaping withdrawal behaviors among female employees. Concerning the fourth hypothesis, which is concerned with the potential mediating role of emotional exhaustion in the relationship between sexual harassment and withdrawal behaviors, the study found no such mediation in the context of the relationship between sexual harassment and work withdrawal in hotels. This suggests that emotional exhaustion, while a significant factor, does not serve as a mediator in this particular context, which contradicts the studies of (Kyei-Poku, 2019; Srivastava and Agarwal, 2020; Alrawadieh et al., 2022) which show that emotional exhaustion plays a mediating role.

CONCLUSIONS

This study revealed a widespread problem in the hospitality industry, especially in Jordanian hotels, as it seems that sexual harassment is a common concern among female workers. Since the study found that sexual harassment has a major and positive impact on the emotional exhaustion of workers, it revealed the extent of the spread of sexual harassment in this sector, and the study shed light on its deep effects on the intention to leave their jobs in the hospitality sector. The study also highlighted the decisive effect of emotional exhaustion on identifying withdrawal behavior among hotel female workers. These outputs emphasize the importance of institutions in the hospitality industry retaining committed and interactive working forces. However, despite emotional exhaustion being recognized as a mediator in the association between sexual harassment and withdrawal behaviors in previous studies, this research did not provide supporting evidence for such mediation within the specific context of the hospitality business; suggesting that further investigation is needed to better understand the dynamics of sexual harassment and its consequences in the workplace.

REFERENCES

Ababneh, R.I. et al. (2023). The Impact of Functional Withdrawal on Organizational Commitment as Perceived by Nurses Working in Public Hospitals in Jordan. In: Alshurideh, M., Al Kurdi, B.H., Masa'deh, R., Alzoubi, H.M., Salloum, S. (eds) The Effect of Information Technology on Business and Marketing Intelligence Systems. *Studies in Computational Intelligence*, vol 1056. Springer, Cham. https://doi.org/10.1007/978-3-031-12382-5_59

Abuzied, A., & Al-Romeedy, B. (2022). The Impact of Organizational Balance on Limiting Employee Withdrawal Behaviors Applied to Egyptian Tourism Companies. *Journal of Association of Arab Universities for Tourism and Hospitality*, 23(1), 87-102. https://doi.org/10.21608/jaauth.2021.108217.1273

Aksonnit, P. (2014). *Sexual Harassment by Hotel Customers: Impacts on Workers, and Reactions from Management: A Thailand Study*. Thesis, Doctor of Philosophy - PhD. University of Waikato, Hamilton, New Zealand. https://hdl.handle.net/10289/8851

Al-Badarneh, M.B., Shatnawi, H.S., Alananzeh, O., & Al-Makhadmeh, A. (2019). Job performance management: The burnout inventory model and intention to quit their job among hospitality employees. *International Journal of Innovation, Creativity and Change*, 5(2), 1355-1375. https://www.ijicc.net/images/Vol5iss2_/79_AlBadarneh_P1355_2019R.pdf

Al-Bahri, N.A. (2023). The Phenomenon of Harassment Among University Students (Applied study on the University of Mutah). *Dirasat: Human and Social Sciences*, 50(2), 116-132. https://doi.org/10.35516/hum.v50i2.4924

Ali, M.D., Haseeb, M.A., Khan, S.R., Khan, S.I., & Sahibzadi, S. (2020). Emotional Exhaustion: A Mediator between Work-overload and Job Performance among the University Faculty. *Pakistan Journal of Social and Clinical Psychology*, 18(1), 66-69.

Ali, S.R.O., Zakaria, Z., Zahari, A.S.M., Said, N.S.M., & Salleh, S.M. (2015). The effects of sexual harassment in workplace: Experience of employees in hospitality industry in Terengganu, Malaysia. *Mediterranean Journal of Social Sciences*, 6(4), 689. http://dx.doi.org/10.5901/mjss.2015.v6n4s2p689

Al-Makhadmeh, A.A., Alananzeh, A.O., Masa'deh, R., & Shatnawi, H.S. (2022). recent changes and their impact on directing school students to enroll in hospitality education: Jordan schools as a case study. *GeoJournal of Tourism and Geosites*, 41(2), 448–455. https://doi.org/10.30892/gtg.41215-849

Al-Matalkah, Faisal, I., & Alkhatiby Yousef, D. (2017). Sexual Harassment against the Jordanian Women's and its Relationship with Some Social Variables as Perceived in the University of Jordan Female Jordanian Students. *Dirasat: Human & Social,* Sciences (2)44. https://eservices.ju.edu.jo/HSS/Article/FullText/8148?volume=44&issue=2

Al-Nabilsi, Hanaa., Al-Adayleh, L., & Al-Bak'ar, A. (2017). Sexual Harassment at Universities: Causes and Consequences (A Case Study of Students at Princess Rahma University College), *Dirasat: Human & Social Sciences*, 44(1). https://journals.ju.edu.jo/DirasatHum/article/download/10832/7387

Alquisi, S., & Sryreh, N. (2015). Sexual Harassment in the Jordanian Universities (Mutah, Yarmouk, and Jordan University). *Annals of the Faculty of Arts, Ain Shams University*, 43(January-March (A)), 63-98. https://doi.org/10.21608/aafu.2015.6283

Alrawadieh, Z., Alrawadieh, Z., & Kozak, M. (2019). Exploring the impact of tourist harassment on destination image, tourist expenditure, and destination loyalty. *Tourism management*, 73, 13-20. https://doi.org/10.1016/j.tourman.2019.01.015

Alrawadieh, Z., Demirdelen Alrawadieh, D., Olya, H.G., Erkol Bayram, G., & Kahraman, O.C. (2022). Sexual harassment, psychological well-being, and job satisfaction of female tour guides: The effects of social and organizational support. *Journal of Sustainable Tourism*, 30(7), 1639-1657. https://doi.org/10.1080/09669582.2021.1879819

Bagozzi, R., & Yi, Y. (1988). On the Evaluation of Structural Evaluation Models. *Journal of the Academy of Marketing Science*, 16(1), 74-94. https://doi.org/10.1007/BF02723327

Baker, A.N. (2016). Antecedents and consequences of observing workplace sexual behavior. *Journal of Managerial Psychology*, 31(1), 265-279. https://psycnet.apa.org/doi/10.1108/JMP-05-2014-0167

Baquero, A. (2023). Hotel employees' burnout and intention to quit: the role of psychological distress and financial well-being in a moderation mediation model. *Behavioral Sciences*, 13(2), 84. https://doi.org/10.3390/bs13020084

Beghini, V. (2021). Violence and harassment in the world of work: A guide on Convention No. 190 and Recommendation No. 206. wcms_814507. pdf (ilo.org)

Benya, F.F., Widnall, S.E., & Johnson, P.A. (Eds.). (2018). Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine. National Academies Press (US). https://doi.org/10.17226/24994

Berdahl, J.L. (2007). The sexual harassment of uppity women. *Journal of Applied Psychology*, 92(2), 425-437. doi/10.1037/0021-9010.92.2.425

Berdahl, J.L., & Aquino, K. (2009). Sexual behavior at work: fun or folly? *Journal of Applied Psychology*, 94(1), 34-47. https://doi.org/10.1037/a0012981

Bilal, A., Laeeque, S.H., Saeed, M.A., & Mumtaz, M. (2022). Teacher-perpetrated sexual harassment and student performance: roles of emotional exhaustion and neuroticism. *Equality, Diversity and Inclusion*, 41(5), 793-812. https://doi.org/10.1108/EDI-06-2021-0155

Brown, L., & Osman, H. (2017). The female tourist experience in Egypt as an Islamic destination. *Annals of Tourism Research*, 63, 12-22.

Browne, K.R. (2008). The evolutionary psychology of sexual harassment. In J. D. Duntley & T. K. Shackelford (Eds.), Evolutionary forensic psychology: Darwinian foundations of crime and law, 81–100, Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195325188.003.0005

Bui, H.T., Pinto, J., & Srivastava, A. (2019). Sexualization of the work environment and emotional exhaustion: The case of emerging India. *International Journal of Manpower*, 40(4), 558-573. http://dx.doi.org/10.1108/IJM-05-2017-0106

Burn, S.M. (2019). The psychology of sexual harassment. *Teaching of Psychology*, 46(1), 96-103. https://doi.org/10.1177/0098628318816183

Chen, H., Green, Y., & Williams, K. (2023a). Does perceived manager support reduce hotel supervisors' emotional exhaustion? The mediating role of control over time and negative emotions. *International Hospitality Review*, 37(1), 110-124. https://doi.org/10.1108/IHR-03-2021-0024

Chen, K.X., Lyu, Y., Ye, Y., & Liu, X. (2023b). Away From the Nightmare: Sexual Harassment, Leave Intention, and Job Search Behavior. *Cornell Hospitality Quarterly*, 0(0). https://doi.org/10.1177/19389655231184477

Cho, M. (2002). An analysis of sexual harassment in Korean hotels from the perspective of female employees. *Journal of Human Resources in Hospitality & Tourism*, 1(3), 11-29. https://doi.org/10.1300/J171v01n03_02

Clarke, H. (2021). Sexual harassment in higher education: A feminist poststructuralist approach. University of Derby (United Kingdom). https://doi.org/10.48773/94zqq

Cortina, L.M., & Areguin, M.A. (2021). Putting people down and pushing them out: Sexual harassment in the workplace. *Annual Review of Organizational Psychology and Organizational Behavior*, 8, 285-309. https://doi.org/10.1146/annurev-orgpsych-012420-055606

Creswell, J.W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* 3rd edition, Thousand Oaks, Sage Publications.

Cropanzano, R., Howes, J.C., Grandey, A.A., & Toth, P. (1997). The Relationship of Organizational Politics and Support to Work Behaviors, Attitudes, and Stress. *Journal of Organizational Behavior*, 18(2), 159–180. https://doi.org/10.1002/(SICI)1099-1379(199703)18:2%3C159::AID-JOB795%3E3.0.CO;2-D

Deery, S., Iverson, R., & Walsh, J. (2002). Work relationships in telephone call centres: Understanding emotional exhaustion and employee withdrawal. *Journal of Management studies*, 39(4), 471-496. http://dx.doi.org/10.1111/1467-6486.00300

Eller, M.E. (1990). Sexual harassment in the hotel industry: the need to focus on prevention. *Hospitality Research Journal*, 14(2), 431-440. https://doi.org/10.1177/109634809001400246

Erdemli, O. (2015). Teachers' withdrawal behaviors and their relationship with work ethic. *Eurasian Journal of Educational Research*, 15(60), 201-220. http://dx.doi.org/10.14689/ejer.2015.60.12

Figueira, J., & Alves, M.J. (2023). Sexual harassment and burnout in health care context. *Scientific Letters*, 1(Sup 1). https://doi.org/10.48797/sl.2023.108

Fitzgerald, L.F., Gelfand, M.J., & Drasgow, F. (1995). Measuring sexual harassment: theoretical and psychometric advances, *Basic and Applied Social Psychology*, 17:4, 425-445, DOI: 10.1207/s15324834basp1704_2

Gilbert, D., Guerrier, Y., & Guy, J. (1998). Sexual harassment issues in the hospitality industry. *International Journal of Contemporary hospitality management*, 10(2), 48-53. https://doi.org/10.1108/09596119810207183

Glomb, T.M., Munson, L.J., Hulin, C.L., Bergman, M.E., & Drasgow, F. (1999). Structural equation models of sexual harassment: longitudinal explorations and cross-sectional generalizations. *Journal of Applied Psychology*, 84(1), 14-28. https://psycnet.apa.org/doi/10.1037/0021-9010.84.1.14

Grobelna, A. (2021). Emotional exhaustion and its consequences for hotel service quality: The critical role of workload and supervisor support. *Journal of Hospitality Marketing & Management*, 30(4), 395-418. https://doi.org/10.1080/19368623.2021.1841704

Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate Data Analysis: Overview of Multivariate Methods (Seventh Edition ed.)*. Pearson Prentice Hall: Upper Saddle River, New Jersey: Pearson Education International.

Houle, J.N., Staff, J., Mortimer, J.T., Uggen, C., & Blackstone, A. (2011). The impact of sexual harassment on depressive symptoms during the early occupational career. *Society and mental health*, 1(2), 89-105. https://doi.org/10.1177%2F2156869311416827

Hsu, F.S., Liu, Y., & Tsaur, S.H. (2019). The impact of workplace bullying on hotel employees' wellbeing: do organizational justice and friendship matter? *International Journal of Contemporary Hospitality Management*, 31(4). https://doi.org/10.1108/IJCHM-04-2018-0330

Huang, Y.H., Du, P.L., Chen, C.H., Yang, C.A., & Huang, I.C. (2011). Mediating effects of emotional exhaustion on the relationship between job demand–control model and mental health. *Stress and Health*, 27(2), e94-e109. https://doi.org/10.1002/smi.1340

Hutagalung, F., & Ishak, Z. (2012). Sexual harassment: a predictor to job satisfaction and work stress among women employees, *Procedia - Social and Behavioral Sciences*, Vol. 65, pp. 723-730. https://doi.org/10.1016/j.sbspro.2012.11.190

Jolly, P.M., Gordon, S.E., & Self, T.T. (2022). Family-supportive supervisor behaviors and employee turnover intention in the foodservice industry: does gender matter? *International Journal of Contemporary Hospitality Management*, 34(3), 1084-1105. http://dx.doi.org/10.1108/IJCHM-02-2021-0280

Jordanian Ministry of Tourism & Antiquities, (2022). https://www.mota.gov.jo/Default/EN

Jordanian National Commission for Women (JNCW). (2017). *Study on the phenomenon of harassment in Jordan.* https://www.women.jo/ar/node/7924

Jung, H.S., & Yoon, H.H. (2019). How does workplace harassment influence the employees' response in a deluxe hotel? *The Service Industries Journal*, 39(11-12), 877-900. https://doi.org/10.1080/02642069.2018.1493103

Jung, H.S., & Yoon, H.H. (2020a). Sexual harassment and customer-oriented boundary-spanning behaviors: The role of burnout and psychological safety of deluxe hotel employees. *International Journal of Contemporary Hospitality Management*, 32(1), 3-19. https://doi.org/10.1108/IJCHM-10-2018-0790

Jung, H.S., & Yoon, H.H. (2020b). How does sexual harassment influence the female employee's negative response in a deluxe hotel? *International journal of environmental research and public health*, 17(24), 9537. https://doi.org/10.3390/ijerph17249537

Jung, H.S., Lee, J., & Yoon, H.H. (2016). The Relationship between Employees' General Characteristics, Workplace Harassment, and Turnover Intent in the Deluxe Hotel. *Culinary Science & Hospitality Research*, 22(1), 117-125. http://dx.doi.org/10.20878/cshr.2016.22.1.013013013

Khan, A.K., Khalid, M., Abbas, N., & Khalid, S. (2022). COVID-19-related job insecurity and employees' behavioral outcomes: mediating role of emotional exhaustion and moderating role of symmetrical internal communication. *International Journal of Contemporary Hospitality Management*, 34(7), 2496-2515. https://doi.org/10.1108/IJCHM-05-2021-0639

Khawaja, K.F., Sarfraz, M., Rashid, M., & Rashid, M. (2022). How is COVID-19 pandemic causing employee withdrawal behavior in the hospitality industry? An empirical investigation. *Journal of Hospitality and Tourism Insights*, 5(3), 687-706. https://doi.org/10.1108/JHTI-01-2021-0002

Koon, V.Y., & Pun, P.Y. (2018). The mediating role of emotional exhaustion and job satisfaction on the relationship between job demands and instigated workplace incivility. *The Journal of Applied Behavioral Science*, 54(2), 187-207. http://dx.doi.org/10.1177/0021886317749163

Koslowsky, M. (2009). A multi-level model of withdrawal: Integrating and synthesizing theory and findings. *Human Resource Management Review*, 19(4), 283–303. https://doi.org/10.1016/j.hrmr.2008.12.001

Kyei-Poku, I. (2019). The influence of fair supervision on employees' emotional exhaustion and turnover intentions. *Management Research Review*, 42(9), 1116-1132. https://doi.org/10.1108/MRR-12-2018-0494

Laband, D.N., & Lentz, B.F. (1998). The effects of sexual harassment on job satisfaction, earnings, and turnover among female lawyers, *ILR Review*, 51 (4), pp. 594-607. https://doi.org/10.2307/2525010

Lammers, J.C., Atouba, Y.L., & Carlson, E.J. (2013). Which identities matter? A mixed-method study of group, organizational, and professional identities and their relationship to burnout. *Management Communication Quarterly*, 27(4), 503-536. https://doi.org/10.1177/0893318913498824

Lazaro, C., Shinn, M., & Robinson, P.E. (1984). Burnout, job performance, and job withdrawal behaviors. *Journal of Health and Human Resources Administration*, 213-234.

Lee, H., Moon, S.Y., & Lee, N.Y. (2023). Industry Culture Matters: Sexual Harassment in the South Korean Film Industry, *Violence Against Women*, 0(0). https://doi.org/10.1177/10778012231203001

Lehman, W.E., & Simpson, D.D. (1992). Employee substance use and on-the-job behaviors. *Journal of Applied Psychology*, 77 (3), p. 309. https://doi.org/10.1037/0021-9010.77.3.309

León, F.R., & Morales, O. (2018). Effects of People-oriented Leadership and Subordinate Employability on Call Center Withdrawal Behaviors. *Journal of Work and Organizational Psychology*, 34(1), 56-62. https://doi.org/10.5093/jwop2018a7

Liao, Y., Liu, X.Y., Kwan, H.K., & Tian, Q.T. (2016). Effects of sexual harassment on employees' family undermining: social cognitive and behavioral plasticity perspectives. *Asia Pacific Journal of Management*, 33(4), 1-21. https://psycnet.apa.org/doi/10.1007/s10490-016-9467-y

Linos, E., Lasky-Fink, J., Halley, M., Sarkar, U., Mangurian, C., Sabry, H., & Jagsi, R. (2022). Impact of sexual harassment and social support on burnout in physician mothers. *Journal of Women's Health*, 31(7), 932-940. https://doi.org/10.1089/jwh.2021.0487

Liu, C.E., Yuan, X., Zhang, M.N., & Hu, C.H. (2019). Work-related identity discrepancy and work withdrawal behavior: the mediation effect of negative emotion. *International Journal of Business and Social Science*, 10, 229-236. https://doi:10.30845/ijbss.v10n7p25

Lobene, E.V., & Meade, A.W. (2013). The effects of career calling and perceived over qualification on work outcomes for primary and secondary school teachers. *Journal of Career Development*, 40(6), 508-530. https://psycnet.apa.org/doi/10.1177/0894845313495512

Malakh-Pines, A., Aronson, E., & Kafry, D. (1981). Burnout: from tedium to personal growth. Free Press. http://books.google.com/books?id=9_NGAAAAMAAJ

Martinmaki, S.E., de Jong, K., Komproe, I.H., Boelen, P.A., & Kleber, R.J. (2023). Incidence and severity of sexual harassment, and its impact on mental health in a cohort of international humanitarian field-workers. *Journal of interpersonal violence*, 38(11-12), 7426-7456. https://doi.org/10.1177/08862605221145954

Maslach, C., & Jackson, S.E. (1981). The measurement of experienced burnout. *Journal of organizational behavior*, 2(2), 99-113. https://doi.org/10.1002/job.4030020205

Maslach, C., & Leiter, M.P. (2016). Understanding the burnout experience: recent research and its implications for psychiatry. *World psychiatry*, 15(2), 103-111. https://doi.org/10.1002%2Fwps.20311

Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397-422. https://doi.org/10.1146/annurev.psych.52.1.397

Mathews, E., Hammarlund, R., Kullar, R., Mulligan, L., Le, T., Lauve, S., & Crapanzano, K. (2019). Sexual harassment in the house of medicine and correlations to burnout: a cross-sectional survey. *Ochsner Journal*, 19(4), 329-339. https://doi.org/10.31486/toj.19.0019

McLaughlin, H., Uggen, C., & Blackstone, A. (2012). Sexual harassment, workplace authority, and the paradox of power. *American sociological review*, 77(4), 625-647. https://psycnet.apa.org/doi/10.1177/0003122412451728

Merkin, R.S. (2008). The impact of sexual harassment on turnover intentions, absenteeism, and job satisfaction: Findings from Argentina, Brazil and Chile. *Journal of International Women's Studies*, 10(2), 73-91. Available at: http://vc.bridgew.edu/jiws/vol10/iss2/7

Mishra, S.K., & Kumar, K.K. (2016). Minimizing the cost of emotional dissonance at work: a multi-sample analysis. *Management Decision*, 54(4), 778-795. http://dx.doi.org/10.1108/MD-06-2015-0222

Mursi, M. (2014). The Effect of Transactional Leadership on Sense of Job Insecurity and Psychological Withdrawal from Work, Afield Study. *Jordan Journal of Business Administration*, 10(2). https://journals.ju.edu.jo/JJBA/article/view/6623

Nicole Salvaggio, A., Hopper, J., & Packell, K.M. (2011). Coworker reactions to observing sexual behavior at work. *Journal of Managerial Psychology*, 26(7), 604-622. http://dx.doi.org/10.1108/02683941111164508

Nimri, R., Kensbock, S., Bailey, J., & Patiar, A. (2021). Management perceptions of sexual harassment of hotel room attendants. *Current Issues in Tourism*, 24(3), 354-366. http://dx.doi.org/10.1080/13683500.2020.1722619

Pallant, J. (2005). *SPSS Survival Guide*. Open University Press, Maidenhead.

Pearlman, D.M., & Bordelon, B.M. (2022). How the# MeToo movement affected sexual harassment in the hospitality industry: A US case study. *International Journal of Hospitality Management*, 101, 103106. https://doi.org/10.1016/j.ijhm.2021.103106

Pokharel, G.B.D.D.R., & Sharma, R.K.D.S. (2020). Abusive Supervision and Withdrawal Behaviors: Defensive Role of Ability-Job-Fit. *The Saptagandaki Journal*, Xi (11). http://dx.doi.org/10.3126/sj.v11i0.36900

Poulston, J. (2008). Metamorphosis in hospitality: A tradition of sexual harassment. *International Journal of Hospitality Management*, 27(2), 232-240. https://doi.org/10.1016/j.ijhm.2007.07.013

Ram, Y. (2018). Hostility or hospitality? A review on violence, bullying and sexual harassment in the tourism and hospitality industry. Current Issues in Tourism, 21(7), 760-774. https://doi.org/10.1080/13683500.2015.1064364

Ram, Y., Tribe, J., & Biran, A. (2016). Sexual harassment: overlooked and under-researched. *International Journal of Contemporary Hospitality Management*, 28(10), 2110-2131. https://doi.org/10.1108/IJCHM-05-2015-0240

Reguera, C., & García-Izquierdo, A.L. (2021). Women as victims of court rulings: Consequences of workplace harassment in the hospitality industry in spain (2000–2016). *Sustainability*, 13(14), 7530. https://doi.org/10.3390/su13147530

Salman, M., Abdullah, F., & Saleem, A. (2016). Sexual harassment at workplace and its impact on employee turnover intentions. *Business & Economic Review*, 8(1), 87-102. http://dx.doi.org/10.22547/BER/8.1.6

Scanlan, J.N., & Still, M. (2013). Job satisfaction, burnout and turnover intention in occupational therapists working in mental health, *Australian Occupational Therapy Journal*, 60 (6), pp. 310-318, https://doi.org/10.1111/1440-1630.12067

Schaufeli, W.B., Leiter, M.P., & Maslach, C. (2009). Burnout: 35 years of research and practice. *Career development international*, 14(3), 204-220. https://doi.org/10.1108/13620430910966406

Sekaran, U., & Bougie, R. (2013*). Research Methods for Business, 6th ed*. Wiley, London.

Shahinaz, I. (2015). The Phenomenon Of Sexual Harassment: Causes - Consequences Methods Of Treatment, *daraloloom*, ISBN 9796500259611. https://books4arabs.com/BORE02-1/BORE02-1743.pdf

Shapira-Lishchinsky, O., & Even-Zohar, S. (2011). Withdrawal behaviors syndrome: An ethical perspective. *Journal of Business Ethics*, 103, 429-451. https://psycnet.apa.org/doi/10.1007/s10551-011-0872-3

Shatnawi, H., AL-Najdawi, B., Kanaan, K., Khaleefah, Q., & Khasawneh, M. (2019). factors affecting customers' behavior towards tipping intentions in Jordanian restaurants. *GeoJournal of Tourism and Geosites*, 26(3), 761–768. https://doi.org/10.30892/gtg.26307-395

Sliter, M., Sliter, K., & Jex, S. (2012). The employee as a punching bag: The effect of multiple sources of incivility on employee withdrawal behavior and sales performance. *Journal of Organizational Behavior*, 33(1), 121-139. https://psycnet.apa.org/doi/10.1002/job.767

Srivastava, S., & Agarwal, S. (2020). Workplace bullying and intention to leave: a moderated mediation model of emotional exhaustion and supervisory support. *Employee Relations: The International Journal*, 42(6), 1547-1563. https://doi.org/10.1108/ER-07-2019-0293

Stark, S., Chernyshenko, O.S., Lancaster, A.R., Drasgow, F., & Fitzgerald, L.F. (2002). Toward standardized measurement of sexual harassment: Shortening the SEQ-DoD using item response theory. *Military Psychology*, 14(1), 49-72. doi:10.1207/S15327876MP1401_03

Tang, C.S.K., Au, W.T., Schwarzer, R., & Schmitz, G. (2001). Mental health outcomes of job stress among Chinese teachers: Role of stress resource factors and burnout. Journal of Organizational Behavior: *The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 22(8), 887-901. doi.org/10.1002/job.120

Timmerman, G., & Bajema, C. (1999). Sexual harassment in northwest Europe. *European Journal of Women's Studies*, 6(4), 419-439. doi.org/10.1177/135050689900600402

Touni, R., & Mohamed Hussien, H. (2021). Uncovering sexual harassment issues in the workplace: a study on hotels in Egypt. *Journal of Association of Arab Universities for Tourism and Hospitality*, 21(5), 171-192. doi.10.21608/JAAUTH.2021.106036.1264

van Jaarsveld, D. D., Walker, D. D., & Skarlicki, D. P. (2010). The role of job demands and emotional exhaustion in the relationship between customer and employee incivility. *Journal of Management, 36*(6), 1486–1504. https://doi.org/10.1177/0149206310368998

Wasti, S.A., Bergman, M.E., Glomb, T.M., & Drasgow, F. (2000). Test of the cross-cultural generalizability of a model of sexual harassment. Journal of Applied Psychology, 85(5), 766. psycnet.apa.org/doi/10.1037/0021-9010.85.5.766

Welsh, S. (1999). Gender and sexual harassment. *Annual Review of Sociology*, 25, 169–190. https://doi.org/10.1146/annurev.soc.25.1.169

Wittmer, J.L., & Martin, J.E. (2010). Emotional exhaustion among employees without social or client contact: The key role of nonstandard work schedules. *Journal of Business and Psychology*, 25, 607-623. https://psycnet.apa.org/doi/10.1007/s10869-009-9153-x

Worke, M.D., Koricha, Z.B., & Debelew, G.T. (2021). Perception and experiences of sexual harassment among women working in hospitality workplaces of Bahir Dar city, Northwest Ethiopia: a qualitative study. BMC Public Health, 21(1), 1119. https://doi.org/10.1186/s12889-021-11173-1

Wu, X., Shie, A.J., & Gordon, D. (2017). Impact of customer orientation on turnover intention: Mediating role of emotional labour. *International Journal of Organizational Analysis*, 25(5), 909-927. doi:10.1108/IJOA-06-2017-1184

Xuecheng, W., & Iqbal, Q. (2022). Factors affecting employee's retention: Integration of situational leadership with social exchange theory. *Frontiers in Psychology*, 13, 872105. https://doi.org/10.3389/fpsyg.2022.872105

Zhu, H., Lyu, Y., & Ye, Y. (2019). Workplace sexual harassment, workplace deviance, and family undermining. *International Journal of Contemporary Hospitality Management*, 31(2), 594-614. https://doi.org/10.1108/IJCHM-11-2017-0776

RESIDENTS' ATTITUDE TOWARDS ETHNO-TOURISM IN ULYTAU, KAZAKHSTAN

Rabiga MUKATOVA[*]
L.N. Gumilyov Eurasian National University, Tourism Department, Astana, Kazakhstan, e-mail: rabigushka@gmail.com

Noémi KULCSÁR
Budapest Metropolitan University, Institute of tourism, Budapest, Hungary, e-mail: nkulcsar@metropolitan.hu

Aitolkyn TLEUBAYEVA
L.N. Gumilyov Eurasian National University, Tourism Department, Astana, Kazakhstan, e-mail: tleubayeva_at@enu.kz

Abstract: This study aims to identify the local residents' attitude to ethno-tourism development in Ulytau region, which is located in the Republic of Kazakhstan. The research also analyses the economic, environmental, and socio-cultural impact of ethno-tourism both from positive and negative perspectives. To meet the research goals, a structured survey was constructed and distributed from February 2022 to September 2023 among locals of Ulytau. It was studied the attitude of the local population to ethno-tourism, openness and readiness for innovation and ethno-tourism. All variables of the measurement instrument were created based on a review of the relevant literature and modified to define the target group in accordance with the objectives of the study. Based on the results, local citizens are positive to develop ethno-tourism, but in sustainable way with preserving natural and cultural heritage.

Key words: ethno-tourism, Ulytau, local residents, innovation, sustainable development

* * * * * *

INTRODUCTION

Currently, ethno-tourism is considered as one of the most attractive types of tourism, which contributes to the economic, social, spiritual, and cultural development of many states and allows preserving the historical heritage. In this regard, it is important to comprehensively study theoretical approaches to the formation of scientific and theoretical foundations of ethno-tourism and conceptual views of residents' attitudes towards its development.

Kazakhstan is a multi-ethnic country, more than 140 nations and ethnic groups are leaving there. Some authors highlighted the residents' attitude on the development of ethno-tourism in multi-ethnic countries like United States (Santos and Yan, 2008), Europe (Shaw et al., 2004), Japan (Maruyama & Woosnam, 2015), Vietnam (Le et al., 2023), and China (Huo et al., 2023; Wang et al., 2020). Ulytau region is a new region of Kazakhstan, it was created in 2022.

It is located in the central part of Kazakhstan, formerly was a part of Karagandy region. Ulytau has a lot of cultural, historical and natural resources and has a great opportunity to become an ethno-tourism destination. According to the official statistic data of the Bureau of National Statistics of the Republic of Kazakhstan, Ulytau region has lowest population density (approximately 1.2 people / km^2) and it is the home for more than 50 nations and ethnic groups. However, while many studies focused on the identification of local residents' attitude towards cultural and ethno-tourism, there are no studies about Ulytau local citizens' attitude to tourism. This study examines the impact of the attitude of local residents to the development of ethno-tourism in Ulytau region both from negative and positive perspectives. The study results can be helpful for theoretical orientation of scientists, as well as for the government and DMO.

LITERATURE REVIEW
1. Ethno-tourism and resident's perception

According to the classical definitions of "ethno-tourism" by Smith (1977), Graburn (1978), McIntosh and Goldner (1990), this type of tourism includes tourists visiting the homes of local residents, communities and tribes, their participation in traditional and religious rituals, acquaintance with art and culture. Numerous authors studied the relationship between ethnic identity and the development of tourism industry, the factors influencing the ethno-tourism (Wood, 1998). In addition, McIntosh and Johnson (2005) investigated the concept of ethno-tourism and used it as a regional strategy for socio-economic development. The "ethno-tourism"concept is focused on the culture, ethnicity, forms of cultural existence of the local community, which are unique to tourists and may differ from their culture (Yang and Wall, 2009; Vengesayi et al., 2009). Additionally, the connection between tourism, multiculturalism, and creativity (Rugkhapan, 2023), the impact of ethnic minority endorsers on social media to tourists' perception of authenticity (Dong et al., 2023),

---

[*] Corresponding author

ethnic minority groups livelihood (Le et al., 2023) and aspirations of women in poverty who are working in tourism in Vietnam (DeJaeghere et al., 2022) were analyzed in some relevant research studies. De Lima (2016) characterized ethno-cultural and ecological tourism as a cultural and economic expression of ethnic development. Currently, the wide popularity of ethno-tourism among tourists can be explained by several reasons (Figure 1).

- A trip abroad takes more time and requires more money and effort than a tourist's acquaintance with his country and his own culture, especially after COVID-19 pandemic
- Some tourists are really interested in the history of their family, people or country, they want to get more information, satisfy their desire to learn
- Traveling is the way to neutralize routine, relax. Visiting other destinations, heritage sites to feel this culture and life of other people, become a direct participant in real action
- Many tourists are interested in the culture, heritage and traditions of other countries
- People are attracted by the sense of culture and the spirit of the past while traveling

Figure 1. The main reasons for the sustainable development of ethno-tourism (Source: Compiled by authors based on (Swain, 2011; Li et al., 2021)

Telfer and Sharpley (2008) emphasized the "development dilemma" of local citizens because of ethno-tourism growth. On the one hand, ethno-tourism is economically beneficial for locals, but on the other hand residents must save their environment, culture and traditions to next generations. And in some cases these attempts can cause the tension between tourists and local communities. While price and quality are considered as the primary conditions for consumers in selecting and evaluating tourism services, they also tend to determine value based on their own experiences and the friendliness of local communities (Kulcsár, 2017). Jurowski et al., (1997) proposed a three-dimensional model of residents' attitude towards tourism development from economic, social and environmental aspects. According to Vargas-Sánchez et al., (2009) and Yoon et al., (2001) six dimensions of economic, socio-cultural and environmental impacts from both positive and negative perspectives are the most common.

2. Ulytau region, its ethno-tourist potential

Ulytau is the geographical center of the Republic of Kazakhstan. The administrative center of the region is the city of Zhezkazgan. In the north it borders with Kostanay region, in the northeast and east - with Karaganda, in the southeast - with Zhambyl, in the south - with Turkestan and Kyzylorda, in the west - with Aktobe region. Ulytau region consists of 3 cities of regional significance (Zhezkazgan, Karazhal, Satpaev), 2 districts (Ulytau and Zhanaarka), 25 rural districts, 71 rural localities (Table 1). The following table provides information on the national composition of the population of Ulytau region and Ulytau district at the beginning of 2023 (Table 2). Representatives of more than 50 ethnic groups live in the region.

Table 1. Population of Ulytau region, the beginning of 2023

№	Administrative unit	Territory km^2	Population, thousand people	Population density people/km^2
1	Zhanaarka district	62 347.81	31.1	0.5
2	Ulytau district	122 931.05	11.2	0.09
3	Zhezkazgan city	1 760.97	92.9	52.76
4	Qarazhal city	792.43	17.5	22.08
5	Satbaev city	1 104.35	68.7	62.2
	Total	188 936.61	221.4	1.17

Note – complied by authors based on the data from National Bureau of Statistics of the Republic of Kazakhstan [https://stat.gov.kz]

Table 2. National composition of the population of Ulytau region and Ulytau district at the beginning of 2023, people

Ethnic groups	Ulytau region	Share in the region, %	Ulytau District	Share in the District, %
Kazakhs	168,630	76.15	10,637	94.8
Russians	31,652	14.3	327	2.9
Ukrainians	6,554	2.95	57	0.5
Germans	2,764	1.24	47	0.42
Tatars	2,676	1.2	29	0.26
Belarusians	1,305	0.6	13	0.12
Koreans	1,058	0.5	13	0.12
Uzbeks	880	0.39	14	0.12
Azerbaijanis	843	0.38	2	0.02
Other nationalities	5,064	2.29	84	0.74
Total	221,426		11,223	

Note – complied by authors based on the [https://stat.gov.kz]

Based on table above, the majority of Ulytau population is Kazakh (in the region -76.15%, in the district-94.8%). In addition, representatives of Russian, Ukrainian, German, Tatar and other ethnic groups are living in the analyzed region.

Ulytau is a region with rich historical, archeological, natural and cultural resources (Mukatova et al., 2022). More than 736 historical and cultural monuments are located in Ulytau, whereas 12 of them have republican significance, and more than 10 thousand are not registered with the state. Ulytau is famous for its archaeological, cultural, historical monuments, such as the mausoleum of Zhoshy Khan, the eldest son of Genghis Khan, Khan Ordasy - the cult place of the historical gathering of representatives of the three zhuzes (historically the division of population based on location), the residence of the khans (kazakh name of rulers), Taldysay complex - ancient center of metallurgy and etc.

The cultural landscape of Ulytau has been proposed by the Government of Kazakhstan as candidates for inclusion in the UNESCO World Heritage List in 2021 № 6560 based on "v- Cultural criteria". The development of ethno-tourism can increase the influx of tourists to the region and become a source of income for the state budget. In addition, it contributes to population growth, the creation of new jobs, gives region opportunity to attract investments from abroad. This type of development is connected to local citizens and requires sustainability, preserving cultural heritage, and improving the well-being of the population. It is vital to take into account local residents point of view to such type development.

MATERIALS AND METHODS

In order to determine the role and attitude of the local citizens to the development of ethno-tourism in Ulytau, surveys, interview and monitoring were conducted. This research work was conducted from February 2022 to September 2023. On this basis, economic impact, environmental impact and socio-cultural impact of ethno-tourism development in Ulytau were analyzed from positive and negative perspectives. Additionally, the attitude of the locals to ethno-tourism, openness and readiness for innovation were analyzed. The survey was conducted face-to-face and online by using a Google form platform. The main steps are given in Figure 2.
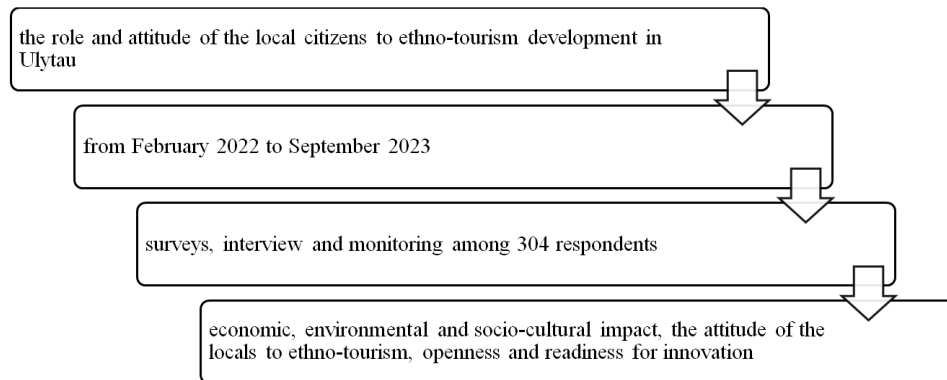
Figure 2. The main steps of methodology Note – complied by authors based on the survey

The study was conducted using a quantitative survey. All variables of the measurement instrument were created based on a review of the relevant literature and modified to define the target group in accordance with the objectives of the study. The survey conducted to collect data consisted of 5 parts. A total of 304 respondents answered the questionnaire. Respondents were selected from key stakeholder groups including the local population, ethnic majority, and minority groups as the target group. The items of this study were initially taken from a comprehensive review of the existing literature.

Figure 3. The main information about respondents Note – complied by authors based on the survey

The main information about respondents is given in Figure 3. The average monthly income of almost half of the survey participants was less than 200 USD, and 44.4% of respondents - 201-500 USD. Based on the official data of Bureau of national statistics, the average monthly nominal salary in Kazakhstan (1st quarter of 2023) was 365 502 KZT (730 USD), while the minimum salary - 70,000 tenge (140 USD) (https://www.stat.gov.kz).

The first part consists of 9 general questions based on scientific studies aimed at determining the profile of the respondent (Yang, 2011; Taheri et al., 2014; Kim et al., 2012) and the attitude of local residents to innovation consisted of 7 attitude questions (Gardiner and Scott, 2018; Ozseker, 2018; Tomescu and Botezat, 2015).

It was rated on a 7-point Likert scale (where 1=strongly disagree, 7=strongly agree). The survey questions were aimed at determining the age, gender, level of education of the respondents, income, field of activity, nationality, time of residence in Ulytau, and the degree of social networks use. The second part consisted of 7 questions on the topic "Positive / negative impact on the economy." The third part considered 4 questions on the topic "Positive/negative impact on the environment", the fourth part included 7 questions on the topic "Positive/negative socio-cultural impact".

These questions were compiled on the basis of questionnaires (Gursoy et al., 2002; Koa and Stewart, 2002) and evaluated on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). The fifth part consists of 10 questions that explore the current state of development of ethno-tourism in the region and the readiness of local residents for its development. In compiling this section, the works of Woosnam et al. (2019), McGehee and Anderek (2004) were used. In this section, respondents' familiarity with the concept of ethno-tourism, knowledge and preservation of traditions, attitude towards ethno-tourism, readiness for its development and problems were assessed on a seven-point Likert scale (1 = completely disagree, 7 = completely agree). Quantitative and qualitative analytical methods were used to analyze and interpret the data. Quantitative data were coded and analyzed using SPSS and Excel statistical software.

RESULTS AND DISCUSSION

According to the results, the image of the respondents was determined. The characteristics of the respondents (i.e., socio-demographic, etc.) are shown in the following table (Table 3). The majority of respondents have lived in the region since birth (52.6%), while 25.7% have lived there for more than 10 years.

The ethnic majority is 93% Kazakh, while ethnic minorities include Russians, Uzbeks, and representatives of other nationalities. In fact, the Kazakh language is developing in the Ulytau region, representatives of other nationalities also speak the Kazakh language, interethnic marriages also took place in the region.

Table 3. Profile of survey respondents among the local population (N=304) Note - compiled by the authors based on the results of the survey

Variables	%	Variables	%
Gender Male Female	 52.6 47.4	Use of social networks Instagram Facebook Telegram Classmates Others Does not apply	 75.7 20.1 13.8 3.9 25.3 5.9
Age 18-25 26-35 36-45 46-55 56 and above	 28.6 29.6 18.5 12.8 10.5	Length of stay in Ulytau up to 1 year 1 to 3 years 3 to 5 years 5 to 10 years Over 10 years From birth	 2.3 2.3 5.6 11.5 25.7 52.6
Marital status Married Single	 66.1 33.9	Education level Secondary education College graduate Bachelor's degree Post-graduate education	 15.1 47 36.3 1.6
Approach to innovation Shows constant interest in innovation, Interested in innovation but not thoughtlessly implemented Smooth reception Doubt, don't believe in innovation	 22 57.6 19.1 1.3	Employment Office worker Civil servant Self-employed Farmers Worker Service industry Stay-at-home spouse Student Retired	 3 24 25 6.6 3.3 9.9 7.2 15.1 5.9
Nation Kazakh Russian Uzbek Other nation	 93 2.3 1 3.7	Monthly income (USD*) Less than 200 USD 201-500 USD 501-1000 USD 1001-2000 USD More than 2000 USD	 50.6 44.4 4.3 0.7 -

Figure 4. The occupation and attitude to innovation of respondents, % Note-Compiled by the authors based on the results of the survey

The occupation and attitude to innovation of respondents are given in Figure 4. In the section on the positive and negative economic impact, 97% of respondents strongly agree that the development of ethno-tourism in Ulytau increases employment opportunities for local residents. And 94.7% of residents fully agree with the possibility of increasing incomes because of ethno-tourism, 93.8% with the attraction of foreign investment in the region and an increase in the sale of local agricultural products, 92.4% with the development of infrastructure, 94.1% with an increase in the standard of living of the population, while 55.9% completely disagree that the development of ethno-tourism leads to higher prices (Figure 5).

Note-Compiled by the authors based on the results of the survey

According to the results of section about the positive / negative impact on the environment, 93.8% of respondents fully agree with the positive impact on the protection of the environment and natural resources, 94.1% with improving the operation of public facilities and improving the quality of services, while 60.5% completely disagree with the raising of noise level and 59.5% completely disagree with the increase of environmental pollution (Figure 6).
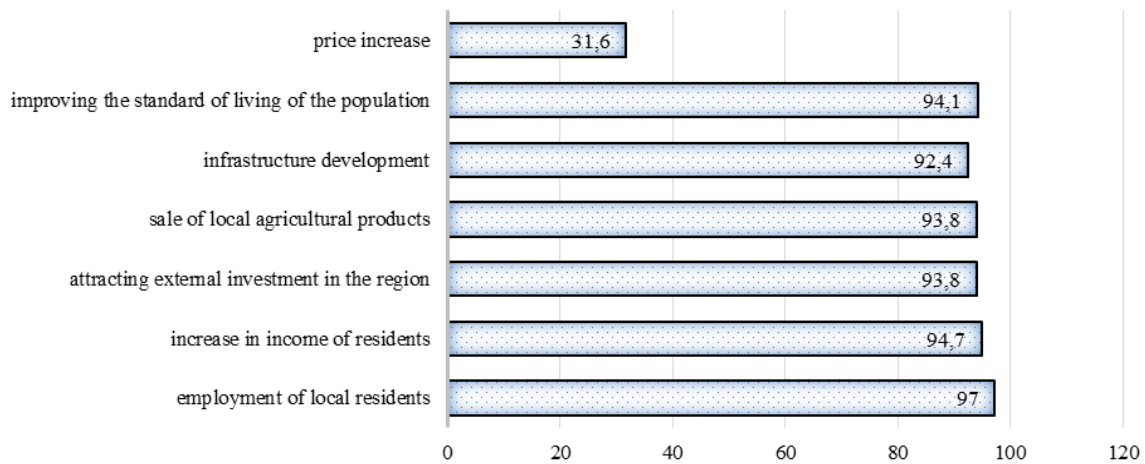
Figure 5. Results of a survey of local residents on the positive and negative economic impact on the development of ethno-tourism, %
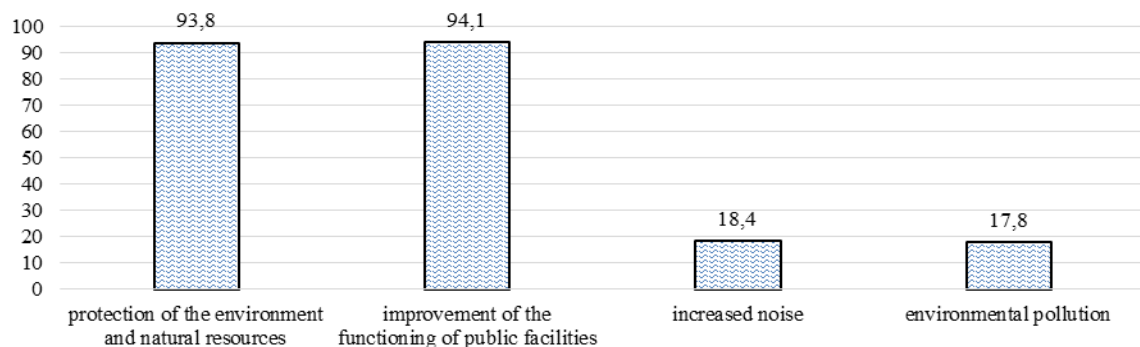
Figure 6. Results of a survey of local residents on the positive and negative impact on the environment
on the development of ethno-tourism, % (Note-Compiled by the authors based on the results of the survey)

According to the results of the socio-cultural impact, 94.7% of respondents strongly agree that the development of ethno-tourism in Ulytau contributes to the continuation and preservation of culture, 92.4% improve the understanding of various cultures, and 93.1% allow the culture of local residents to be widely known among tourists, 93.4% strongly agree with the increasing popularity of the region, 93.1% with the possibility of joint work of local residents, 64.5% strongly disagree with the lack of cultural authenticity, while 90.8% strongly agree with commercialization of traditional foods and rituals.

According to the results of the section devoted to the current state of development of ethno-tourism in the region and the readiness of local residents for its development, 49% of respondents are familiar with the concept of ethno-tourism, and about 7% are not familiar with it or could not answer. 93.1% of respondents are familiar with the traditions and customs of their people, 84.9% keep traditions, 58.6% answered that ethno-tourism supports the culture of the region, 41.4% believe that it contributes to improvement of regional identity (Figure 7).
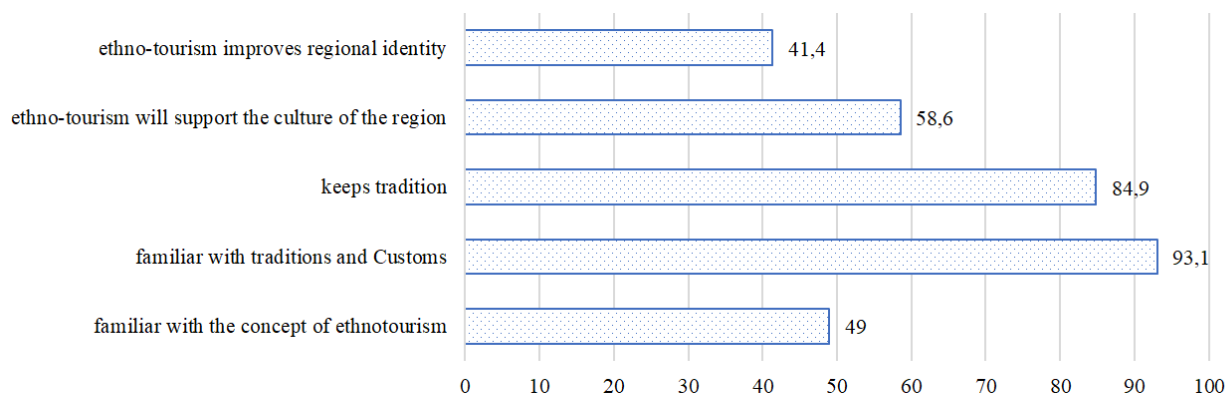
Figure 7. Results of a survey of local residents on the current state of development
of ethno-tourism, % (Note-Compiled by the author based on the results of the survey)

However, local residents indicated that they are currently not ready for the development of ethno-tourism, and 94.7% believe that local residents should acquire tourist service skills. 96.7% of respondents fully agree with the support for the development of ethno-tourism in the region, 75.7% of respondents are currently ready to develop ethno-tourism, among the factors that hinder them: lack of skills in servicing tourists - 34.5%, lack of funds - 59.5%, use of information technologies lack of skills - 9.5%, lack of training courses - 25.7%, lack of interest in the development of ethno-tourism - 0.3% (Figure 8). The reliability of survey data was measured using Cronbach's Alpha coefficient. Since the result exceeds the value of 0.7, the survey questions were determined to be reliable. The study Reliability Scale is presented in the following table (Table 4).
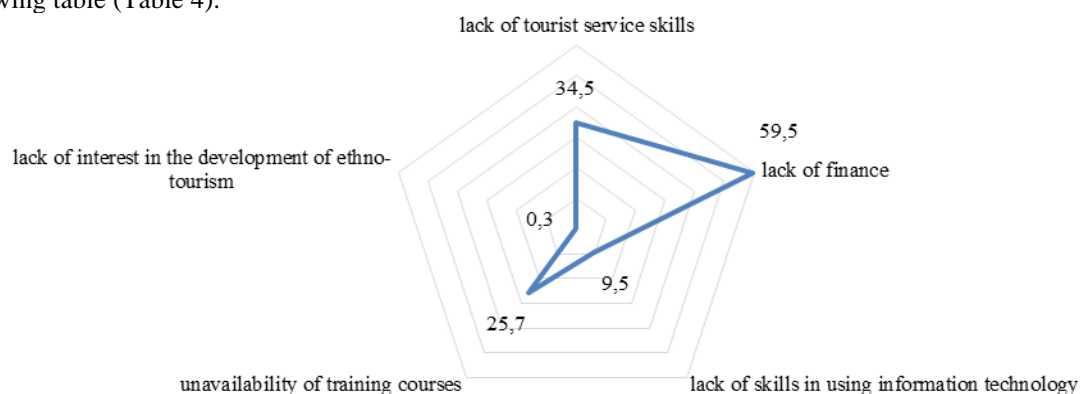
Figure 8. Results of a survey of local residents on factors that hinder
ethno-tourism development (Note-Compiled by the authors based on the results of the survey)

Table 4. The study Reliability Scale

Reliability Scale	Number of questions	Cronbach's alpha coefficient
A survey of local residents on the development of ethno-tourism in Ulytau	32	0,73

Note - compiled by the authors based on the results of the survey

According to the results of a survey conducted among local residents on the development of ethno-tourism in the Ulytau region, it was found that the locals have positive attitude towards the development of ethno-tourism and 75.7% strongly agree with their readiness to develop it, while 8.2% just agree. In general, 64.1% of the locals are familiar with the concept of ethno-tourism, and a significant part of them preserves and celebrates their traditions.

In addition, in relation to the attitude of local residents to ethno-tourism, 58.6% of them believe that ethno-tourism helps to preserve the identity and culture of the region, and 41.4% believe that it contributes to its improvement. 52.6% of the

local residents who took part in the survey believe that since they have been living in this region since birth, they attach significant importance to the development of the region and work on the development of ethno-tourism, which will positively affect the economy, cultural development, environmental protection and improvement of people's well-being.

CONCLUSION

According to the main results of residents' survey, it was found that the development of ethno-tourism causes the possibility of employment and increase in their income, attracting foreign investment to the region, raising the sale of local agricultural products and infrastructure development.

In addition, in terms of environmental impact, most respondents believe that the development of ethno-tourism contributes to the protection of the environment and natural resources, improves the operation of public facilities, and improves the quality of services, without increase in noise and environmental pollution.

According to the influence of ethno-tourism on culture, it has been established that its development contributes to the preservation of culture, improves understanding of various cultures, allows tourists learn about the culture of local residents, increases the popularity of the area, positively effects on the ability of local residents to work together, which leads to the commercialization of traditional products and customs. In general, it was found that the results are positive, local residents are ready for the development of ethno-tourism and know, expect, and agree with the benefits of ethno-tourism development. Analyzing the attitude of local residents to innovations, showed local residents openness to innovations, their thoughtful implementation after successful testing in the usual conditions.

Moreover, results demonstrated locals' attempts to discover and master new things and technologies, participate in innovative processes, acquire new knowledge and skills. In general, according to the results of the survey, local residents are ready to develop ethno-tourism, and for its implementation it is important to master the skills of serving tourists, introduce new programs, allocate funds from the state, develop tourism infrastructure, gain skills in using information technology, as well as open training courses. In conclusion, the development of ethno-tourism in Ulytau region is supported by locals, and requires sustainability with preserving natural and cultural heritage.

REFERENCES

De Lima, I.B., Kumble, P.A., De Almeida, M.G., Chaveiro, E.F., Ferreira, L.C.G., & Mota, R.D. (2016). Ecotourism community enterprises and ethno development: modelling the Kalunga empowerment possibilities in the Brazilian savannah. *Brazilian Journal of Science and Technology*, 3(1), 1–25. https://doi.org10.1186/s40552-016-0013-8

DeJaeghere, J., Wiger, N., Le, H., Luong, P., Ngo, N., Vu, T., & Lee, J. (2022). Why do aspirations matter for empowerment?: Discrepancies between the A-WEAI domains and aspirations of ethnic minority women in Vietnam. *World Development*, 159, 106057. https://doi.org/10.1016/j.worlddev.2022.106057

Dong, Y., Li, Y., Hua H., & Li, W. (2023). Perceived tourism authenticity on social media: The consistency of ethnic destination endorsers. *Tourism Management Perspectives*, 49, 101176. https://doi.org/10.1016/j.tmp.2023.101176

Gardiner, S., & Scott, N. (2018). Destination Innovation Matrix: A framework for new tourism experience and market development. *Journal of Destination Marketing & Management* 10, 122–131. https://doi.org/10.1016/j.jdmm.2018.07.002

Graburn, N. (1978). Tourism: the sacred journey, in V. Smith, ed, Hosts and Guests. *The Anthropology of Tourism*, Basil Blackwell, Oxford, 19-36.

Gursoy, D., Jurowski, C., & Uysal, M. (2002). Resident attitudes. A Structural Modeling Approach. *Annals of Tourism Research*, 29 (1), 79–105. https://doi.org/10.1016/S0160-7383(01)00028-7

Huo, T., Yuan, F., Huo, M., Shao, Y., Li, S., & Li, Z. (2023). Residents' participation in rural tourism and interpersonal trust in tourists: The mediating role of residents' perceptions of tourism impacts. *Journal of Hospitality and Tourism Management*, 54, 457–471. https://doi.org/10.1016/j.jhtm.2023.02.011

Jurowski, C., Uysal, M., & Williams, D.R. (1997). A theoretical analysis of host community resident reactions to tourism. *Journal of Travel Research*, 36(2), 3–1. https://doi.org/10.1177/004728759703600202

Kim, J., Ritchie1, J.R., & McCormick, B. (2012). Development of a Scale to Measure Memorable Tourism Experiences. *Journal of Travel Research*, 51(1): 12–25. https://doi.org/10.1177/0047287510385467

Koa, D., & Stewart, W. (2002). A structural equation model of residents' attitudes for tourism development. *Tourism Management* 23, 521–530. https://doi.org/10.1016/S0261-5177(02)00006-7

Kulcsár, N. (2017). *Analyzing the Consumer Value Dimensions of Rural Tourism*. Saarbrücken, Lambert Academic Publishing.

Le, H., Nguyen, M., Le, H., & Shinjo, H. (2023). Implementation of payment for forest environmental services and its influence on the livelihood of ethnic minorities in Thua Thien Hue Province, Vietnam. *Trees, Forests and People*, 13, 100404. https://doi.org/10.2139/ssrn.4289796

Li, X., Xie, C., Morrison, A.M., & Nguyen, T.H. (2021). Experiences, Motivations, Perceptions, and Attitudes Regarding Ethnic Minority Village Tourism. *Sustainability*, 13, 2364. https://doi.org/10.3390/su13042364

Maruyama, N., & Woosnam, K.M. (2015). Residents' ethnic attitudes and support for ethnic neighborhood tourism: The case of a Brazilian town in Japan. *Tourism Management*, 50: 225-237. https://doi.org/10.1016/j.tourman.2015.01.030

Mcgehee, G., & Andereck, L. (2015). Factors Predicting Rural Residents' Support of Tourism. *Journal of Travel Research* , 43(2), 131-140. https://doi.org/10.1177/0047287504268234

McIntosh, R., & Gocldner, C.R. (1990). *Tourism. Principles, Practices and Philosophies*, 6th edn, Wiley, New York.

McIntosh, A. J., & Johnson, H. (2005). Exploring the nature of the Maori experience in New Zealand: views from hosts and tourists. *Tourism*, 52(2), 117–129.

Mukatova, R., Mussina, K., & Rodríguez, M. (2022). The Untapped Potential of Ethno-Tourism in Ulytau Region. *Journal of Environmental Management and Tourism*, XIII, 6(62): 1534-1550. https://doi.org/10.14505/jemt.v13.6(62).02

Mutangaa, C.N., Vengesayi, S., Chikuta, O., Muboko, N., Gandiwa, E. (2017). Travel motivation and tourist satisfaction with wildlife tourism experiences in Gonarezhou and Matusadona National Parks, Zimbabwe. *Journal of Outdoor Recreation and Tourism*, 20, 1-18. https://doi.org/10.1016/j.jort.2017.08.001

Ozseker, B.D. (2018). Towards a model of destination innovation process: an integrative review. *The Service Industries Journal*. https://doi.org/10.1080/02642069.2018.1491970

Rugkhapan, N. (2023). Linear tourism, multiculturalism, creative district: The case of Charoenkrung creative district in Thailand. *Annals of Tourism Research*, 102, 103626. https://doi.org/10.1016/j.annals.2023.103626

Santos, C.A., & Yan, G. (2008). Representational politics in Chinatown: the ethnic other. *Annals of Tourism Research*, 35(4), 879-899. https://doi.org/10.1016/j.annals.2008.06.006

Shaw, S., Bagwell, S., & Karmowska, J. (2004). Ethnoscapes as spectacle: reimaging multicultural districts as new destinations for leisure and tourism consumption. *Urban Studies*, 41(10), 1983-2000. https://doi.org/10.1080/0042098042000256341

Smith, V. (1977). [1989]. *Hosts and guests: The anthropology of tourism*. Philadelphia: University of Pennsylvania Press.

Swain, M. (2011). Ethnic Tourism and Indigenous Cosmopolitans. *Sociology*, 15-26.

Taheri, B., Jafari, A., & O'Gorman, K. (2014). Keeping your audience: Presenting a visitor engagement scale. *Tourism Management*, 42: 321-329. https://doi.org/10.1016/j.tourman.2013.12.011

Telfer, D., & Sharpley, R. (2008). *Tourism and development in the developing world*. Abingdon: Routledge, 280. https://doi.org/10.4324/9780203938041

Tomescu, A.M., & Botezat, E.A. (2015). Innovative practices in tourism. A possible model by fostering shadow factors. *Ecoforum*, 4.

Vargas-Sánchez, A., Plaza-Mejia, M.D.L.Á., & Porras-Bueno, N. (2009). Understanding residents' attitudes toward the development of industrial tourism in a former mining community. *Journal of Travel Research*, 47(3), 373–387. https://doi.org/10.1177/0047287508322783

Vengesayi, S., Mavondo, F., & Reisinger, Y. (2009). Tourism destination attractiveness: Attractions, facilities, and people as predictors. *Tourism Analysis*, 14(5), 621-636. https://doi.org/10.3727/108354209X12597959359211

Wang, Y., Shen, H., Ye, S., & Zhou, L. (2020). Being rational and emotional: An integrated model of residents' support of ethnic tourism development. *Journal of Hospitality and Tourism Management*, 44, 112-121. https://doi.org/10.1016/j.jhtm.2020.05.008

Wood, R. (1998). Touristic ethnicity: A brief itinerary. *Ethnic and Racial Studies*, 21(2), 218–241

Woosnam, K., Naho, U., Maruyama, N., Ribeiro, M., & Joo, D. (2019). Explaining minority residents' attitudes of ethnic enclave tourism from general perceptions of tourism impacts. *Journal of Tourism and Cultural Change*, 17(4), 467-484. https://doi.org/10.1080/14766825.2019.1601407

Yang, L. (2011). Ethnic tourism and cultural representation. *Annals of Tourism Research*, 38, 561–585. https://doi.org/10.1016/j.annals.2010.10.009

Yang, L., & Wall, G. (2009). Ethnic tourism: A framework and an application. *Tourism Management.* 30, 559–570. https://doi.org/10.1016/j.tourman.2008.09.008

Yoon, Y., Gursoy, D., & Chen, J.S. (2001). Validating a tourism development theory with structural equation modeling. *Tourism Management*, 22(4), 363–372. https://doi.org/10.1016/S0261-5177(00)00062-5

*** Official website of the National Bureau of Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan. https://stat.gov.kz/en/

*** Official website of UNESCO. https://whc.unesco.org

MANGROVE FOREST MANAGEMENT STRATEGY IN BEDUL, BANYUWANGI: COLLABORATION BETWEEN COMMUNITY AND ALAS PURWO NATIONAL PARK FOR SUSTAINABLE ECOTOURISM DEVELOPMENT

SUMARMI[*]

Department of Geography, Universitas Negeri Malang, Malang, Indonesia, e-mail: sumarmi.fis@um.ac.id

Syamsul BACHRI

Department of Geography, Universitas Negeri Malang, Malang, Indonesia, e-mail: syamsul.bachri.fis@um.ac.id

PURWANTO

Department of Geography, Universitas Negeri Malang, Malang, Indonesia, e-mail: purwanto.fis@um.ac.id

Tuti MUTIA

Department of Geography, Universitas Negeri Malang, Malang, Indonesia, e-mail: tuti.mutia.fis@um.ac.id

Adellia Wardatus SHOLEHA

Department of Geography, Universitas Negeri Malang, Malang, Indonesia, e-mail: adellia.wardatus.2107218@students.um.ac.id

Pratidina Izza RAHMASYAH

Department of Geography, Universitas Negeri Malang, Malang, Indonesia, e-mail: pratidinaizza@gmail.com

Rajendra Prasad SHRESTHA

School of Environment, Asian Institute of Technology, Pathum Thani, Thailand, e-mail: rajendra@ait.ac.th

Abstract: This study aimed to: (1) identify the condition of the Bedul Banyuwangi mangrove forest area for sustainable ecotourism; (2) evaluate the fitness of the Bedul Banyuwangi mangrove forest for sustainable ecotourism; (3) evaluate collaboration between the community and the management of Alas Purwo National Park in conserving Bedul mangrove forest areas; and (4) design a management strategy for the Bedul mangrove forest for developing sustainable ecotourism. This research is a descriptive analytic study with a survey technique constructed using a remote sensing approach and a Geographic Information System (GIS). Landsat and Quickbird satellite imagery are used to identify temporal changes in mangrove forests and temperature over the last decade. Quickbird remote sensing data are used to evaluate the current land use associated with community activities in mangrove areas and government policies related to the presence of mangrove forests. The results showed that: 1) the condition of the Bedul Banyuwangi mangrove area from 1995-2022 was in a stable state. ; 2) the fitness of the Bedul Banyuwangi mangrove forest for sustainable ecotourism is included in the S2 category or following with the Bedul mangrove ecotourism fitness index; 3) the collaborative management of the Bedul mangrove ecotourism between the community (fishing community, local government) and the management of Alas Purwo National Park is continuing good to maintain the condition of the mangroves and provide economic benefits to the community in a sustainable manner; 4) the management strategy implemented is to maintain the quality and quantity of Bedul mangroves and supporting facilities in a sustainable manner. This research can be used as a reference for future research into sustainable ecotourism, as well as for the government to create policies that support sustainable ecotourism.

Key words: management strategy, sustainable ecotourism, mangrove forest

* * * * * *

INTRODUCTION

Mangrove forests are one of the characteristics of coastal biodiversity in Indonesia as an archipelagic country. Mangroves grow along muddy coastlines, particularly in areas with large river channels and deltas with continuous flow of sediment transported from higher elevations (Eddy et al., 2021; Kathiresan, 2021; Sumarmi et al., 2023). With 17.500 islands and 95.181 km of coastline, Indonesia is estimated to have the world's largest mangrove forest at 3,2 billion hectares (DasGupta and Shaw, 2014; Eddy et al., 2021; Kusmana, 2014). This area correlates with the coastal ecosystem in preventing coastal erosion, providing habitat for various species, ensuring the quality of marine products, protecting coastal communities from extreme weather, and storing carbon for climate change mitigation (Hochard et al., 2019; Lovelock and

---

[*] Corresponding author

Reef, 2020; Wang and Gu, 2021). According to the explanation of mangrove forests' ecological role, this purpose is to ensure that coastal communities, sea creatures, and other organisms can adjust to a variety of threats from the environment (Biswas and Biswas, 2020; DasGupta and Shaw, 2014; Leal Filho et al., 2022). The economic significance of mangrove ecosystems is influenced by a deeper awareness of ecosystems and the availability of relevant mangrove conservation training (Getzner and Islam, 2020). This correlation of economic opportunities is an adaptive measure to prevent the community from picking land degradation, illegal logging, and marine life exploitation as reasons for economic sustainability (Aye et al., 2019). Environmental circulation and the economic value of mangrove ecosystems are also acknowledged as contributing to the social welfare of the community, such as food security, air circulation, a conservation mindset, and natural risk barriers (Aye et al., 2019; Vo et al., 2012). Mangrove ecosystems have the potential to be used as potential marine ecotourism areas to support the development of an area that can enhance the economic conditions of the local community while ensuring the sustainability of its natural resources (Marasabessy et al., 2018; Sumarmi et al., 2023).

Ecotourism objectives are achieved by focusing on the interconnected importance of fundamental components (Sumarmi et al., 2023). These elements include a comprehension of tourists, the minimization of negative impacts, local community participation, local community welfare, and ecotourism sustainability (Kete, 2016; Sumarmi et al., 2020). Regarding the first-mentioned elements, tourists' knowledge of mangrove tourism objects or destinations is enhanced by providing them with relevant experience and education (Arinta et al., 2023; Sumarmi et al., 2020). Second, the developed mangrove ecotourism reduces the negative impacts on environmental and cultural sustainability (Fattah et al., 2023). Third, community participation in mangrove ecotourism management and implementation. Fourth, the welfare of local communities, such as increasing economic income to make mangrove ecotourism profitable, and fifth, ecotourism that is sustainable. Based on this explanation, it is crucial to develop mangrove ecotourism. The advantages of mangroves are closely linked to their sustainability in a particular area located on the eastern tip of Java Island, Indonesia. The Bedul Mangrove Ecotourism area, located in Banyuwangi Regency, is renowned for its comprehensive mangrove biodiversity in Indonesia. The area has 24 distinct species and spans across 2.300 ha (Sumarmi et al., 2022). The Bedul mangrove forest's emphasis on environmental education and conservation aligns with the ecotourism paradigm, which was established in 2007 and formally launched for visitors in 2009. The annual escalation in tourist entry has resulted in the temporary shutdown of the Bedul mangrove ecotourism. The previously mentioned event can be attributed to the exceeding of the carrying capacity of the Bedul mangrove ecotourism by an increase of tourists, as well as certain cases of mangrove plant problems (interview, 2022).

The Bedul Mangrove Ecotourism environment's significant potential resulted in a dispute over ownership. The lack of balance in the management of this area can be attributed to the conflict over ownership and distribution of utilization rights (Kurniawati et al., 2020; Sumarmi et al., 2022). Prior studies have similarly determined that the unregulated utilization of mangrove ecosystems has led to diminished functionality and inter-user disputes, particularly within the territorial limits of Indonesia (Eddy et al., 2021). Furthermore, the evaluation of the sustainability of mangrove forests typically places emphasis on biological and ecological factors, such that the appraisal of their utilization in the context of interdisciplinary cooperation between economics and social sciences is made explicit (Aye et al., 2019; Fattah et al., 2023). The observed decline in the carrying capacity of mangrove ecosystems is frequently attributed to anthropogenic drivers (Eddy et al., 2021; Friess et al., 2019; Rudianto et al., 2020; Worthington et al., 2020). The Bedul Mangrove Ecotourism is also subject to anthropogenic impacts. The location in question is designated as a conservation area and is safeguarded by the Alas Purwo National Park. It serves as a tourist destination, thereby requiring a collaborative effort towards comprehending the ecosystem and achieving shared objectives (Sumarmi et al., 2020). This study is essential for the local community.

Similar to the previously mentioned description of Bedul Mangrove Ecotourism, numerous studies have been conducted with a focus on the physical state of the mangrove area, the variety of mangrove species, and mangrove nurseries. Furthermore, prior academic investigations related to the Multitemporal Analysis of Mangrove Degradation in the Bedul Banyuwangi mangrove ecotourism area employed Sentinental 2A Imagery (Parela, 2020). Research has been conducted on the Mangrove Tourism Development Strategy in the Bedul areas. However, there is a lack of academic research on the collaborative efforts between the community and the Alas Purwo National Park Management in managing the Bedul Banyuwangi mangrove forest (Saifullah and Harahap, 2013). In 2022, a survey conducted by researchers revealed that facilities suffered considerable damage as a result of inadequate maintenance. This is very concerning because there is a chance that ecotourism chances will fail because of insufficient cooperation, understanding, and carrying capacity efforts, which could result in environmental destruction (Purwanti et al., 2021; Sumarmi et al., 2020).

The research process started by analyzing, identifying, and measuring the extent of changes in mangrove forest cover during the period of 1995-2022, to assess the collaboration and resilience of Mangrove Ecotourism in managing various issues. We are conducting 4 aims of research in this study, which consist of: (1) identifying the condition of the Bedul Banyuwangi mangrove forest area for sustainable ecotourism; (2) evaluating the fitness of the Bedul Banyuwangi mangrove forest for sustainable ecotourism; (3) evaluating collaboration between the community and the management of Alas Purwo National Park in conserving Bedul mangrove forest areas; and (4) designing a management strategy for the Bedul mangrove forest for developing sustainable ecotourism. The utilization of remote sensing presents a financially efficient method and valuable outcomes, particularly in the reconstruction of shifts in mangrove coverage.

LITERATURE REVIEW

Management of sustainable mangrove forests must be in line with sustainable development objectives that meet ecological, economic, and social dimensions. Particularly, alternative research indicates the existence of five main

dimensions: economy, society, ecology, technology, infrastructure, and law and institutions. According to Tjahjono et al., (2022), the five dimensions of mangrove ecotourism can be generated into three main strategic steps: 1) enhancing the quality of mangrove ecotourism products by the utilization of ecological characteristics and local wisdom; 2) enhancing the quality of human resources to effectively manage and produce competitive ecotourism products; and 3) promoting the development and construction of the main and additional mangrove ecotourism infrastructure using eco-friendly technology (Tjahjono et al., 2022). Moreover, the study from Arifanti et al. (2022) found that enhancing mangrove forest strategy and management requires the following: 1) improving the use and value of mangrove forests; 2) integrating protection management for mangrove ecosystems; 3) enhancing political commitment and law enforcement; 4) engaging all relevant stakeholders (particularly coastal communities); and 5) promoting research and innovation (Arifanti et al., 2022). The previously stated recommendations emphasize the importance of prioritizing sustainable networking among diverse stakeholders, including local government, community members, and managers.

One of the most significant challenges associated with these recommendations is establishing fair collaboration between management and the community. Cross-sectoral and multi-stakeholder participatory relationships have emerged as fundamental approaches to mangrove management in several nations, including Mexico, Ghana, and Brazil (Bryan-Brown et al., 2020). Challenges in the manager and the community relationship arise from issues such as land expansion, ownership conflicts, elite participation, unfair benefit distribution, community capacity limitations, divergent objectives, and the limited amount of time available for ecosystem development and preservation (Song et al., 2021).

Recent studies have further validated similar challenges, which include the following: 1) divergent perceptions regarding the importance and benefits of mangrove ecosystems; 2) the urgency of rehabilitation actions; 3) poor local participation; 4) the majority of low-income households residing in nearby to mangrove ecosystems; 5) the utilization of undeveloped sustainable mangrove ecosystems; and 6) rapid population expansion and economic demands that require land use changes. These socioeconomic issues serve as an indication that mangrove forest management strategies require improvement; moreover, increasing sustainable community participation is the most important concern.

It is essential that the participation of local communities in the management of mangrove forests ensures positive collaboration. This finding corresponds with previous research that establish the following factors affect local participation: 1) the presence of enough funding sources, 2) the effectiveness of law enforcement, 3) the transparency of financial management, 4) fair distribution of profits, 5) annual income level, and 7) whether an individual's livelihood is directly dependent on mangrove forests (Thuy et al., 2019). Further study indicates that fishermen have a significantly higher level of perception than other areas of society, suggesting that they perceive and experience the advantages of mangroves more extensively (Firdaus et al., 2021). Therefore, additional initiatives are required to ensure that the advantages experienced by the broader local community extend outside the fishing community. Previous research has suggested that in order to foster stronger collaborative trust and increase community access to resources, more cooperation is necessary (Valenzuela et al., 2020).

Direct observation reveals that the research location, located in the Bedul Banyuwangi Mangrove in East Java, is known for its dense population. Additionally, the area is located within the Alas Purwo National Park area, which classifies as a protected area. The existence of mandatory regulations in a protected area serves to encourage the implementation of sustainable development principles including ecological, economic, social, infrastructure/technology, and legal aspects, as suggested by previous studies (Tjahjono et al., 2022). In addition, this research is grounded in the recognition that unidirectional communication and collaboration pose a significant challenge, as demonstrated in previous research (Arifanti et al., 2022; Song et al., 2021). Therefore, current study aims to determine the current extent of mangrove resources, assess the effectiveness of current development models, examine the community and the manager collaboration in Alas Purwo National Park, and develop long-term development recommendations.

MATERIALS AND METHODS
Research Location
The research is conducted in Sumberasri Village, Purwoharjo District, Banyuwangi Regency, East Java. The researchers selected this location based on geographical studies and physical conditions available in the surrounding area. Previous research has indicated a significant increase in the phenomenon under investigation, which was then decreased as a result of excessive burden. However, the area that received a significant surge then had a substantial decline in 2018, resulting in a complete collapse during the COVID-19 pandemic. The selection of this area was based on the wide variety of mangrove species and its status as the most complex area in East Java.

Research Design
This study used field surveys, Geographic Information Systems (GIS), remote sensing techniques, and analytical descriptive research with a survey method. Remote sensing data in the form of Landsat and Quickbird satellite images are used to identify changes in the temporal extent of mangrove forests and temperature over the last 10 years. The utilization of Quickbird remote sensing data is applied for the evaluation of current land use.

Data Collecting
Data is collected using primary data and secondary data. The data that is directly obtained in the field is referred to as primary data. The collection of primary data was achieved through the implementation of field surveys, which involved various methods such as observations, field measurements, documentation, and interviews. A field survey was conducted to assess the potential of mangrove ecotourism in Bedul, Banyuwangi Regency. The survey focused on measuring physical

parameters such as height (m) and the diversity of mangrove plant species present in the area. Furthermore, interviews were conducted to determine the level of collaboration between the community and the Alas Purwo National Park management in preserving the Bedul mangrove forest. The research used secondary data obtained from remote sensing data, specifically Landsat and Quickbird satellite imagery, to observe the temporal changes in mangrove forests and temperature over a decade. The aim is to conduct a quantitative descriptive analysis to assess the condition of mangrove forest areas and their potential for sustainable ecotourism development. This research aimed to evaluate the fit of mangrove forests for the development of sustainable ecotourism by analyzing data obtained from field measurements. The tabulation of interview data was conducted to analyze the level of collaboration between the community and the Alas Purwo National Park management. Mangrove forest management strategies for sustainable ecotourism are determined based on image analysis data, field data analysis, and analysis results from interviews. For details on the research location, it is shown in the following Figure 1.
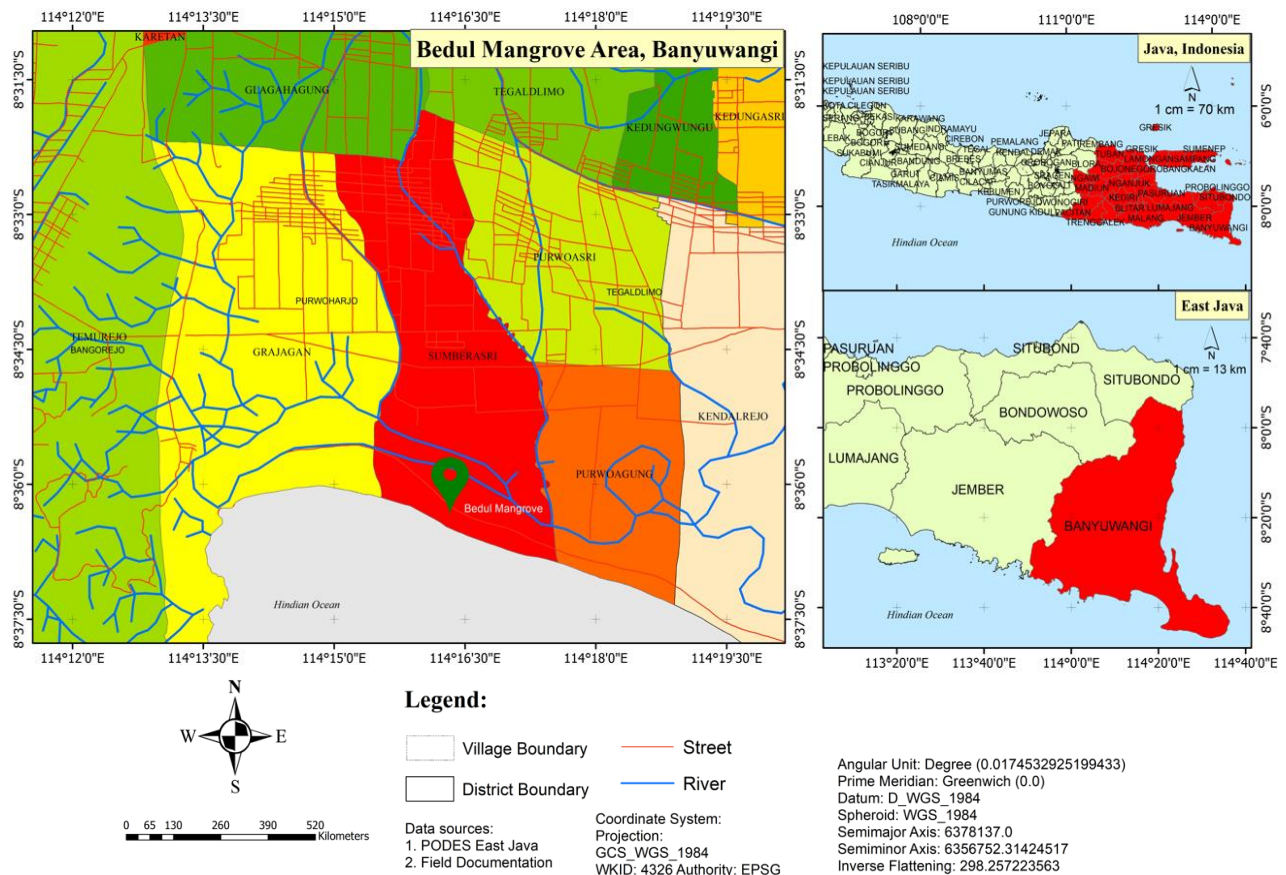
Figure 1. Research Location Map (Source: Author, 2022)

Data Analysis

This research involves a four-stage analysis process, which includes data collection, reduction, categorization, and drawing conclusions. The formula for assessing the fit of mangrove ecotourism is based on the fitness index for coastal and marine tourism (Yulianda, 2007). The process of calculating scores and weights involves the evaluation of various parameters such as mangrove thickness, density, species, biota, tides, area characteristics, and accessibility. The fitness categories can be seen in the following Table 1.

Table 1. Categories of land use for coastal ecotourism (Source: Yulianda, 2007)

Category	Index
S1 (Highy Fit)	>500
S2 (Fit)	>200-500
S3 (Moderate)	>50-200
N (Not Fit)	<50

$$IKW = \sum \left(\frac{Ni}{Nmax} \right) x \ 100 \ \%$$

Description: IKW: Tourism Fitness Index; Ni: Parameter score to I (weight x score); N max: Max score from tourism category

RESULTS AND DISCUSSION
The Condition of Bedul Mangrove Forest Area for Ecotourism

The condition of the mangroves in Bedul can be classified as 'fit' category. This is evidenced from several measurement variables, including mangrove type, density, area, and thickness. There are 27 species of mangroves with a density of 28 trees per 100 m^2 and a thickness of approximately 306 m. The implementation of the ecotourism concept in the Bedul mangroves is also regarded as highly successful. Observations and interviews indicate that the environmental conditions in the mangroves of Bedul qualify as clean. Bedul mangrove ecotourism also includes a number of support amenities such as restrooms, religious sites, and food stalls. The condition of the Bedul mangrove area for ecotourism over the past decade is shown in the table 2 and for time-series mapping is shown in Appendix 1 - 2.

Table 2. The Transformation of Bedul Mangrove Areas from 1995-2022
(Source: Analysis Data Spatial Time Series Citra Landsat dan Quickbird; Author, 2022)

	Land Cover	High-density Vegetation	Low-density Vegetation	Mangrove	Non-vegetation	Water	Total Cover (ha)
Year 1995				Year 1995			
	High-density Vegetation	1342.75	186.48				1529.23
	Low-density Vegetation	75.35	8441.41	11.52	493.02	2.75	9024.05
	Mangrove		330.27	906.96	9.66	2.39	1249.28
	Non-vegetation	6.65	2647.60	0.18	2572.72	10.10	5237.24
	Water	3.90	77.11	31.02	50.17	11722.95	11885.15
	Total Cover (ha)	1428.65	11682.86	949.68	3125.57	11738.19	28924.96
Year 2000				Year 2000			
	High-density Vegetation	1262.72	80.48		1.95	1.60	1346.75
	Low-density Vegetation	257.39	4917.90	26.06	334.18	7.89	5543.42
	Mangrove	0.71	145.46	1213.92	57.17	137.83	1555.08
	Non-vegetation	5.76	3849.89	5.05	4821.70	48.57	8730.97
	Water		6.47	0.18	12.32	11686.70	11705.67
	Total Cover (ha)	1526.58	8999.85	1245.21	5227.32	11882.49	28881.44
Year 2005				Year 2005			
	High-density Vegetation	1274.77	180.04	2.66	8.42	1.86	1467.75
	Low-density Vegetation	72.24	5017.50	117.36	2882.37	9.22	8098.68
	Mangrove	0.09	42.90	1370.54	9.04	9.31	1431.88
	Non-vegetation		298.82	37.31	5789.48	16.75	6142.37
	Water		4.17	27.21	41.66	11668.62	11741.65
	Total Cover (ha)	1347.10	5543.42	1555.08	8730.97	11705.75	28882.33
Year 2010				Year 2010			
	High-density Vegetation	1400.73	154.57	0.09	1.60	1.60	1558.58
	Low-density Vegetation	61.52	5751.81	21.54	1710.63	12.85	7558.36
	Mangrove	0.53	154.23	1400.32	28.98	81.63	1665.70
	Non-vegetation	4.61	2033.46	7.62	4391.14	48.22	6485.05
	Water	0.35	4.61	2.30	10.02	11597.35	11614.64
	Total Cover (ha)	1467.74	8098.69	1431.88	6142.37	11741.65	28882.32
Year 2015				Year 2015			
	High-density Vegetation	1331.50	53.36		0.62		1385.48
	Low-density Vegetation	220.44	5798.31	35.37	2109.59	2.04	8165.74
	Mangrove	0.18	107.52	1583.27	39.00	12.41	1742.37
	Non-vegetation		1578.08	7.36	4272.64	7.36	5865.43
	Water	6.47	21.09	39.71	63.20	11592.83	11723.30
	Total Cover (ha)	1558.58	7558.36	1665.70	6485.05	11614.64	28882.32
Year 2020				Year 2020			
	High-density Vegetation	1301.98	502.41		1.15	2.75	1808.29
	Low-density Vegetation	72.51	7009.07	29.52	2456.55	24.20	9591.85
	Mangrove		123.30	1703.99	44.41	85.89	1957.58
	Non-vegetation	10.11	529.72	8.24	3361.63	35.45	3945.15
	Water		1.24	0.62	1.68	11575.03	11578.57
	Total Cover (ha)	1383.71	8165.74	1742.37	5865.43	11723.31	28880.56
Year 2022				Year 2022			
	High-density Vegetation	1326.98	483.00			1.60	1811.57
	Low-density Vegetation	88.11	8155.49	1.60	1350.63	16.84	9612.67
	Mangrove	0.80	767.26	947.46	116.29	134.28	1966.09
	Non-vegetation	11.88	2264.26	0.27	1647.83	30.04	3954.28
	Water		12.85	0.35	10.81	11555.44	11579.46
	Total Cover (ha)	1426.88	11682.86	949.68	3125.57	11738.19	28923.19

According to the figure of the mangrove area map and the table regarding the condition of the mangrove area above, the condition of the Bedul Banyuwangi mangroves from 1995 to 2022 is stable. The table presented indicates the existence of five distinct classifications of land cover, which include high density vegetation, low density vegetation, mangrove, non-vegetation, and water. The stability of land cover within the high-density vegetation or low-density categories between the years 1995 and 2022 has been classified as stable (Figure 2). The graphical representation above indicated a reduction in changes related to land cover of high-density vegetation during the years 2000 and 2005, followed by a significant increase in 2010. Although not significantly, there have been new changes from 2015 to 2022. The second classification of land

cover is related to areas characterized by sparse vegetation or low-density vegetation. The low-density vegetation category exhibits a wider range of land cover in comparison to the high-density vegetation category. Changes in the land area occupied by low density vegetation are also categorized as stable. Figure 3 showed the number of changes in land area.
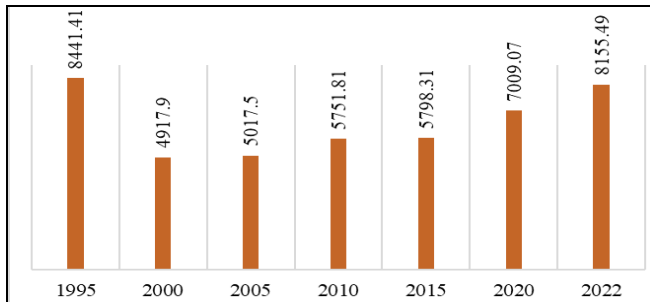
Figure 2. High-Density Vegetation (Ha) (Data Analysis, 2022)   Figure 3. Low-Density Vegetation (Ha) (Data Analysis, 2022)
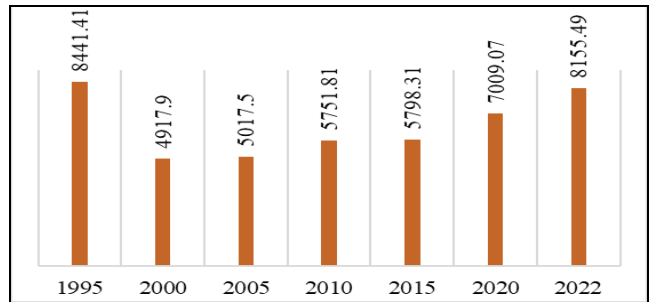
The amount of area covered by high-density vegetation increased in 1995 at 8441.41. The amount recorded in the year 2000 showed a decrease in comparison to the prior year, which had a value of 4917.90. The previous figure represented the minimum extent of low-density vegetation land cover in the area. Between 2005 and 2022, there has been a significant rise in land cover. It is projected that in 2022, the land area characterized by low density vegetation will reach a value of 8000, specifically 8155.49. The primary commodity in Bedul Mangrove is the mangrove land cover, which is indicated as the third parameter. The period spanning from 1995 to 2020 showed a consistent growth in the expanse of mangrove surfaces. The current year of 2020 exhibits optimal conditions for mangrove growth and development. The mangrove land area, as shown in the figure, measures 1703.99 ha. The comparison of mangrove land cover can be seen in Figure 4.
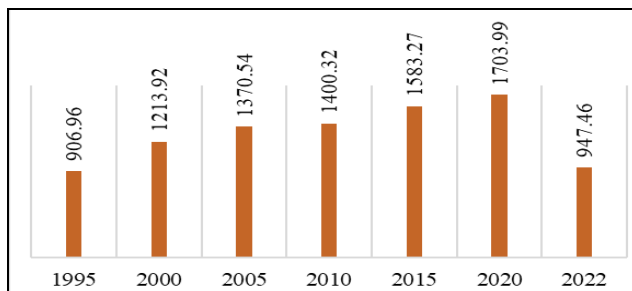
Figure 4. Mangrove Land Cover (Ha) (Data Analysis, 2022)   Figure 5. Non-Vegetation Land Cover (Ha) (Data Analysis, 2022)
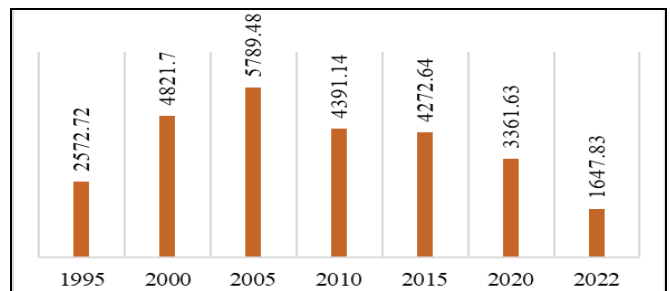
According to the data presented in Graph 3, there is an expected decrease in the extent of mangrove land in the year 2022. The Bedul Banyuwangi mangrove area is expected to extend 947.46 hectares by the year 2022. The reduction in the expanse of mangrove land can be attributed to a swift escalation in tourist activity. The Bedul Mangrove ecotourism location experienced ecological harm due to an increase of tourists that surpassed the carrying capacity, resulting in damage to multiple mangrove plants. The fourth parameter related to land cover includes non-vegetation areas that lack vegetation growth. The non-vegetation area exhibited a rise from 2572.72 in 1995 to 4821.7 in 2000. In 2005, the area experienced a significant expansion, reaching a high figure of 5789.48, which was the highest recorded in the past seven years. It is expected that the extent of non-vegetation land cover will exhibit a decrease from 2010 to 2022. The land area numbers can be seen in Figure 5.
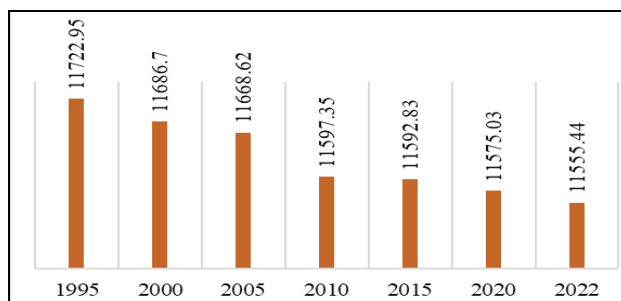
Figure 6. Water Area (Ha) (Data Analysis, 2022)   Figure 7. All Mangrove Area (Ha) (Data Analysis, 2022)
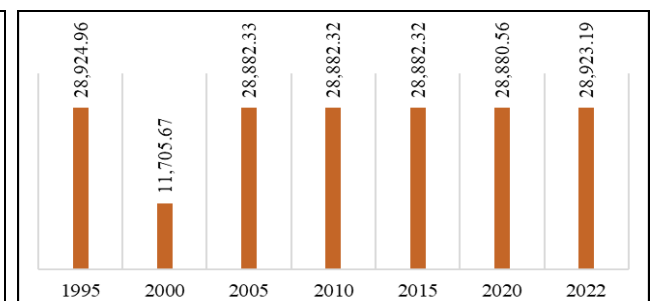
The non-vegetation land cover area was recorded as 4391.14 ha in the year 2010. The previous metric exhibited a persistent decrease in the years 2015, 2020, and 2022. In the year 2022, the minimum number recorded for non-vegetated land areas was 1647.83. The category of non-vegetation land cover includes the part of land that is occupied by built-up structures. The Bedul Banyuwangi mangrove area may contain built-up land in the form of residential areas and roads. The reduction in land cover area suggests a transition from non-vegetated regions to areas with little vegetation.

The fifth parameter refers to the measurement of the expanse of water or water-based solution. The water area included a total of 11722.95 ha in the year 1995. It is expected that the water land cover will experience a persistent decline from 2000 to 2022. It is anticipated that by the year 2022, the total area of water land cover will have reached a value of 11555.44 ha. The observed reduction in the extent of water cover can be attributed to a shift in land use practices, in which areas previously occupied by water have been converted to low density vegetation. Changes in land cover can be seen in Figure 6. The analysis of the five land cover parameters in the Bedul Banyuwangi Mangrove revealed that the overall condition of the mangrove area has exhibited minor fluctuations, indicating a stable state. The utilization of stable mangrove areas for ecotourism purposes is a possible possibility (Figure 7). The mangrove ecosystem in Bedul has the potential to be sustainably developed for the benefit of both the environment and the local communities. The guiding principle of ecotourism is to mitigate negative impacts by prioritizing ecological balance and financial stability (Salam et al., 2000).

Table 3. The Fitness Index for Bedul Mangrove Ecotourism

No.	Parameter	Observation Result	Weight	Score	Total	Classification
Observation Point 1: Jogging Track Entrance (50UTM-L 0199058 9049499)						
1.	Mangrove height (m)	310	30	3	90	S2
2.	Mangrove density (100 m2)	16	20	4	80	S1
3.	Mangrove type	5	20	3	60	S2
4.	Biodiversity	Fish, crabs, birds	10	2	20	S3
5.	Tidal waves (m)	<1	10	4	40	S1
6.	Area Characteristics	Natural, small islands, riverside estuary, existing tourist destinations, endangered species, and flat areas	5	4	20	S1
7.	Accessibility	Land and sea transport routes, entrance route, near to villages, built infrastructures	5	4	20	S1
		Total			330	S2 (Fit)
Observation Point 2: Mangrove Planting (50UTM-L 0199014 9049514)						
1.	Mangrove height (m)	310	30	3	90	S2
2.	Mangrove density (100 m2)	28	20	4	80	S1
3.	Mangrove type	2	20	2	40	S3
4.	Biodiversity	Fish, crabs, birds	10	2	20	S3
5.	Tidal waves (m)	<1	10	4	40	S1
6.	Area Characteristics	Natural, riverside estuary, existing tourist destinations, endangered species, and flat areas	5	4	20	S1
7.	Accessibility	Land and sea transport routes, entrance route, near to villages, coastal access road using motor boats	5	4	20	S1
		Total			310	S2 (Fit)
Observation Point 3: Bedul Pier (50UTM-L 0199670 9048938)						
1.	Mangrove height (m)	310	30	3	90	S2
2.	Mangrove density (100 m2)	26	20	4	80	S1
3.	Mangrove type	3	20	3	60	S2
4.	Biodiversity	Fish, crabs, birds	10	2	20	S3
5.	Tidal waves (m)	<1	10	4	40	S1
6.	Area Characteristics	Natural, riverside estuary, existing tourist destinations, endangered species, and flat areas	5	4	20	S1
7.	Accessibility	Land and sea transport routes, entrance route, near to villages, built infrastructures	5	4	20	S1
		Total			330	S2 (Fit)
Observation Point 4: Kempeng Road-South (50UTM-L 0200232 9048506)						
1.	Mangrove height (m)	266	30	3	90	S2
2.	Mangrove density (100 m2)	24	20	4	80	S2
3.	Mangrove type	3	20	3	60	S2
4.	Biodiversity	Fish, crabs, birds, prawns, monkeys	10	4	40	S1
5.	Tidal waves (m)	<1	10	4	40	S1
6.	Area Characteristics	Natural, riverside estuary, existing tourist destinations, endangered species, and flat areas	5	4	20	S1
7.	Accessibility	Coastal access road using motor boats	5	1	5	S3
		Total			335	S2 (Fit)
Observation Point 5: Kere Estuary (50UTM-L 0200872 9048274)						
1.	Mangrove height (m)	455	30	3	90	S2
2.	Mangrove density (100 m2)	18	20	4	80	S1
3.	Mangrove type	3	20	3	60	S2
4.	Biodiversity	Fish, crabs, birds	10	3	30	S2
5.	Tidal waves (m)	1	10	4	40	S1
6.	Area Characteristics	Natural, riverside estuary, existing tourist destinations, endangered species, and flat areas	5	4	20	S1
7.	Accessibility	Coastal access road using motor boats dan canoes	5	2	10	S3
		Total			330	S2 (Fit)

	Observation Point 6: Canoe Spot (50UTM-L 0200974 9048375)					
1.	Mangrove height (m)	416	30	3	90	S2
2.	Mangrove density (100 m2)	16	20	4	80	S1
3.	Mangrove type	3	20	3	60	S2
4.	Biodiversity	Fish and crabs	10	2	20	S3
5.	Tidal waves (m)	1,2	10	2	20	S2
6.	Area Characteristics	Natural, riverside estuary, existing tourist destinations, endangered species, and flat areas	5	4	20	S1
7.	Accessibility	Coastal access road using motor boats dan canoes	5	2	10	S3
	Total				300	S2 (Fit)
	Observation Point 7: Kere Pier (50UTM-L 0201039 9048087)					
1.	Mangrove height (m)	288	30	3	90	S2
2.	Mangrove density (100 m2)	27	20	4	80	S1
3.	Mangrove type	3	20	3	60	S2
4.	Biodiversity	Fish, crabs, birds, prawns, monkeys	10	4	40	S1
5.	Tidal waves (m)	<1	10	4	40	S1
6.	Area Characteristics	Natural, riverside estuary, existing tourist destinations, endangered species, and flat areas	5	4	20	S1
7.	Accessibility	Coastal access road using motor boats	5	1	5	S3
	Total				335	S2 (Fit)
	Observation Point 8: Tender (50UTM-L 0199858 9048790)					
1.	Mangrove height (m)	313	30	3	90	S2
2.	Mangrove density (100 m2)	24	20	4	80	S1
3.	Mangrove type	3	20	3	60	S2
4.	Biodiversity	Fish, crabs, birds, prawns, monkeys	10	4	40	S1
5.	Tidal waves (m)	<1	10	4	40	S1
6.	Area Characteristics	Natural, riverside estuary, existing tourist destinations, endangered species, and flat areas	5	4	20	S1
7.	Accessibility	Coastal access road using motor boats	5	1	5	S3
	Total				335	S2 (Fit)

The Fitness of Bedul Mangrove Forest for Ecotourism

Researchers obtained observation point sources for the data collection using the grid method at a distance of 400 m each. This conclusion is based on a significant area with very similar physical conditions. Furthermore, the measurement process modifies the locations or points by taking into consideration how the area is used to support the various economic activities indicated by the names of the points. Regarding the selection of the Bedul mangrove ecotourism fitness index, this research modified it based on growth outcomes based on Yulianda (2007) research. The research classified the variables for determining the potential of mangrove ecotourism according to mangrove thickness, density, mangrove species, biota, tides, area characteristics, and accessibility. The fitness index of Bedul mangrove ecotourism in Banyuwangi Regency can be seen in the Table 3. According to Table 3, there are 8 observation locations that showed mangroves have a density of 28 trees per 100 m^2 and a thickness varying from 266-455 m^2.

The Bedul Mangrove Ecotourism Fitness Index placed the mangrove's thickness in the S2 category. There are 27 different species of mangroves in this area. The mangrove vegetation that surrounds the river demonstrated the existence of different vegetation types. Fish, crabs, shrimp, and monkeys represent the majority of the fauna in Bedul's forest ecotourism. Fishermen used these ecosystems resources to grow them, then they sell them for economic gain. In conclusion, Figure 8 showed the mangrove ecotourism fitness index based on the previous table, which corresponded to the 'fit' category. Further, the entrance to the Segara Anakan area is shown in Figure 9.
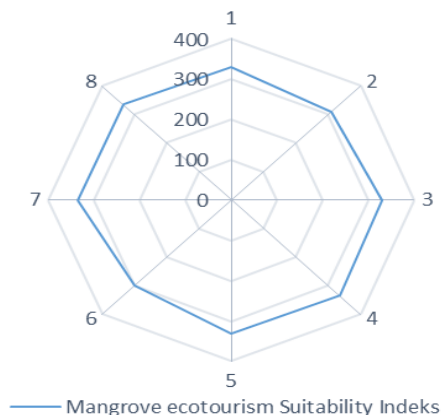
Figure 8. Mangrove Ecotourism Fitness Index
(source: Data Analysis, 2022)

Figure 9. The Entrance of Bedul Mangrove Ecotourism (Source: Author, 2022)

The Collaboration between the Community and the Management of Alas Purwo National Park in Conserving Mangrove Forest Areas

The Bedul mangrove forest is a destination for environmental education and conservation (Sumarmi et al., 2023). The Bedul mangrove ecotourism was founded in 2007 and introduced to the public in 2009. The Bedul mangrove ecotourism has been temporarily closed due to the rapid rise in the number of tourists every year. The number of tourists exceeded the capacity of the Bedul mangrove ecotourism, resulting in some damage to mangrove plants (interview, 2022). The tourist and cultural attractions of Bedul Mangrove Ecotourism contributed to the increase in visitors.

Mangrove ecotourism in Bedul covers approximately 4.000 ha, 30 ha of which are used for mangrove conservation. Mangroves are spread along the Segara Anakan estuary in Bedul. In addition to conservation and environmental balance, mangroves serve as a habitat for a variety of animals and provide for the needs of local communities. Fishermen use Segara Anakan, which is located in the Bedul mangrove ecotourism area, to catch fish.

Three piers exist in the Segara Anakan mangrove Bedul, each serving a different function. The main or middle pier serves as a port for tourist boats along the Segara Anakan, as well as a docks for fishing boats. The second pier is utilized for mangrove protection along the jogging trail. Observations indicate that this second pier is already in bad condition, so it must be repaired. The third pier is the resort pier, which is managed by Alas Purwo National Park along with the Forestry Police patrol boat parking lot. This pier serves as an access point to Mageran Beach. The placement of the three piers demonstrates mutual care and support between the community, in this case the fishing community, and the management of Alas Purwo National Park. The community is highly concerned about the condition of the mangrove forest because they recognize that it is a breeding ground for fish and crabs, which are their primary source of income. And the management of the National Park is extremely concerned with the maintenance of this mangrove forest area. Management of Bedul mangrove ecotourism is a collaborative effort between the community (fishing community, local administration) and the management of Alas Purwo National Park. This collaboration is effective in maintaining the welfare of the mangroves and the economic benefits to the local community. The condition of the Segara Anakan area and the pier is shown in Figure 10.

Figure 10. The condition of the main pier, Segara Anakan for fishing,
esort and boat parking area for forestry police patrols (A – D) (Source: Author, 2022)

Mangrove Forest Management Strategy for Sustainable Ecotourism Development

The implementation of the ecotourism concept in the Bedul mangroves is also considered to be highly successful. Observations and interviews indicate that the environmental conditions in the mangroves of Bedul qualify as clean. Efforts to enhance the economy of the community surrounding the Bedul mangrove ecotourism have included the installation of food stands (Sumarmi et al., 2021). Managers and business actors in Bedul mangrove ecotourism are

committed to: 1) maintaining the quality and quantity of Bedul mangroves in a sustainable manner, 2) increasing collaboration between the community and Alas Purwo National Park management in preserving mangrove forests, 2) improving the economy and welfare by empowering local communities, 3) making Bedul mangrove ecotourism for environmental education, with mangrove seedling and planting programs, 4) equipping and maintaining the quality of supporting facilities such as toilets, religious sites, and food stalls. The image showed that the mangrove ecosystem on the Bedul beach is still sustainable; the roots and dense vegetation are strong enough to resist sea waves. Sustainable mangrove environments support local populations' needs both economically and ecologically. Mangroves help keep the coastline thick and sturdy so that it can endure waves and defend against erosion, tsunamis, hurricanes, and storms (Fitriah et al., 2013; Joandani et al., 2019). The protection of coastal habitats like coral reefs and the prevention of seawater from getting into land cannot be separated from this issue (Sumarmi et al., 2021). Figure 11 shows the condition of the Segara Anakan Mangrove Area and the conservation activities performed by researchers.

Figure 11. The Condition of the Bedul Mangrove Forest as conservation for birds, fish, crab,
monkeys and others, as well as education and mangrove preservation activities (A – D) (Source: Author, 2022)

Mangrove preservation results from the growth of ecotourism, which encourages understanding and activities that protect the ecosystem. Ecotourism management at Bedul Beach is closely linked to community groups that are aware of tourism issues and are supportive of it. This is followed by community empowerment initiatives and conservation efforts through the planting of mangroves, as seen in the image above (Purwanti et al., 2021). Understanding ecological behaviour in the management of natural resources in local communities requires a thorough investigation of the growth of ecotourism potential (Henri and Ardiawati, 2020). The image above depicts community and visitor involvement in mangrove conservation on Bedul beach as a type of ecotourism management (Kurniawati et al., 2020; Purwanti et al., 2021).

The potential for biodiversity that is still quite diverse draws visitors to the area, and the development of Bedul mangrove ecotourism creates employment, boosting the local community's economy. Bedul Beach mangrove ecotourism is environmentally sustainable. The potential of mangroves offers residents of mangrove areas chances for welfare. Mangrove ecotourism management seeks to protect mangroves while having financial advantages (Hakim et al., 2017). The success of Bedul's mangrove tourist operations can be attributed to its foundation in sustainability. This is so that management can take into consideration cultural, social, economic, and environmental factors (Purwanti et al., 2021; Sumarmi et al., 2021).

CONCLUSION

This study found that the status of the Bedul Banyuwangi mangrove area between 1995 and 2022 remained stable. The Bedul mangrove forest's potential for sustainable ecotourism is classified under the S2 category, as per ecotourism fitness index for the Bedul mangrove. The successful management of the Bedul mangrove ecotourism involved a

collaborative effort between the local community (including the fishing community and local government) and the Alas Purwo National Park management. This partnership aimed to ensure the preservation of the mangroves and the sustainable economic benefits for the community. The implementation of the management strategy involved the sustainable maintenance of both the quality and quantity of the Bedul mangroves, as well as the supporting facilities. This study offered guidance for the formulation of a mangrove forest management plan aimed at ensuring the sustainable future of the Bedul mangrove ecotourism. The recommendations for ensuring the sustainability of ecotourism required careful consideration of the involvement of local communities, ecotourism managers, and governmental entities in a collaborative effort to establish ecotourism practices that are both environmentally and financially sustainable.
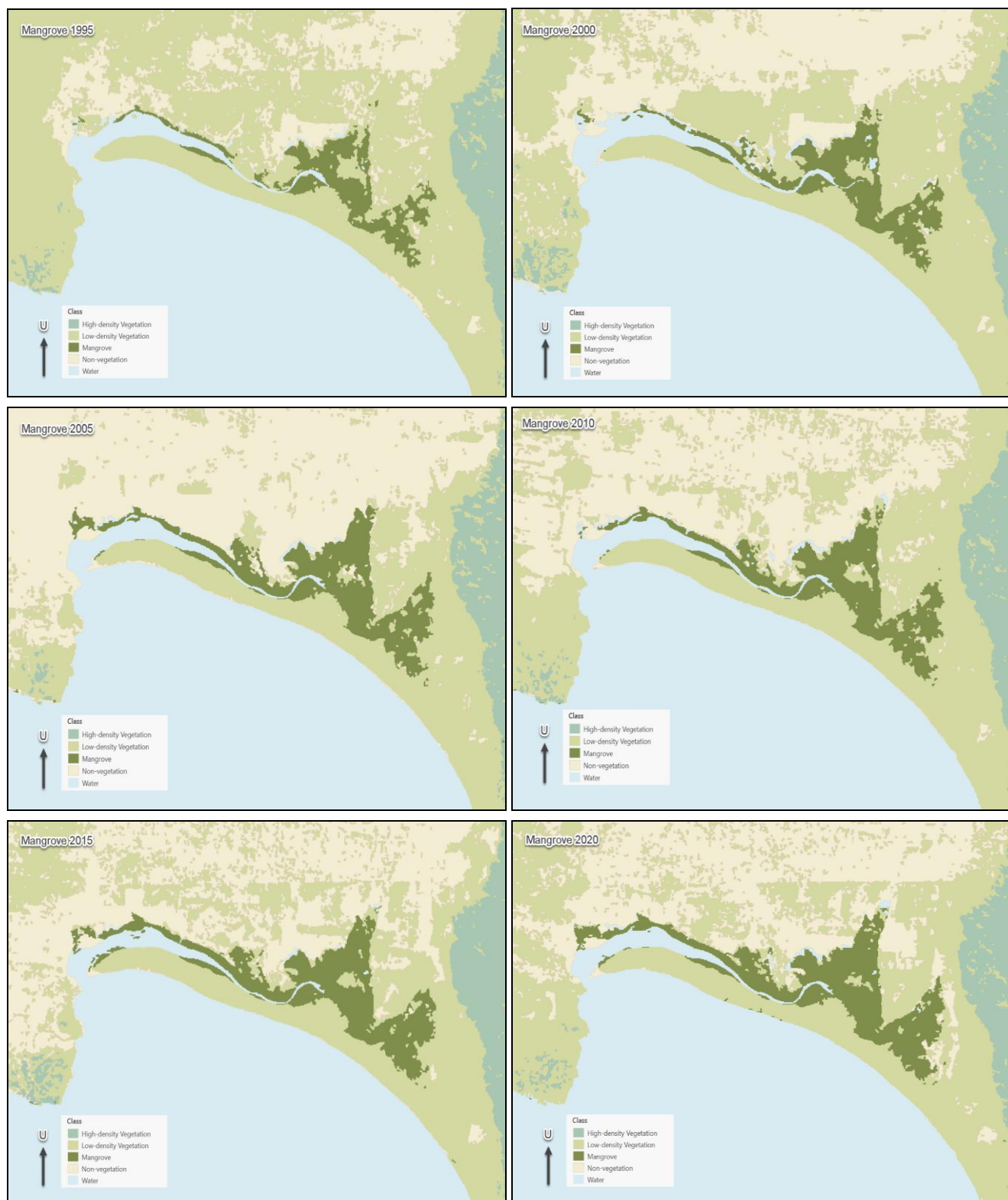
Appendix 1. Mangrove Mapping Time-Series (1995 – 2020)

Appendix 2. Mangrove Mapping Time-Series 2022

REFERENCES

Arifanti, V.B., Sidik, F., Mulyanto, B., Susilowati, A., Wahyuni, T., Subarno, S., Yulianti, Y., Yuniarti, N., Aminah, A., Suita, E., Karlina, E., Suharti, S., Pratiwi, P., Turjaman, M., Hidayat, A., Rachmat, H.H., Imanuddin, R., Yeny, I., Darwiati, W., & Novita, N. (2022). Challenges and Strategies for Sustainable Mangrove Management in Indonesia: A Review. *Forests*, *13*(5), 695. https://doi.org/10.3390/f13050695

Arinta, D., Sumarmi, S., Budijanto, B., & Susilo, S. (2023). Development of Integrated and Sustainable Community Based Eco-Tourism on Sipelot Beach, Indonesia. *GeoJournal of Tourism and Geosites*, *46*(1), 19–26. https://doi.org/10.30892/gtg.46102-996

Aye, W.N., Wen, Y., Marin, K., Thapa, S., & Tun, A.W. (2019). Contribution of mangrove forest to the livelihood of local communities in Ayeyarwaddy region, Myanmar. *Forests*, *10*(5), 414. https://doi.org/10.3390/f10050414

Biswas, P.L., & Biswas, S.R. (2020). Mangrove forests: Ecology, management, and threats. In *Life on Land* (pp. 627–640). Springer. https://doi.org/10.1007/978-3-319-95981-8_26

Bryan-Brown, D.N., Connolly, R.M., Richards, D.R., Adame, F., Friess, D.A., & Brown, C.J. (2020). Global trends in mangrove forest fragmentation. *Scientific Reports*, *10*(1), 7117. https://doi.org/10.1038/s41598-020-63880-1

DasGupta, R., & Shaw, R. (2014). Role of NGOs and CBOs in a decentralized mangrove management regime and its implications in building coastal resilience in India. *Civil Society Organization and Disaster Risk Reduction: The Asian Dilemma*, 203–218. https://doi.org/10.1007/978-4-431-54877-5_11

Eddy, S., Milantara, N., Sasmito, S.D., Kajita, T., & Basyuni, M. (2021). Anthropogenic drivers of mangrove loss and associated carbon emissions in South Sumatra, Indonesia. *Forests*, *12*(2), 187. https://doi.org/10.3390/f12020187

Fattah, M., Intyas, C.A., Ruminar, H., & Arif, M.E. (2023). Evaluation of The Sustainability Status of The Bangsring Underwater with Indonesia's Coral Reef Ecosystem. *GeoJournal of Tourism and Geosites*, *49*(3), 858–865. https://doi.org/10.30892/gtg.49302-1086

Firdaus, M., Hatanaka, K., & Saville, R. (2021). Mangrove Forest Restoration by Fisheries Communities in Lampung Bay: A study based on perceptions, willingness to pay, and management strategy. *Forest and Society*, 224–244. https://doi.org/10.24259/fs.v5i2.12008

Fitriah, E., Maryuningsih, Y., Chandra, E., & Mulyani, A. (2013). Studi analisis pengelolaan hutan mangrove Kabupaten Cirebon. *Scientiae Educatia: Jurnal Pendidikan Sains*, *2*(2), 73–92. https://doi.org/DOI: 10.24235/sc.educatia.v2i2.521

Friess, D.A., Rogers, K., Lovelock, C.E., Krauss, K.W., Hamilton, S.E., Lee, S.Y., Lucas, R., Primavera, J., Rajkaran, A., & Shi, S. (2019). The state of the world's mangrove forests: Past, present, and future. *Annual Review of Environment and Resources*, *44*, 89–115. https://doi.org/10.1146/annurev-environ-101718-033302

Getzner, M., & Islam, M.S. (2020). Ecosystem services of mangrove forests: Results of a meta-analysis of economic values. *International Journal of Environmental Research and Public Health*, *17*(16), 5830. https://doi.org/10.3390/ijerph17165830

Hakim, L., Siswanto, D., & Makagoshi, N. (2017). Mangrove conservation in East Java: The ecotourism development perspectives. *Journal of Tropical Life Science*, *7*(3), 277–285.

Henri, H., & Ardiawati, S. (2020). Ecotourism development of Munjang mangrove forest and conservation efforts based on community approach. *BIOLINK (Jurnal Biologi Lingkungan Industri Kesehatan)*, *7*(1), 106–116. https://doi.org/10.31289/biolink.v7i1.2952

Hochard, J.P., Hamilton, S., & Barbier, E.B. (2019). Mangroves shelter coastal economic activity from cyclones. *Proceedings of the National Academy of Sciences*, *116*(25), 12232–12237. https://doi.org/10.1073/pnas.1820067116

Joandani, G.K.J., Pribadi, R., & Suryono, C.A. (2019). Kajian potensi pengembangan ekowisata sebagai upaya konservasi mangrove di Desa Pasar Banggi, Kabupaten Rembang. *Journal of Marine Research*, *8*(1), 117–126. https://doi.org/10.14710/jmr.v8i1.24337

Kathiresan, K. (2021). Mangroves: Types and importance. *Mangroves: Ecology, Biodiversity and Management*, 1–31. https://doi.org/10.1007/978-981-16-2494-0_1

Kete, S.C.R. (2016). *Pengelolaan Ekowisata Berbasis Goa: Wisata Alam Goa Pindul*. Deepublish.

Kurniawati, E., Sumarmi, S., & Aliman, M. (2020). Participation of Green Environmental Group and Ulur-ulur Local Wisdom on Buret Lake Ecotourism Management in Karst Area of Tulungagung, Indonesia. *GeoJournal of Tourism and Geosites*, *30*(2 supplement), 889–895. https://doi.org/10.30892/gtg.302spl15-519

Kusmana, C. (2014). Distribution and current status of mangrove forests in Indonesia. *Mangrove Ecosystems of Asia: Status, Challenges and Management Strategies*, 37–60. https://doi.org/10.1007/978-1-4614-8582-7_3

Leal Filho, W., Alam, G.M., Nagy, G.J., Rahman, M.M., Roy, S., Wolf, F., Kovaleva, M., Saroar, M., & Li, C. (2022). Climate change adaptation responses among riparian settlements: A case study from Bangladesh. *Plos One*, *17*(12), e0278605. https://doi.org/10.1371/journal.pone.0278605

Lovelock, C.E., & Reef, R. (2020). Variable impacts of climate change on blue carbon. *One Earth*, *3*(2), 195–211. https://doi.org/10.1016/j.oneear.2020.07.010

Marasabessy, I., Fahrudin, A., Imran, Z., & Agus, S.B. (2018). Strategi Pengelolaan Berkelanjutan Pesisir dan Laut Pulau Nusa Manu dan Pulau Nusa Leun di Kabupaten Maluku Tengah. *Journal of Regional and Rural Development Planning (Jurnal Perencanaan Pembangunan Wilayah Dan Perdesaan)*, *2*(1), 11–22. https://doi.org/doi:10.29244/jp2wd.2018.2.1.11-22

Parela, A. (2020). *Analisis multitemporal degradasi mangrove di area ekowisata mangrove bedul, banyuwangi menggunakan citra sentinel-2A* [Universitas Gadjah Mada]. http://etd.repository.ugm.ac.id/penelitian/detail/191226

Purwanti, P., Fattah, M., Qurrata, V.A., & Narmaditya, B.S. (2021). An Institutional Reinforcement Model for the Protection of Mangroves Sustainable Ecotourism in Indonesia. *GeoJournal of Tourism and Geosites*, *35*(2), 471–479. https://doi.org/10.30892/gtg.35227-674

Rudianto, R., Bengen, D.G., & Kurniawan, F. (2020). Causes and effects of mangrove ecosystem damage on carbon stocks and absorption in East Java, Indonesia. *Sustainability*, *12*(24), 10319. https://doi.org/10.3390/su122410319

Saifullah, S., & Harahap, N. (2013). Strategi pengembangan wista mangrove di â€ øeBlok Bedulâ€ Taman Nasional Alas Purwo Kabupaten Banyuwangi Jawa Timur. *Journal of Indonesian Tourism and Development Studies*, *1*(2), 79–86.

Salam, M.A., Lindsay, G.R., & Beveridge, M.C. (2000). Eco-tourism to protect the reserve mangrove forest the Sundarbans and its flora and fauna. *Anatolia*, *11*(1), 56–66. https://doi.org/10.1080/13032917.2000.9686983

Song, F., Su, F., Mi, C., & Sun, D. (2021). Analysis of driving forces on wetland ecosystem services value change: A case in Northeast China. *Science of The Total Environment*, *751*, 141778. https://doi.org/10.1016/j.scitotenv.2020.141778

Sumarmi, S., Arinta, D., Suprianto, A., & Aliman, M. (2021). The development of ecotourism with community-based tourism (CBT) in clungup mangrove conservation (CMC) of tiga warna beach for sustainable conservation. *Folia Geographica*, *63*(1), 123–142.

Sumarmi, S., Bachri, S., Purwanto, P., Zubaidah, S., Shrestha, R.P., & Sholiha, A.W. (2022). Assessing Bedul Mangrove Ecotourism Using Green and Fair Strategy Empowerment to Fulfill SDGs 2030 Agenda for Tourism. *Environmental Research, Engineering and Management*, *78*(2), 73–87. https://doi.org/10.5755/j01.erem.78.2.31006

Sumarmi, S., Bachri, S., Sholeha, A.W., Kurniawati, E., Hakiki, A.R., & Hidiyah, T.M. (2023). Development Strategy for Special Interest Tourism (SIT) Through Community-Based Ecotourism (CBET) in Perawan Beach to Promote a Sustainable Economy. *GeoJournal of Tourism and Geosites*, *48*(2 supplement), 696–708. https://doi.org/10.30892/gtg.482spl03-1069

Sumarmi, S., Kurniawati, E., & Aliman, M. (2020). Community Based Tourism (CBT) to Establish Blue Economy and Improve Public Welfare for Fishing Tourism Development in Klatak Beach, Tulungagung, Indonesia. *GeoJournal of Tourism and Geosites*, *31*(3), 979–986. https://doi.org/10.30892/gtg.31307-530

Thuy, P.T., Phuong, V.T., Chien, P.D., Trang, D.L.H., Truong, N.V., Hoa, H.N.V., Long, H.T., Chi, D.T.L., & Tien, N.D. (2019). *Opportunities and challenges for mangrove management in Vietnam: Lessons learned from Thanh Hoa, Thai Binh and Quang Ninh provinces*. CIFOR.

Tjahjono, A., Adi Intyas, C., & Fattah, M. (2022). Mangrove Management Strategy For Sustainable Business Based On Indonesian Ecological Products. *GeoJournal of Tourism and Geosites*, *43*(3), 1045–1055. https://doi.org/10.30892/gtg.43325-919

Valenzuela, R.B., Yeo-Chang, Y., Park, M.S., & Chun, J.N. (2020). Local People's Participation in Mangrove Restoration Projects and Impacts on Social Capital and Livelihood: A Case Study in the Philippines. *Forests*, *11*(5), 580. https://doi.org/10.3390/f11050580

Vo, Q.T., Künzer, C., Vo, Q.M., Moder, F., & Oppelt, N. (2012). Review of valuation methods for mangrove ecosystem services. *Ecological Indicators*, *23*, 431–446. https://doi.org/10.1016/j.ecolind.2012.04.022

Wang, Y.S., & Gu, J.D. (2021). Ecological responses, adaptation and mechanisms of mangrove wetland ecosystem to global climate change and anthropogenic activities. *International Biodeterioration & Biodegradation*, *162*, 105248. https://doi.org/10.1016/j.ibiod.2021.105248

Worthington, T.A., Andradi-Brown, D.A., Bhargava, R., Buelow, C., Bunting, P., Duncan, C., Fatoyinbo, L., Friess, D.A., Goldberg, L., & Hilarides, L. (2020). Harnessing big data to support the conservation and rehabilitation of mangrove forests globally. *One Earth*, *2*(5), 429–443. https://doi.org/10.1016/j.oneear.2020.04.018

SOCIAL VISIBILITY OF CONSUMPTION AS A PHENOMENON DRIVING THE SELF-EXPRESSION AND TRAVEL INTENTION OF MUSLIM TOURISTS

Yusuf BİLGİN[*]

Bayburt University, Faculty of Economics and Administrative Sciences, Department of Business,
Bayburt, Turkey, e-mail: yusufbilgin@bayburt.edu.tr

Abstract: This study aims to empirically predict the relationship between social visibility of consumption and word-of-mouth communication (e-WOM) and travel intention, with self-expression as the mediator variable. Survey data obtained from 483 tourists who follow the Halal Booking online travel agency on Facebook and Instagram was analyzed Structural Equation Modeling SEM. Results revealed that the social visibility of consumption among Muslim tourists positively affected self-expression (spiritual and social), e-WOM and travel intention. This research was able to promote ways on how social media can best promote travel destinations among Muslim travelers.

Key words: Social media, social visibility, self-expression, word-of-mouth communication, travel intention

* * * * * *

INTRODUCTION

The halal tourism market is comprised of Muslim consumers who are susceptible to acquiescence to Islamic rules regarding food, beverages, accommodation, entertainment, and activities during their travels. This market, which is described as one of the largest niche markets of the tourism industry (Boğan and Sarıışık, 2019), is expected to reach 230 million travelers in 2026 (Crescent Rating, 2019). Moreover, the remarkable growth experienced in the halal tourism market is strongly attracting destinations and businesses that want to take advantage of the market (Sulong et al., 2022). Destinations and businesses pay more attention to activities that are aimed at discovering their expectations, wishes, and needs and understanding the factors that shape their purchasing attitudes and behaviors in order to develop long-term relationships with Muslim tourists based on satisfaction. Although the findings on the motivation of Muslim tourists regarding their spiritual travels such as Hajj and Umrah are definite, the level of knowledge regarding the needs, wishes, and expectations of Muslim tourists inquiring about leisure holidays as well as the factors influencing their travel choices are quite limited (Wingett and Turnbull, 2017). Today, in the information age, social media is a dynamic that profoundly influences the purchasing behavior of tourists who identify themselves as Muslim. Social media can be described as a mass communication channel that helps people communicate with one another and where consumer habits, choices, thoughts, tastes, and experiences are personalized and displayed (Hajli, 2014). The effect of social media covers a broad range from raising awareness and sharing knowledge, thoughts, and experiences to the purchasing process and post-travel comments (Tatar and Erdoğmuş, 2016). Another aspect of the profound influence that social media has on the travel choices of tourists is the visualization of consumption with pictures and videos in the real-time sharing of the travel experiences (Josiassen and Assaf, 2013; Kim and Fesenmaier, 2017; So et al., 2018).

In industries where visuality is very important, such as the tourism industry, visual content sharing via social media inevitably affects the travel behavior of the followers more than other ways of conveying experiences (So et al., 2018). Furthermore, as many consumption behaviors in everyday life are seen by other people (Heffetz, 2011) visualizing consumption through social media plays an active role in communicating the mood of the tourists and their social class or status to which they belong, beyond conveying their travel experiences for tourists. So et al. (2018) reported that the social visibility of consumption increased tourists' motivation to express themselves and develop e-WOM. In this direction, the social visibility of consumption holds a symbolic meaning that tourists utilize to build their personal and social identity, realize their representation goals, and display their feelings of self (Popp and Woratschek, 2017). Hence, social media is functional to reveal the connection between the social identity of the tourists and their purchasing behavior and to express the identity that the tourist considers real or ideal. However, research on social media using by Muslim tourists is quite limited. This research is focused on the visual sharing of Muslim tourists on social media about travel from the perspective of conspicuous consumption. Moreover, a link has been established between the visual sharing of Muslim tourists on social media and their self-expression, e-WOM, and travel intentions. In this respect, revealing the use of social media among Muslim tourists and the effect of social media on their travel intentions is important to fill the gap in the literature.

This study aims to empirically predict the relationship between social visibility of consumption and e-WOM and travel intention, with self-expression (spiritual and social) as the mediator variable. In this direction, the conceptual framework of

---

[*] Corresponding author

the research was based on theory of conspicuous consumption, then the relations between the variables were systematically analyzed and the research hypotheses were grounded. The methodology section includes the study population, sampling, data collection, and analysis. In the following sections, the findings of the data analysis are presented. Subsequently, the study results are revealed, and suggestions are given for practitioners and researchers.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT
1. Social Visibility of Consumption

The visible aspects of consumed goods or services form the basis of the inferences about the person's income, personality, social status, and identity in almost all cultures (Belk, 1978:11). Displaying a purchased good or service to others helps individuals to declare the social class or status to which it belongs (Seo and Park, 2018) and supports their thought that they will be socially accepted by reference groups such as friends, family, and colleagues (Bhattacharya and Sen, 2003). There are some findings have shown that consumers attribute significance to product categories such as cars, clothes, and sunglasses because of the high social visibility to reveal their social identity and status in the literature (Heffetz, 2011; Josiassen and Assaf, 2013). In this regard, the social visibility of consumption follows the theory of conspicuous consumption, which involves consumers purchasing products from prestigious brands to advance their social status (O'Cass and McEwen, 2004). The social visibility of consumption in the information age means a bridge or fence in getting closer or moving away from social groups (Berger and Ward, 2010).

Many social media communication channels such as YouTube, LinkedIn, Twitter, Facebook, Instagram, WeChat, and blogs facilitate individuals to share their knowledge, thoughts, comments, and experiences through visual content (Hajli, 2014). These shares enable the created content (text or visual) to be published, discussed, and known instantly among other users (Tsimonis and Dimitriadis, 2014). These characteristics prompt individuals to create visual content that shows their statuses, and purchasing levels on social media (Heffetz, 2011), highlights products and brands with prestige and visual appeal, and shows their social identity (Stokburger-Sauer et al., 2012).

Social media is efficient in visually transferring tourists' travel experiences to the people around them (So et al., 2018). Researchers have revealed that tourists are quite enthusiastic about sharing their travels with other people via social media communication channels such as Facebook, Twitter, Instagram, and Trip Advisor (Kim and Fesenmaier, 2017). When analyzed from the perspective of Muslim tourists, the social visibility of consumption must satisfy specific criteria regarding Islamic beliefs. Muslim tourists must behave accordingly to Islamic rules when sharing texts or images on social media before, during, and after their travels (Sofyan et al., 2022). In this regard, Muslim tourists must preserve their privacy within the boundaries that Islam represents and make sure that they do not use their financial opportunities as a sign of superiority over other people in the visual content they share of their touristic travels. The findings of various studies in the literature suggest that visually sharing halal hotels, halal travel packages, and halal restaurants play a vital role in the purchasing processes of Muslim tourists (Khan et al., 2022; Akhtar et al., 2019). Nevertheless, no studies conducted on the tendency of Muslim tourists to display consumption innerly and socially were encountered in the literature.

2. Self-expression and Social Visibility of Consumption

People can use various methods (written, verbal, and visual) and communication channels to show their true or ideal selves as others desire. As one of these methods, self-expression through the social visibility of consumption constitutes a form of communication in which people seek to deliver visual messages about who they are (Feizollah et al., 2022; Kim and Tussyadiah, 2013). This form of communication visually conveys the individual's social identity, status, economic competence, and psychological status (picture or video) instead of a verbal or text status. Social media is an important communication channel that increases the social visibility of consumption and assists its users in showing themselves to the world with visual content and obtaining social support (Kim and Lee, 2011). Studies have revealed that consumers actively use social media to show brands they have identified with to represent their social identity or status (Simon and Tossan, 2018; So et al., 2018). Also, when all social media posts are considered, it is striking that the content related to travel is high (So et al., 2018). When tourists visualize their travel experiences on social media, they tend to highlight items that will positively affect others' perceptions of themselves (Kim and Tussyadiah, 2013). The travel experiences visualized on social media allow tourists to think about other people's travels, comprehend their moods, and display their social identity and status. These opportunities granted by social media fill tourists with the desire to share exceptional products and brands to display their differences and create a social identity (Batra et al., 2000).

Regarding the perspective of Muslim tourists, like other tourist groups, Muslim tourists seek experiences that will present a high level of social and emotional support in their travel preferences (Han et al., 2019). The fact that Muslim tourists prefer halal-friendly destinations or halal tourism businesses naturally shows that they have a separate social identity. In this respect, a visual message to be shared concerning halal-friendly destinations or halal businesses can be actively used to display the diversity of Muslim tourists' values and social identity from other tourist groups or their connection to the Islamic social identity. Research findings revealed by Sirgy and Su (2000) prove that travel preferences are affected by the attractiveness of tourists to promote their individual and social identities. As interacting with others on social media increases the psychological well-being of tourists (Valkenburg et al., 2006), the reactions of others, such as liking and commenting, to the posts of Muslim tourists can make them feel better spiritually. Moreover, tourists can easily express their feelings and moods by simply updating their status or changing their wall photos on social media (Kim and Fesenmaier, 2017). Similarly, Muslim tourists can show their mood and inner peace by including prayer and worship instruments in their stories or situations during their travels (Idris et al., 2023). In the literature, the focus on the relationship

between the social visibility of consumption in tourist travels and the self-expression of tourists is very limited, and the findings are not clear. Slama (2023) revealed that visual posts on social media are used by the Muslim middle class in Indonesia as a means of comparison for their travels. Hence, the hypotheses to be tested in the present study are as follows:

H1: There is a positive relationship between social visibility of consumption and the social self-expression of Muslim tourists.

H2: There is a positive relationship between social visibility of consumption and the spiritual self-expression of Muslim tourists.

3. e-WOM, Social Visibility of Consumption, and Self-Expression

Bearing visuality to the fore with photos and videos in sharing travel experiences on social media increases e-WOM among users (Josiassen and Assaf, 2013). This interaction is critical for tourists in reducing risks and ambiguities, especially in complicated and high-risk services such as touristic travel, for which there is no pre-purchase experience (Litvin et al., 2008). Various studies have revealed that social media has turned into an effective social tool that enables tourists to communicate online with other tourists to improve, rate, and interpret their travel experiences, share their ideas, and cooperate (Kim and Fesenmaier, 2017; Sotiriadis, 2017). A picture or video shared by tourists on a beach, trekking, parachuting, or conducting any touristic activity enables them to express much more than they would be able to by writing or stating their travel experience. Furthermore, the visual transfer of a touristic experience instead of text or verbal on social media enables a wide crowd to have visible evidence of this experience through e-WOM. Schmallegger et al. (2009) reported that photos shared on social media were useful for the e-WOM of tourists in terms of destinations. Ranjbarian (2011) and King et al. (2014) determined that the fast visibility of social media that requires no speech helps the e-WOM of tourists. In addition, So et al. (2018) discovered that the social visibility of consumption in the airline industry decidedly affected the e-WOM of tourists. Abror et al. (2020) found that photos shared on social media boosted e-WOM among Muslim tourists. Therefore, the hypothesis to be tested in the study was determined as follows:

H3: There is a positive relationship between the social visibility of consumption and the e-WOM of Muslim tourists.

Social media features such as ubiquity, mobility, and interactivity allow users to communicate and connect more often and closer to each other (Wang et al., 2016). Such an environment gives users unique opportunities to represent their ideally preferred self, even if it is an unsupported self in their material world (Schau and Gilly, 2003). Fotiadis et al., (2023) reported that the primary motivation of Muslim tourists who seek to build or develop their identities via social media posts is increasing their e-WOM. This is because consumed brands (that is, self-expressing brands) visually present the profit of expressing oneself to others without effort (Liu et al., 2012). Trusov et al. (2010) asserted on Facebook that consumers who communicated with brands liked to be part of how they expressed themselves in the online environment. Syed-Ahmad (2011) concluded that Muslim tourists actively utilized their social media profiles or story sharing to draw the attention of others to their social and mental situation and to develop their e-WOM. Various studies in the literature have found that halal tourism decidedly affects the e-WOM of Muslim tourists (Khan et al., 2022; Wardi et al., 2018). Nevertheless, there was no finding between Muslim tourists' expressing themselves socially and mentally and e-WOM on social media. The hypotheses formed in this direction were as follows:

H4: There is a positive relationship between Muslim tourists expressing themselves socially on social media and e-WOM.

H5: There is a positive relationship between Muslim tourists expressing themselves spiritually on social media and e-WOM.

4. Travel Intention, Social Visibility of Consumption, Self-Expression, and Word-of-mouth Communication

The social visibility level of a product or service, whether it is touristic or not, has a crucial impact on the image perceptions of consumers and their purchase intentions (Josiassen and Assaf, 2013). In the current social media period, where social visibility is growing in travel purchases (So et al., 2018), it is only probable to achieve the desired recognition level of a destination or tourism product with high social visibility (Correia et al., 2016). In this regard, social media is a useful tool for tourists to visually declare their sentiments, observations, recommendations, and complaints to others at every stage of the travel experience (before, during, and after the trip) (Leung et al., 2013). The fact that tourists visually share their travel experiences on social networks or with a social community helps other tourists reconstruct their mental reactions (positive-negative) to the shared content (Jansson, 2007). This is because the content has been created by a tourist and, thus, encourages a sense of credibility and closeness in other tourists (Mersey et al., 2010). Josiassen and Assaf (2013) and So et al. (2018) revealed that tourists favored high-visibility destinations and businesses when traveling. Similarly, the social visibility of consumption has a decisive effect on the travel intentions of Muslim tourists (Juliana et al., 2022). In this direction, the hypothesis that was developed is as follows:

H6: There is a positive relationship between the social visibility of consumption and the travel intentions of Muslim tourists.

On the other hand, when tourists are interested in how others think about them, they are more inclined to share high-visibility content regarding their travels (Josiassen and Assaf, 2013). Tourists can instantly express themselves mentally and socially to a broad audience and observe the responses of others by sharing their travel experiences on social media (Hudson et al., 2016). The acts of liking, sharing, and tagging a photo shared by a tourist of a branded tourism business or from a destination by others support the tourist's social expression (Ruane and Wallace, 2015). In this respect, Muslim tourists prefer fancy destinations and halal tourism businesses with which they can express themselves more efficiently, both visually and socially. This is because decisive feedback and social support for the travel content they share can develop a pleasant tourism experience for them (Tussyadiah and Fesenmaier, 2009). In terms of Muslim tourists, the social and spiritual perspectives of a touristic journey that can be conveyed to others shape others' opinions of them. Hence, Muslim tourists who desire to acquire a reputation with their Muslim social identity in their social environment visit destinations and use halal tourism businesses that will allow them to present themselves as they want in their travels. The hypotheses formed from this assumption were as follows:

H7: There is a positive relationship between Muslim tourists expressing themselves socially on social media and their travel intentions.

H8: There is a positive relationship between Muslim tourists expressing themselves spiritually on social media and their travel intentions.

Currently, online content produced and shared by others in the tourism industry is highly evaluated by tourists in their travel purchasing decisions (Khan et al. 2022; Fotis et al., 2012). Before tourists determine a destination, they examine content (text/visual) shared on social media communication channels such as Facebook, Twitter, and Instagram and observe the ratio and evaluation of others regarding facilities by visiting sites such as Trip-Advisor.com, LateRooms.com and Hotels.com (Mohammed Abubakar, 2016). As e-WOM is generally business-independent and non-profit communications, tourists rely more on these sources of information and are more easily influenced by them (Leung et al., 2013). Amalia et al. (2019) revealed that e-WOM on social media increased the intention of Muslim tourists to visit Islamic destinations. Juliana et al. (2022) and Ismail et al. (2019) determined that Muslim tourists were very sensitive about halal and that adverse e-WOM instantly changed their preferences. The research hypothesis formed in this regard is as follows:

H9: There is a positive relationship between Muslim tourists' e-WOM and their travel intentions.

METHODOLOGY

In this study, the quantitative method was adopted to reveal the relationships between social visibility of consumption, self-expression, e-WOM, and travel intention of Muslim tourists. Figure 1 summarizes the proposed research model. Online surveys were used to reach out to Muslim tourists who actively use social media and prefer halal hotels and destinations for their travels. The population of this study was Muslim tourists who follow the HalalBooking online travel agency on Facebook and Instagram. The number of users who followed HalalBooking in these social media communication channels was over 400 thousand people. However, information regarding the users' gender, nationality, beliefs, travel frequency, and post content on their profiles were very limited. Therefore, a purposive sampling method was employed in this study to obtain the data. Online surveys were sent online to users who liked or shared the agency's posts, starting with the most up-to-date posts on the HalalBooking online travel agency's Facebook and Instagram social media accounts. The responses of the participants who preferred halal restaurants or hotels in their travels in the last two years were considered. The reliability of the measurement instrument was tested and verified with data from 74 Muslim tourists ($\alpha = 0.874$). The study data was obtained through online surveys of Muslim tourists shared on Facebook and Instagram between June and October 2022. Data were collected from 506 Muslim tourists through online surveys. However, 23 of these answers were deemed invalid due to being incomplete and a total of 483 answers were accepted as valid. The data used for the pre-test were not included in the analysis.
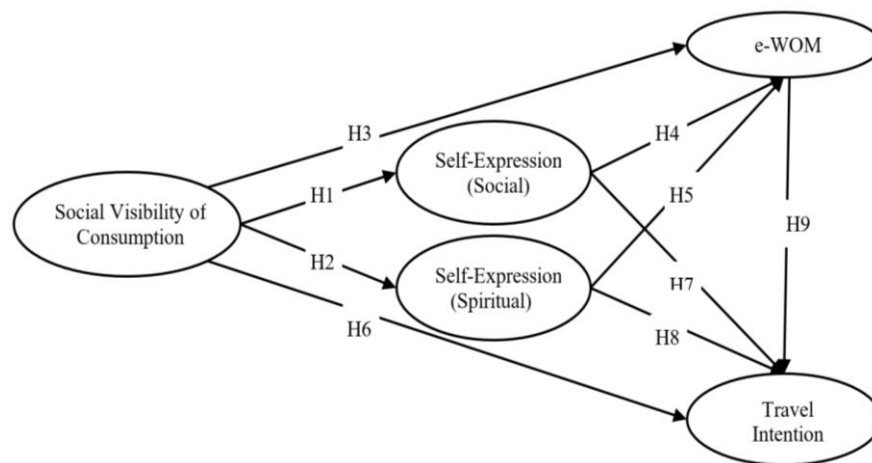
Figure 1. Proposed research model

The observed variables determined to measure the latent variables were adapted from empirical studies. All constructs were modified to relate to Muslim tourists' sharing their travel experiences and were rated on the five-point Likert scale (1-strongly disagree, 5- strongly agree). The measurement instrument consisted of two parts. The first part consisted of 10 closed-ended questions regarding the demographic characteristics of the Muslim tourists, while the second part comprised 20 items about the latent variables of the study. Four expressions were adapted from So et al. (2018) and Bilgin (2018) to measure consumption's social visibility. Eight items related to Muslim tourists spiritually (four items) and socially (four items) expressing themselves were adapted Algharabat (2017). Four items measuring the word-of-mouth communication of Muslim tourists were adapted from Preko et al. (2020), and four items measuring Muslim tourists' travel intentions were adapted from Nurhayati and Hendar (2019). The content validity of the created measurement instrument was tested by calling the opinions of two marketing experts and two tourism experts. The items in the measurement instrument are shown in Table 2. In this study, explanatory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM) was used to achieve the determined goals. The demographic characteristics of the participants were analyzed using the descriptive statistics for the measurement model and the SPSS 23.0 package program for the EFA. AMOS 23.0 statistical analysis software validated the measurement model and tested the hypotheses.

FINDINGS

1. Demographic Characteristics

The demographic characteristics of the participants are shown in Table 1. Accordingly, most of the participants were women (66.9 %), between the ages of 26-and 35 years (43.8 %), and married (63.0 %). Most of the participants had received an undergraduate education (62.0 %), had an income between $2501 and above (54.2 %), and traveled with their families (56.7 %). In addition, most of the participants spent more than four hours a day on social media (40.8 %), and their most frequently used social media communication platform was Instagram (41.3 %).

2. Measurement Model

The skewness (-0.13-1.21) and kurtosis (-0.81,1.50) tests showed that the data did not violate the assumption of normality (George and Mallery, 2010). EFA was applied to the data based on Principal components and Varimax rotation methods before CFA. In the EFA, the Kaiser-Meyer-Olkin (KMO) value of 0.895 indicated that the sample was sufficient for factor analysis (Kaiser, 1974), while Bartlett's Test of Sphericity (p <0.001) value indicated that the correlation between the items for principal component analysis was high enough. In the EFA, a five-factor structure that explained 76.157% of the total variance and varying eigenvalues between 1.328 and 7.871 was determined. The reliability of these factors was between .782 and .860, and the factor loadings were between .880 and .912. The EFA results showed that the measurement model was compatible with the constructed structure. The CFA was performed using a five-factor structure derived from the EFA to purify and cross-validate the measurement model. In the CFA, the five-factor structure of the model was verified by considering the standardized factor loadings of each item, composite reliability (CR), and mean-variance (AVE). The indices used to evaluate the goodness of model fit were as follows: chi-square (χ2 = 457.144, df = 160, x 2/df = 2.859, p <.001), root mean square error of approximation (RMSEA) = 0.06 and

Table 1. Demographic characteristics of the respondents

Variable	Category	N	%
Nationality	Turkish	146	30.2
	French	93	19.3
	German	87	18.0
	Dutch	69	14.3
	Others	88	18.2
Gender	Male	213	33.1
	Female	431	66.9
Age	25 and under	13	2.0
	26-35 years	282	43.8
	36-45 years	260	40.4
	46-55 years	65	10.1
	51 and over	24	3.7
Education level	Primary school graduate	7	1.1
	Vocational school graduate	87	13.5
	University graduate	399	62.0
	Master or PhD	151	23.4
Marital status	Single	221	34.3
	Married	406	63.0
	Divorced	17	2.6
Monthly income	US$ 1000 or less	67	10.4
	US$ 1001- 1500	96	19.8
	US$ 1501-2500	220	34.2
	US$ 2501 or more	261	54.0
The person/s Accompanying the travel	Alone	59	9.2
	With family	365	56.7
	With friends	220	34.2
Time spent on social media (daily)	Less than 1 hour	22	3.4
	1-2 hours	134	20.8
	2-4 hours	225	34.9
	More than 4 hours	263	40.8
The most used social media platform	Facebook	172	26.7
	Twitter	120	18.6
	Instagram	266	41.3
	LinkedIn	10	1.6
	YouTube	76	11.8

comparative fit index (CFI) = 0.954, GFI = 0.912 AGFI = 0.885, NFI = 0.932). The indices demonstrated that the model fit was within the recommended minimum levels (Hair et al., 2010). The CFA results are presented in Table 2.

Table 2. CFA results; Note: ***p < .001, λ= Standardizad loadings, AVE = average variance extracted, CR = composite reliability

Construct	λ	t-value	CR	AVE
Social Visibility of Consumption				
I would like to show my journey to the people around me.	0.788	----	0.91	0.72
I want others to see the attractions I witnessed during my travels.	0.873	21.449***		
When traveling I prefer destinations and businesses with high visual appeals.	0.878	21.620***		
I pay attention to privacy in my visual posts about my travel experience on social media.	0.869	21.348***		
Social Self-Expression				
My visual posts on social media … --- about my travels contribute to my personal image.	0.816	----	0.88	0.64
--- about my travels support the social role I have.	0.815	19.582***		
--- have a positive effect on others' thoughts about me.	0.801	19.179***		
--- improve the way society views me.	0.789	18.801***		
Spiritual Self-Expression				
--- symbolize the person I really feel on the inside.	0.823	----	0.88	0.66
--- reflect my personality.	0.864	21.636***		
--- are an extension of my inner self.	0.825	20.449***		
--- mirror my real emotions.	0.737	17.648***		
Word-of-mouth Communication				
I want everyone around me to know that I prefer a halal-friendly destination when traveling.	0.858	----	0.89	0.67
It's exciting to share my travel experience with someone seeking my advice.	0.725	18.653***		
I like to answer comments or questions about my travels on social media.	0.754	19.751***		
I receive good comments from my friends anytime I share my travel experiences.	0.941	27.414***		
Travel Intention				
I am planning to visit a halal-friendly destination soon.	0.770	----	0.89	0.67
When planning my budget, I consider the touristic trips I plan to do.	0.804	18.259***		
I try to follow the developments about Muslim-friendly tourism products and services.	0.868	19.812***		
I will continue to prefer Muslim-friendly businesses and destinations in my travels.	0.836	19.065***		

Discriminant validity was examined by comparing the correlation between the latent variables in the model and the square root of the AVE obtained for each structure. Table 3 shows the discriminant validity results. The AVE square for all structures was higher than the square of the correlation coefficients. Therefore, the intended structure of each item in the measurement model was explained better than the other structures, and there were no problems with discriminating validity for any of the structures (Hair et al., 2014).

3. Structural Model

The structural model showed an acceptable fit between the data and the proposed model. The fit indices of the structural model were as follows: chi-square ($\chi 2$ = 483.178, df = 161, x 2/df = 3.00, p <.001, RMSEA = 0.064, CFI = 0.950, GFI = 0.907 AGFI = 0.878, NFI = 0.928. All values of the fit indices met the recommended minimum criteria for model fit (Hair et al., 2019). Table 4 shows the results of the structural model.

In the path analysis, the significant coefficients were noted for the paths running from the social visibility of consumption to social and spiritual self-expression, e-WOM, and travel intention (β = 0.60, β = 0.43, β = 0.39, β = 0.23; p <0.001, respectively). The findings showed that the social visibility of consumption had a significant effect on social and spiritual expression, e-WOM, and travel intention and that H1, H2, H3, and H6 were supported. In addition, the paths from spiritual self-expression to e-WOM and travel intention were found to be meaningful (β = 0.32, p <0.001; β = 0.10, p <0.05, respectively). Therefore, H5 and H8 were supported. However, the coefficients were meaningless for the paths from social self-expression to e-WOM and travel intention. Hence, H4 and H7 were not supported. Finally, the path from e-WOM to travel intention was significant (= 0.35, p <0.001), and, thus, H9 was supported. However, the social visibility of consumption indirectly affects the e-WOM and travel intentions of Muslim tourists. In addition, spiritual self-expression through the visualization of travel has a mediating role in the effect of social visibility of consumption on travel intention. Direct and indirect effects of social visibility of consumption on endogenous variables are presented in Table 5, along with the total effect.

Table 3. Discriminant validity

Construct	Items	Mean	S.D.					
Social Visibility of Consumption	4	3.99	0.74	*0.852*				
Social Self-Expression	4	3,46	0.85	0.598	*0.805*			
Spiritual Self-Expression	4	3.34	0.81	0.421	0.452	*0.813*		
Word-of-mouth Communication	4	3.97	0.62	0.449	0.352	0.463	*0.823*	
Travel Intention	4	4.21	0.66	0.418	0.276	0.359	0.501	*0.820*

Table 4. Results of the structural model
Note: Significant at ***p <0.001, **p <0.05 (two-tailed); ns= not significant; β= standardized path coefficients

	Hypotheses		β	t-value	Results
H1	Social Visibility of Consumption	→ Social Self-Expression	0.607	11.915***	Supported
H2	Social Visibility of Consumption	→ Spiritual Self-Expression	0.435	8.372***	Supported
H3	Social Visibility of Consumption	→ e-WOM	0.391	4.564***	Supported
H4	Social Self-Expression	→ e-WOM	0.038	.664^{ns}	Not supported
H5	Spiritual Self-Expression	→ e-WOM	0.322	6.089***	Supported
H6	Social Visibility of Consumption	→ Travel Intention	0.236	3.621***	Supported
H7	Social Self-Expression	→ Travel Intention	0.041	0.676^{ns}	Not supported
H8	Spiritual Self-Expression	→ Travel Intention	0.106	2.002**	Supported
H9	e-WOM	→ Travel Intention	0.357	6.424***	Supported

Table 5. Standardized direct, indirect, and total effects

Dependent Variables	Indirect Effect		Direct Effect			Total Effect		
	SVC	Spiritual	SVC	Spiritual	e-WOM	SVC	Spiritual	e-WOM
Social Self-Expression	---		0.607	---	---	0.607	---	---
Spiritual Self-Expression	---	---	0.435	---	---	0.435	---	---
e-WOM	0.163	---	0.291	0.322	---	0.454	0.322	---
Travel intention	0.184	0.115	0.236	0.106	0.357	0.421	0.221	0.357

RESULTS AND DISCUSSION

Social media is an effective platform that facilitates tourists to declare their travel experiences to others with visual evidence, and strengthens their motivation to express themselves spiritually and socially. This study examined the influence of the social visibility consumption of Muslim tourists' travel experiences on social media on their social and spiritual self-expression, e-WOM, and travel intentions. The study results showed that the social visibility regarding the travel experience on social media among Muslim tourists played an important role in their spiritual and social expression. Similar to those obtained in previous studies (Hudson et al., 2016; Josiassen and George Assaf, 2013; So et al., 2018), this result highlighted the strong perception of Muslim tourists' consumption behavior being followed by others and the importance of social visibility in their travels in presenting themselves both spiritually and socially to others.

In addition, this study determined that the visualization of the travel experiences of Muslim tourists on social media had a positive influence on their e-WOM. Similar results have been obtained in empirical studies that have reported that photo and video sharing, in which visuality is prominent, on social media increases e-WOM regarding users' travel experiences (Barreto, 2014; King et al., 2014). In addition, the social visibility of consumption positively affected the travel intentions of Muslim tourists. High visibility on social media increases the awareness of a touristic product and

encourages users' sense of curiosity. Therefore, this result supported the behavior of tourists who prefer high social visibility destinations and businesses for their travels, which has been revealed in previous studies (So et al., 2018).

Descriptive statistics show that Muslim tourists tend to visualize their travel experiences on social media. In other words, the desire of Muslim tourists to visually communicate their travel experiences to others on social media is similar to other tourist groups (Kim and Fesenmaier, 2017). Findings in the literature have shown that Muslim tourists take privacy into account when visualizing the travel experience on social media, in line with Islamic beliefs (Sandikci and Ger, 2010). In addition, studies have revealed that Muslim tourists attach more importance to social expression than spiritual expression when visualizing their travels. However, social self-expression does not significantly affect e-WOM among Muslim tourists. Conversely, spiritual self-expression has a positive effect on the e-WOM of Muslim tourists. In this respect, it can be said that the visual sharing of the travel experiences of Muslim tourists on social media was made to communicate with others, provide social and emotional support, and feel better.

In the study, it was determined that the social self-expression of Muslim tourists did not have a significant effect on their travel intentions. On the other hand, it was found that Muslim tourists' spiritual self-expression had a very low effect on their travel intentions. Accordingly, it can be said that Muslim tourists did not go on travel to reflect the social identity or inner world that they consider ideal for themselves. However, Sirgy and Su (2000), and Bhattacharya and Sen (2003) determined that social identity development and desire for social acceptance were influential in the travel preferences of tourists in line with conspicuous consumption. In contrast, the behavior of Muslim tourists visualizing their travels was not compatible with the conspicuous consumption theory. This result can stem from the Islamic belief that orders Muslims to not use their social status and financial competence as a means of superiority over others.

In the Islamic belief, the pretentious behavior of someone to be accepted by others or to show that they are superior to them is called "Riya." These acts of showing off are expressed in some verses of the Qur'an, and it is stated that showing off is a behavior that should be avoided even in worship (Qur'an, 2:264). In Islamic teaching, the determinant of whether an individual's behavior is for the show (Riya) is intention. The intention is the explicit or implicit end goal that a person aims at while performing a behavior. Therefore, the fact that Muslim tourists express themselves socially through visual sharing on social media does not affect their travel intentions may be because they do not travel to show others their social status or wealth. However, the fact that Muslim tourists want to express themselves socially through visual posts about their travels on social media shows that they are to balance their desire for religiosity and modernity, in line with previous research findings (Khan et al., 2022). In this study, the participants' commitment to Islamic teachings and their level of religiosity was not considered. However, the fact that the participants follow the halalbooking.com online travel agency on social media and have preferred a halal hotel or a halal-friendly destination at least once in their travels in the last two years shows that they consider Islamic teachings. However, the result that socially self-expression did not affect travel intention may have been affected by the characteristics of the sample. Because most of the participants are women, the current research findings show that the priority of Muslim women in their touristic travel planning is the sense of freedom in accessing women-only facilities such as hammams, beaches, and pools (Vargas-Sánchez and Moral-Moral, 2019). Moreover, a commercialization and branding process that will consider tourist differences such as service types, age groups (generations), wealth, social status, and education level in halal tourism has not been completed yet (Wingett and Turnbull, 2017). However, current research findings show that Muslim women expressing themselves on social media is an effective tool in strengthening their social identities (Khan et al., 2022).

CONCLUSION

The present study determined that social media influences visualizing the travels, word-of-mouth communications, and the travel intentions of Muslim tourists. In this regard, the managers of halal tourism enterprises are recommended to use social media more effectively for their direct marketing activities and enhance customer communication. The findings showed that tourism businesses that serve Muslim tourists should pay attention to visual appeal and prestige. However, that is not enough to attract Muslim tourists, as visual posts to express social status, social role, and ideal social identity among Muslim tourists do not increase their e-WOM and travel intentions. On the other hand, visual posts express peace, freedom, emotion, and spirituality. Muslim tourists feel that their travels positively affect their word-of-mouth communication and travel intentions. In this respect, halal tourism businesses, the target market of Muslim tourists, should provide them with a peaceful, accessible, and spiritual atmosphere, visual appeal, and prestige. This research has some limitations. Firstly, the findings of this study were obtained from users who followed the Halalbooking online travel agency on the social media communication channels of Facebook and Instagram. In other words, the findings to be obtained from Muslim tourists using other social media communication channels may differ. In addition, another limitation of the study is related to the sampling. Most of the participants are women, and Muslim women rarely travel alone. Therefore, factors not included in the research other than word-of-mouth communication and self-expression may have played a more influential role in their travel intentions. Two suggestions are offered to researchers for future studies. The first is to examine the conspicuous consumption theory within the framework of the tendencies of Muslim tourists to visualize their travels on social media and their travel behaviors. The second is to examine the relationship between the behavior of Muslim tourists expressing themselves through the social visibility of consumption and the level of overlap of halal tourism businesses' brands.

REFERENCES

Abror, A., Patrisia, D., Trinanda, O., Omar, M.W., & Wardi, Y. (2020). Antecedents of word of mouth in Muslim-friendly tourism marketing: the role of religiosity. *Journal of Islamic Marketing*, *12*(4), 882–899. https://doi.org/10.1108/JIMA-01-2020-0006

Mohammed Abubakar, A. (2016). Does eWOM influence destination trust and travel intention: a medical tourism perspective. *Economic research-Ekonomska istraživanja,* 29(1), 598-611. https://doi.org/10.1080/1331677X.2016.1189841

Akhtar, N., Sun, J., Ahmad, W., & Akhtar, M.N. (2019). The effect of non-verbal messages on Muslim tourists' interaction adaptation: A case study of Halal restaurants in China. *Journal of Destination Marketing and Management*, 11 December 2018, 10–22. https://doi.org/10.1016/j.jdmm.2018.10.001

Algharabat, R.S. (2017). Linking social media marketing activities with brand love: The mediating role of self-expressive brands. *Kybernetes*, *46*(10), 18001–1819. https://doi.org/10.1108/K-04-2017-0130

Amalia, R., Yahya, A., Nurhalis, N., Idris, S., Mahdi, S., Putra, T.R.I., & Sartiyah, S. (2019). Impact of electronic word of mouth on tourist attitude and intention to visit Islamic destinations. In 1st Aceh Global Conference, AGC 2018, 700-705, Atlantis Press. https://doi.org/10.2991/agc-18.2019.105

Barreto, A.M. (2014). The word-of-mouth phenomenon in the social media era. *International Journal of Market Research*, *56*(5), 631–654. https://doi.org/10.2501/IJMR-2014-043

Batra, R., Ramaswamy, V., Alden, D.L., Steenkamp, J.B.E.M., & Ramachander, S. (2000). Effects of Brand Local and Nonlocal Origin on Consumer Attitudes in Developing Countries. *Journal of Consumer Psychology*, *9*(2), 83–95. https://doi.org/10.1207/15327660051044178

Belk, R.W. (1978). *Assessing the effects of visible consumption on impression formation*. ACR North American Advances.

Berger, J., & Ward, M. (2010). Subtle signals of inconspicuous consumption. *Journal of Consumer Research*, *37*(4), 555–569. https://doi.org/10.1086/655445

Bhattacharya, C.B., & Sen, S. (2003). Consumer-company identification: A framework for understanding consumers' relationships with companies. *Journal of Marketing*, *67*(2), 76–88. https://doi.org/10.1509/jmkg.67.2.76.18609

Bilgin, Y. (2018). We can see who you are! Reflections of Social Visibility of Consumption on Consumer-Brand Identity, WOM Communication, and Brand Loyalty. *Journal of the Human and Social Science Researches*, *7*(3), 2204–2231. https://doi.org/10.15869/itobiad.451231

Boğan, E., & Sarışık, M. (2019). Halal tourism: conceptual and practical challenges. *Journal of Islamic Marketing*, *10*(1), 87–96. https://doi.org/10.1108/JIMA-06-2017-0066

Correia, A., Kozak, M., & Reis, H. (2016). Conspicuous consumption of the elite: Social and self-congruity in tourism choices. *Journal of Travel Research*, *55*(6), 738–750. https://doi.org/10.1177/0047287514563337

Crescent Rating, M. (2019). Global Muslim travel index 2019. Singapore: Mastercard. https://www.crescentrating.com/download/thankyou.html?file=hJGfOCBy_20190406_MC-CR_GMTI_2019_Interactive.pdf

Feizollah, A., Mostafa, M.M., Sulaiman, A., Zakaria, Z., & Firdaus, A. (2021). Exploring halal tourism tweets on social media. Journal of Big Data, *8*(72), 2-18. https://doi.org/10.1186/s40537-021-00463-5

Fotiadis, A., Rice, J., & Hiyasat, R. (2023). Antecedents of yacht tourism participants' satisfaction and word-of-mouth intention. *Worldwide Hospitality and Tourism Themes*, *15*(4), 349–361. https://doi.org/10.1108/WHATT-03-2023-0042

Fotis, J., Buhalis, D., & Rossides, N. (2012). Social media use and ımpact during the holiday travel planning process. *Information and Communication Technologies in Tourism 2012*, 13–24. https://doi.org/10.1007/978-3-7091-1142-0_2

George, D., & Mallery, M. (2010). SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 update (10a ed.) Boston: Pearson.

Hair, J.F., Risher, J.J., Sarstedt, M., & Ringle, C.M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hair, J.F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V.G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, *26*(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128

Hajli, M.N. (2014). A study of the impact of social media on consumers. *International journal of market research*, 56(3), 387-404. https://doi.org/10.2501/IJMR-2014-025

Han, H., Al-Ansi, A., & Kim, H.C. (2019). Perceived inconveniences and Muslim travelers' loyalty to non-Muslim destinations. *Sustainability (Switzerland)*, *11*(17), 1–14. https://doi.org/10.3390/su11174600

Heffetz, O. (2011). A test of conspicuous consumption: Visibility and income elasticities. *The Review of Economics and Statistics*, *XCIII*(4), 1101–1117. https://doi.org/10.1162/REST_a_00116

Hudson, S., Huang, L., Roth, M.S., & Madden, T.J. (2016). The influence of social media interactions on consumer-brand relationships: A three-country study of brand perceptions and marketing behaviors. *International Journal of Research in Marketing*, *33*(1), 27–41. https://doi.org/10.1016/j.ijresmar.2015.06.004

Idris, I., Herdiani, A., Adi, K.R., & Shobiroh, N.B.I. (2023). Mobile augmented reality as epromotion to attract tourısts' awareness and intenion to visit halal destinations. *GeoJournal of Tourism and Geosites*, 49(3), 1123-1133. https://doi.org/10.30892/gtg.49327-1111

Ismail, W.R., Othman, M., Abdul Rahman, R., Kamarulzaman, N.H., & Ab Rahman, S.B. (2019). Is sharing really caring?: The impact of eWoM on halal tolerance among Malay Muslim consumers. *Journal of Islamic Marketing*, *10*(2), 394–409. https://doi.org/10.1108/JIMA-04-2016-0035

Jansson, A. (2007). A sense of tourism: New media and the dialectic of encapsulation/decapsulation. *Tourist Studies*, *7*(1), 5–24. https://doi.org/10.1177/1468797607079799

Josiassen, A., & George Assaf, A. (2013). Look at me-I am flying: The influence of social visibility of consumption on tourism decisions. *Annals of Tourism Research*, *40*(1), 155–175. https://doi.org/10.1016/j.annals.2012.08.007

Juliana, J., Putri, F.F., Wulandari, N.S., Saripudin, U., & Marlina, R. (2022). Muslim tourist perceived value on revisit intention to Bandung city with customer satisfaction as intervening variables. *Journal of Islamic Marketing*, 13 (1), 161-176. https://doi.org/10.1108/JIMA-08-2020-0245

Kaiser, H.F. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31-36. https://doi.org/10.1007/BF02291575

Khan, I.M., Sahadev, S., Rashid, T., & Banerjee, S. (2022). Social media and empowerment in hospitality and tourism decision-making: A study among UK Muslim women. *International Journal of Hospitality Management*, 101, 103125. https://doi.org/10.1016/j.ijhm.2021.103125

Kim, J., & Fesenmaier, D.R. (2017). Sharing tourism experiences: The posttrip experience. *Journal of Travel Research*, *56*(1), 28–40. https://doi.org/10.1177/0047287515620491

Kim, J., & Lee, J.E.R. (2011). The facebook paths to happiness: Effects of the number of Facebook friends and self-presentation on subjective well-being. *Cyberpsychology, Behavior, and Social Networking*, *14*(6), 359–364. https://doi.org/10.1089/cyber.2010.0374

Kim, J., & Tussyadiah, I.P. (2013). Social networking and social support in tourism experience: The moderating role of online self-presentation strategies. *Journal of Travel and Tourism Marketing*, *30*(1–2), 78–92. https://doi.org/10.1080/10548408.2013.751220

King, R.A., Racherla, P., & Bush, V.D. (2014). What we know and don't know about online word-of-mouth: A review and synthesis of the literature. *Journal of Interactive Marketing*, *28*(3), 167–183. https://doi.org/10.1016/j.intmar.2014.02.001

Leung, D., Law, R., van Hoof, H., & Buhalis, D. (2013). Social media in tourism and hospitality: A literature review. *Journal of Travel and Tourism Marketing*, *30*(1–2), 3–22. https://doi.org/10.1080/10548408.2013.750919

Litvin, S.W., Goldsmith, R.E., & Pan, B. (2008). Electronic word-of-mouth in hospitality and tourism management. *Tourism Management*, *29*(3), 458–468. https://doi.org/10.1016/j.tourman.2007.05.011

Liu, F., Li, J., Mizerski, D., & Soh, H. (2012). Self-congruity, brand attitude, and brand loyalty: a study on luxury brands. *European Journal of Marketing*, *46*(7/8), 922–937. https://doi.org/10.1108/03090561211230098

Mersey, R.D., Malthouse, E.C., & Calder, B.J. (2010). Engagement with online media. *Journal of Media Business Studies*, *7*(2), 39–56. https://doi.org/10.1080/16522354.2010.11073506

Nurhayati, T., & Hendar, H. (2019). Personal intrinsic religiosity and product knowledge on halal product purchase intention: Role of halal product awareness. *Journal of Islamic Marketing*, *11*(3), 603–620. https://doi.org/10.1108/JIMA-11-2018-0220

O'Cass, A., & McEwen, H. (2004). Exploring consumer status and conspicuous consumption. *Journal of Consumer Behaviour*, *4*(1), 25–39. https://doi.org/10.1002/cb.155

Popp, B., & Woratschek, H. (2017). Consumer-brand identification revisited: An integrative framework of brand identification, customer satisfaction, and price image and their role for brand loyalty and word of mouth. *Journal of Brand Management*, *24*(3), 250–270. https://doi.org/10.1057/s41262-017-0033-9

Preko, A., Mohammed, I., Gyepi-Garbrah, T.F., & Allaberganov, A. (2020). Islamic tourism: travel motivations, satisfaction and word of mouth, Ghana. *Journal of Islamic Marketing*, *12*(1), 124–144. https://doi.org/10.1108/JIMA-04-2019-0082

Ranjbarian, B. (2011). Word of mouth communication and some consumption habits among Iranian consumers. *African Journal of Business Management*, *5*(26), 10303–10313. https://doi.org/10.5897/ajbm10.378

Ruane, L., & Wallace, E. (2015). Brand tribalism and self-expressive brands: Social influences and brand outcomes. *Journal of Product and Brand Management*, *24*(4), 333–348. https://doi.org/10.1108/JPBM-07-2014-0656

Sandikci, Ö., & Ger, G. (2010). Veiling in style: How does a stigmatized practice become fashionable? *Journal of Consumer Research*, *37*(1), 15–36. https://doi.org/10.1086/649910

Schau, H.J., & Gilly, M.C. (2003). We are what we post? Self-presentation in personal web space. *Journal of Consumer Research*, *30*(3), 385–404. https://doi.org/10.1086/378616

Schmallegger, D., Carson, D., & Jacobsen, D. (2009). The use of photographs on consumer generated content websites: Practical implications for destination image analysis. *Tourism Informatics: Visual Travel Recommender Systems, Social Communities, and User Interface Design*, *1993*, 243–260. https://doi.org/10.4018/978-1-60566-818-5.ch014

Seo, E.J., & Park, J.W. (2018). A study on the effects of social media marketing activities on brand equity and customer response in the airline industry. *Journal of Air Transport Management*, *66*, 36–41. https://doi.org/10.1016/j.jairtraman.2017.09.014

Simon, F., & Tossan, V. (2018). Does brand-consumer social sharing matter? A relational framework of customer engagement to brand-hosted social media. *Journal of Business Research*, *85*(November 2016), 175–184. https://doi.org/10.1016/j.jbusres.2017.12.050

Sirgy, M.J., & Su, C. (2000). Destination image, self-congruity, and travel behavior: Toward an integrative model. *Journal of Travel Research*, *38*(4), 340–352. https://doi.org/10.1177/004728750003800402

Slama, M. (2023). Conspicuous Pilgrimages and the Politics of Public/Private: Social Media Representations of Indonesia's Muslim Middle Class. *The 'Crossed-Out God' in the Asia-Pacific: Religious Efficacy of Public Spheres*, 27-47, Singapore, Springer Nature Singapore.

So, K.K.F., Wu, L., Xiong, L., & King, C. (2018). Brand management in the era of social media: Social visibility of consumption and customer brand ıdentification. *Journal of Travel Research*, *57*(6), 727–742. https://doi.org/10.1177/0047287517718354

Sofyan, A.S., Abror, A., Putra, T.W., Muslihati, M., Sofyan, S., Sirajuddin, S., Katman, M.N., & Darussalam, A.Z. (2022). Crisis and disaster management for halal tourism: a systematic review. *Tourism Review*, *77*(1), 129–145. https://doi.org/10.1108/TR-08-2020-0390

Sotiriadis, M.D. (2017). Sharing tourism experiences in social media: A literature review and a set of suggested business strategies. *International Journal of Contemporary Hospitality Management*, *29*(1), 179–225. https://doi.org/10.1108/IJCHM-05-2016-0300

Stokburger-Sauer, N., Ratneshwar, S., & Sen, S. (2012). Drivers of consumer-brand identification. *International Journal of Research in Marketing*, *29*(4), 406–418. https://doi.org/10.1016/j.ijresmar.2012.06.001

Sulong, Z., Abdullah, M., & Chowdhury, M.A.F. (2022). Halal tourism demand and firm performance forecasting: new evidence from machine learning. *Current Issues in Tourism*, 1–17. https://doi.org/10.1080/13683500.2022.2145458

Syed-Ahmad, S.F. (2011). Tourism, Communication and Photography on Social Media. Doctoral dissertation, University of Western Australia.

Tatar, Ş.B., & Eren-Erdoğmuş, İ. (2016). The effect of social media marketing on brand trust and brand loyalty for hotels. *Information Technology and Tourism*, *16*(3), 249–263. https://doi.org/10.1007/s40558-015-0048-6

Trusov, M., Bodapati, A.V., & Bucklin, R.E. (2010). Determining influential users in internet social networks. *Journal of Marketing Research*, *47*(4), 643–658. https://doi.org/10.1509/jmkr.47.4.643

Tsimonis, G., & Dimitriadis, S. (2014). Brand strategies in social media. *Marketing Intelligence and Planning*, *32*(3), 328–344. https://doi.org/10.1108/MIP-04-2013-0056

Tussyadiah, I.P., & Fesenmaier, D.R. (2009). Mediating tourist experiences. Access to places via shared videos. *Annals of Tourism Research*, *36*(1), 24–40. https://doi.org/10.1016/j.annals.2008.10.001

Valkenburg, P.M., Peter, J., & Schouten, A.P. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *Cyberpsychology and Behavior*, *9*(5), 584–590. https://doi.org/10.1089/cpb.2006.9.584

Vargas-sánchez, A., & Moral-moral, M. (2019). *Halal tourism : state of the art*. 74(3), 385–399. https://doi.org/10.1108/TR-01-2018-0015

Wang, T., Yeh, R.K.J., Chen, C., & Tsydypov, Z. (2016). What drives electronic word-of-mouth on social networking sites? Perspectives of social capital and self-determination. *Telematics and Informatics*, *33*(4), 1034–1047. https://doi.org/10.1016/j.tele.2016.03.005

Wardi, Y., Abror, A., & Trinanda, O. (2018). Halal tourism: antecedent of tourist's satisfaction and word of mouth (WOM). *Asia Pacific Journal of Tourism Research*, *23*(5), 463–472. https://doi.org/10.1080/10941665.2018.1466816

Wingett, F., & Turnbull, S. (2017). Halal holidays: exploring expectations of Muslim-friendly holidays. *Journal of Islamic Marketing*, *8*(4), 642–655. https://doi.org/10.1108/JIMA-01-2016-0002

NETWORK ANALYSIS FOR THE STUDY OF TRANSPORT IN THE METROPOLITAN AREA OF ALGEIRS

Tina BENFERHAT[*]

University of Science and Technology HouariBoumediene, Faculty of Earth Sciences, Geography and Territory Planning,
Bab Ezzouar, Algeria, e-mail: benferhattina.usthb@gmail.com

Abdelmadjid BOUDER

University of Science and Technology HouariBoumediene, Faculty of Earth Sciences, Geography and Territory Planning,
Bab Ezzouar, Algeria, e-mail: abdbouder@gmail.com

Abstract: Transport in the metropolitan area of Algiers is very complicated, so we used the powerful tools of geographic information systems in the analysis of transport in the study area. Through the utilization of network analysis and GIS capabilities, our study focuses on optimizing transportation networks and enhancing port accessibility in the metropolitan regions of Boumerdes, Blida, Tipaza, and Algiers. Our methodology involves data collection, GIS analysis, and mapping to generate databases and maps of metropolitan networks. Through assessing port accessibility, road connectivity, and population-based hotspots analysis. Our study reveals Algiers as the most accessible municipality, attributed to its strong centralization. The road-based analysis and population-based hotspot analysis provide valuable insights into port accessibility, road connectivity, and high-density townships, facilitating informed urban planning and infrastructure development.

Keywords: network analysis, transportation, business activity, the geographic information system (GIS), accessibility, connectivity, Algerian metropolitan business areas.

* * * * * *

INTRODUCTION

The National Spatial Planning Policy is currently at the heart of the concerns of the public authorities. The fundamental instrument of this policy is the National Spatial Planning Scheme (SNAT 2030). The latter is based, horizontally, on the Sectoral Master Plans and vertically, on the Schemes of Territorial Programming Spaces (SEVEN for the nine program regions) as well as on the Development Plans of the Wilaya Territory (PATW). Note that metropolitan areas are equipped with instruments, in this case the Metropolitan Area Development Plans (SDAAM).

The National Planning Policy and sustainable development of the territory aims at a harmonious development of the whole national territory, according to the specificities and the assets of each regional space.

Its purposes consist in:
- Creating favorable conditions for the development of national wealth and employment;
- Providing equal opportunities for promotion and development among all citizens;
- Encouraging the appropriate distribution, between regions and territories, of the bases and means of development by aiming to alleviate pressure on the coast, metropolises and large cities and the promotion of mountain areas, regions of the Highlands and South;
- Supporting and revitalizing rural areas, territories, regions and areas in difficulty, for the stabilization of their populations;
- Rebalancing the urban framework and the promotion of regional, national and international functions, of metropolises and large cities;
- Protecting and enhancing ecologically and economically sensitive spaces and groups;
- Protecting territories and populations against the risks associated with natural hazards;
- Protecting, enhancing and rationalizing the use of heritage, natural and cultural resources and their preservation for future generations.

To situate the importance of the role of ports in supporting and driving the economic and social activity of a country, it is crucial to highlight the nation's heavy reliance on trade with the rest of the world, with over 95% of these exchanges being conducted through maritime transportation (World Bank, 2021). This statistic underscores the critical role of ports in facilitating international trade connections and emphasizes their significance in the country's economic development and social progress. In light of the significant dependence on maritime trade, the efficiency and development of ports play a crucial role in driving the economic development of the country. The continuous pursuit of improving port performance is imperative (World Bank, 2019). Achieving efficiency relies on having suitable and well-adapted infrastructure that meets

---

[*] Corresponding author

the demands of evolving maritime transport technologies and the impacts of globalization (UNCTAD, 2020). This necessitates the availability of appropriate facilities and high-performance operational equipment, as well as an organizational and management system that adheres to international norms, standards, and market economy principles (UNCTAD, 2020).

The perception of ports has evolved beyond being merely a connection point between different transportation modes and a hub for goods movement. They now serve as dynamic components and essential elements within national and international logistics systems (Notteboom and Rodrigue, 2020). Recognizing their pivotal role, ports can significantly contribute to gaining a competitive advantage in the global market (Lam and Yap, 2019). Consequently, there arises a crucial requirement for a well-defined port policy that prioritizes the development of national potential and assets (Wilmsmeier and Notteboom, 2018). Transportation is the most critical and complex component of urban development and plays a vital role in the lives of the people and development of the country's economy (Mb and Vera, 2021) especially in underdeveloped nations. Investing in transportation is a powerful tool for regional development (Filip and Popa, 2014). The sustainable development of a region facilitates efficient route planning and accessibility to the desired service locations. Efficient accessibility is considered an essential input for socio-economic development. Access to input resources and output markets determines potential production and investment opportunities for products and services (Amin Hamdi, 2019).

The manner of balancing equity and efficiency is an important step to achieving spatial balance in the distribution of public service resources (Nitin and Kriti, 2023). Geographic Information System (GIS) technology is one of the hottest research tools in the world and is one of the fastest growing high technologies for monitoring (Ahmed et al., 2017). It is widely recognized as an organized collection computer hardware, software, geographic data, and personnel to capture, store, update, manipulate, analyze, and display all forms of geographically referenced information efficiently (Amrapali et al., 2015).The ArcGIS Network Analyst extension enables users to dynamically model realistic network conditions including turn restrictions, speed limits, height restrictions, and traffic conditions at different times of the day (Kumar and Kumar, 2016). An accurate examination of the current road network is essential for sustainability and for enabling people to travel with ease, at lower cost, and in less time, among other things (Debashis et al., 2019).

Port development leads to enhanced trade activity, increased supply, and reduced prices for commodities (Brooks, and Pallis, 2016). The role of the transportation network and access to ports are highly significant in facilitating unconstrained imports and exports of raw materials, machinery, and products (Ng and Ducruet, 2020). Port regionalization represents a new phase in port development, emphasizing the importance of efficient port systems (Notteboom, and Rodrigue, 2018). Evidence from China demonstrates the impact of port development on trade (Kunz and Hesse, 2017).

The primary objective of this project is to analyze the connectivity between ports and activity areas, identify optimal routes, and identify areas with high and low population densities. Onthe one hand, the GIS will provide management assistance based on functional and decision-making support based on several thematic analyzes spatial anal (Manel and Djamel, 2022). Utilizing GIS software, we aim to efficiently represent this spatial information. ArcGIS has been recognized as a highly user-friendly and efficient tool in the fields of traffic engineering and transportation planning. The approach used for this purpose is based on road network modeling, travel time calculations and functions integrated into geographic information software (Manel and Djamel, 2023).To implement our suggested improved approach, we selected thewe selected the road networks of Boumerdes, Blida, Tipaza, and the capital Algiers in Algeria as a case study.

Analogical models simplify diversity by describing, naming, classifying and cataloguing objects of study and grouping them into generic types; mathematical models simplify the complexity of their behavior by describing it in the form of laws and formulas. Depending on the spatial issues involved in a research or study project: the scale of observation (urban, regional), the type of network (monomodal or multimodal), and the object addressed (road traffic, accessibility), etc., a network can be assessed and modeled differently:

- Nodes can represent a network of cities, a network of ports or airports, the location of a high demographic concentration, economic potential, a city, a crossroads within a city, a simple intersection of roads, etc. It's a question of seeing from what angle we approach the question of transport.

- An arc corresponds to a section of homogeneous transport network (roads, bus lines, tramways, etc.), and must reflect the technical and functional characteristics of the transport infrastructure (cross-sections, speed, etc.) (Farid and Tahar, 2022).

The aim of this article is also to highlight the efficiency of using GIS in territorial governance on the one hand and to optimize travel time in economic activities in general and relations between ports and business parks in particular, in order to minimize time wasted on long journeys.

MATERIALS AND METHODS

The analysis in this paper is based on the road network connectivity and on the geographic locations of ports and the activity areas, and the population density to identify the statistically significant communes that have best routes providing accessibility to ports and activity areas using GIS software. We began by collecting and preparing the data that would be used in the analysis and this would be followed by the creation of a Geo-database for storing store the prepared data. Then both the network topology and network dataset would be built. Next, the network analysis process would be applied to the road network of the four states, and finally the hot spot analysis of the communes' population identified from the network analysis is made. The study area in this research consists of four states:
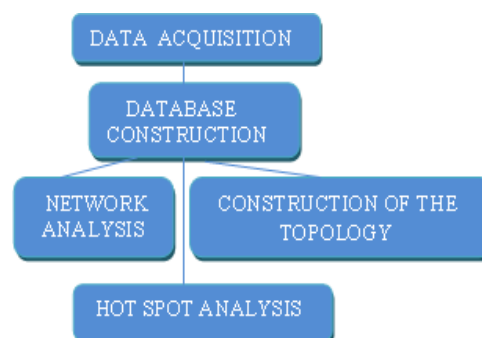
Figure 1.Geomatization method

Boumerdes, Blida, Tipaza, and the capital Algiers located in the north of Algeria country between longitudes 1″32'25" E and 4″2'26" E, and latitudes 36″49'25" N and 36″20'50" N. They cover a total area of around 5427.71 km^2 (Figure 2).
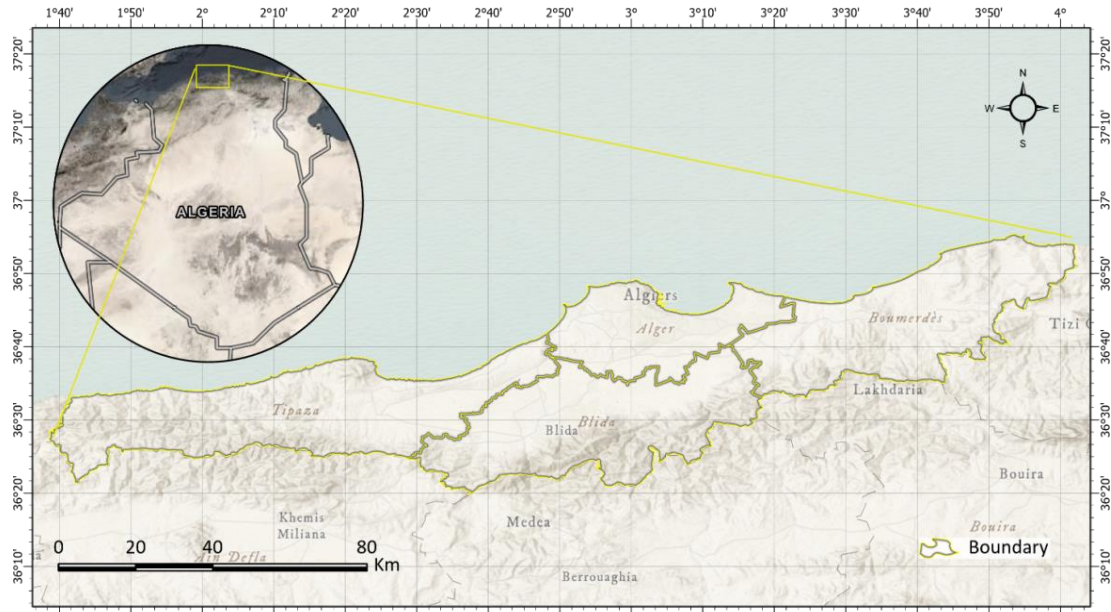
Figure 2. Location map of the Study area (Source: www.diva-gis.org)
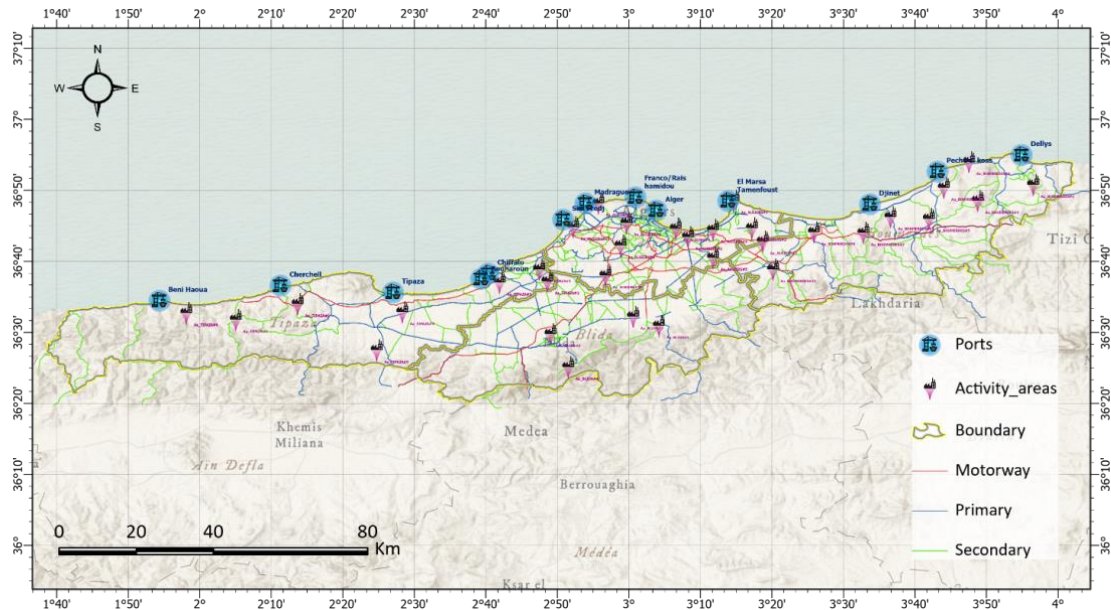
Figure 3. Road network map with Locations of Ports and Activity areas (Source: realised by TinaBENFERHAT)

DATA PREPARATION

A Modern Antique world base map was added to ArcGIS Pro software for network analysis of the study area, which can be accessed as an ArcGIS Online Service that provides free read-only unique vector web map customization. Updating the look of 18th and 19th century antique maps in the modern world of multi-scale mapping (Esri). Open-source national road network datasets are available from the OpenStreetMap (OSM for short), a worldwide spatial dataset, with unlimited use by everyone, generated and processed by interested parties with no limitations to download the data. We used Qgis software with the help of QuickOSM Plugin to extract three layers of the highway road network data. The studied roads were classified according to a hierarchy, based on the main function each road had in the road network. They were categorized as motorway, primary, secondary road. The data contain an attribute (Meters) to store the length of each road segment in the roads network, an attribute (Direction) to store the direction of each segment, and an attribute (Name) to store the name of each road segment and the max speed of each segment. Distance and time are essential to perform analysis on transportation networks. With the length attribute, we created a new field of distance for each road segment and, from distance and max speed attributes, we calculated the estimated travel time of each segment of our dataset. With the help of Remotely Sensed Data from Google Earth, digitization of ports and activity areas has been done. Also the data contain an attribute (Name) to store the name of each port and finally the count of 2018 population data of each state was added to the attributes table of the study areas and a map in ArcGIS Software showing the data in a spatial context was generated (Figure 3).

1. Creating geodatabase file:

A geodatabase within ArcGIS software was used for to store the data which is the native data structure used in ArcGIS and it is the fundamental data format used for both editing and management of the data (Esri). All the files were within one single dataset which ensured thatall had the same coordinate system, which was a vital condition for the operation to be correct It will contain the data of the road network, ports and activity areas The advantages of using a database include: centralized data, all within the same place; high speed for access and manipulation of data; high security, with measures to ensure the data is not damaged or corrupted.

2. Creating Network topology:

To manage better our geographic road network dataset, we need a network topology to ensure data integrity checks and maintain the connectivity between features. By applying some topology rules, such as ensuring that there are no dangles in the road network and the roads do not intersect or overlap with themselves, network information can be read and processed by tracing and diagram functions in an effective way.

3. Creating Network dataset:

After the download and preparation of the dataset it is ready for being used in building the network dataset that will be used in the network analysis. The line feature class elements are dataset. A network geo dataset was created which resulted in the links over which agents travel and Junctions connect. In addition, network elements have attributes that control navigation generated from the source of the highway road layers features it which will represent the road network and must be stored in a featurelayer consisting of the junctions connected topologically to each other. Edges connect other element's (junctions) edges facilitate navigation from one edge to another (Esri). The geometry of the source features helps establish connectivity over the network. The Network analyst extension was used in ArcGIS pro to create the network dataset shown in Figure 4.
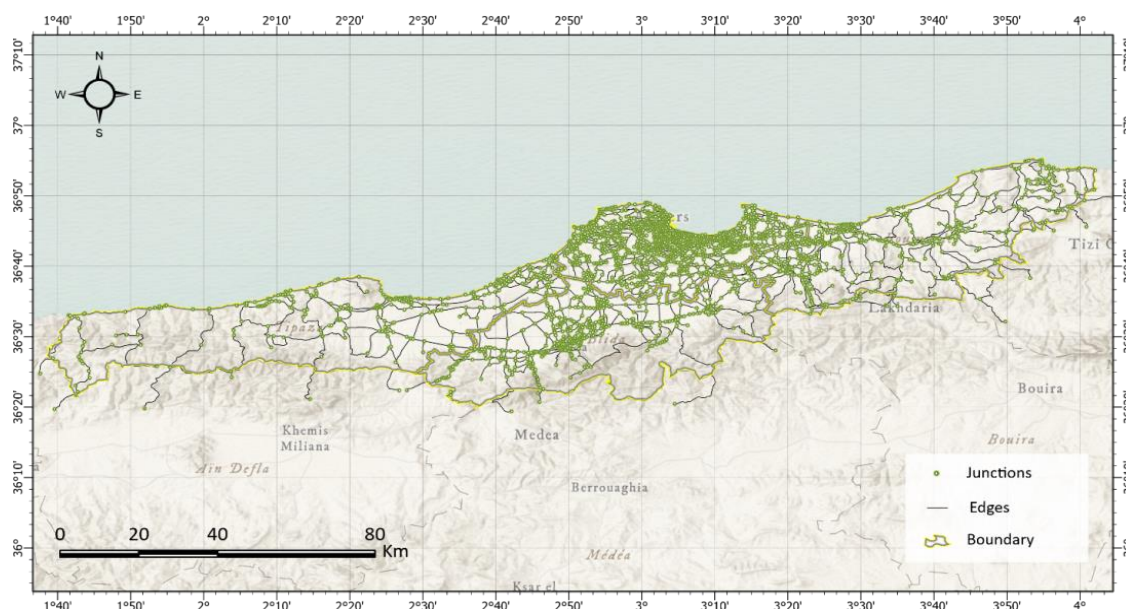
Figure 4. Junctions and edges of the road network generated by network analyst tool in ArcGIS
(Source: generated by network analyst tool in Arcgis)

4. Network analysis

The road network analysis has been implemented using the ArcGIS Network Analyst Extension. It helps organizations, businesses, and public services improve strategic decision-making (Esri), model realistic network conditions, which include turn restrictions, speed limits, height restrictions, and traffic conditions at various times of the day, and facilitates understanding and solving problems of a transportation nature. Network analysis is used for measuring the effective distance, rather than the Euclidian distance, between habitat patches. This method has been used in planning to assess the connectivity of existing or proposed reserves. There are several extremely efficient algorithms for determining the optimal route, the most widely cited of which was developed by Edgar Dijkstra (in 1959) and calculates the least accumulated cost between the destination node and every other node in the network (Khaing et al., 2018). To serve the purposes of our study, two types of network analyses were applied to solve the network for the determination of the shortest route: the closest facilities analysis and the origins-destination matrix analysis.

4.1. Closest facility

The closest facilities analysis finds the closest facilities that can be reached in a specific period from an incident location based on travel time and traffic information available (Debashis et al., 2019). In our case, the facilities represent the ports and the incident represents activity areas; this helps finding the closest facilities and specifies how many ports are there, the impedance factors in the analysis, the start time, the period to reach the closest activity areas, and whether the direction of travel is toward or away from them. The closest facility solver displays the best routes between activity areas

and ports, reports their travel costs, and returns driving directions. Then, by using the network analyst extension solver, the closest ports to the location of an activity area can be found, as shown in (Figure 5) below.

	ObjectID *	Shape *	FacilityID	FacilityRank	Name	IncidentCurbApproach	FacilityCurbApproach	IncidentID	Total_Length	Total_Time_travel ▲	Shape_Length
1	1	Polyline M	8	1	Aa_ALGIERS#1 - El Marsa Tamenfoust	Right side of vehicle	Right side of vehicle	1	1218.139613	1.593104	0.013276
2	9	Polyline M	10	1	Aa_ALGIERS#7 - Madrague	Right side of vehicle	Right side of vehicle	9	2654.765835	3.022496	0.027545
3	23	Polyline M	5	1	Aa_TIPAZA#3 - Chiffalo	Left side of vehicle	Right side of vehicle	28	5304.898387	6.36794	0.056226
4	27	Polyline M	2	1	Aa_TIPAZA#8 - Beni Haoua	Left side of vehicle	Right side of vehicle	33	5964.029701	6.564162	0.065642
5	17	Polyline M	11	1	Aa_BOUMERDES#3 - Peche el koss	Right side of vehicle	Right side of vehicle	20	7304.278313	7.680589	0.076806
6	25	Polyline M	4	1	Aa_TIPAZA#6 - Cherchell	Left side of vehicle	Left side of vehicle	31	8708.834715	7.939671	0.088626
7	3	Polyline M	12	1	Aa_ALGIERS#11 - Sidi Fredj	Right side of vehicle	Right side of vehicle	3	6756.228977	7.999079	0.071367
8	11	Polyline M	1	1	Aa_ALGIERS#9 - Alger	Right side of vehicle	Left side of vehicle	11	8372.772958	9.029904	0.085146
9	10	Polyline M	1	1	Aa_ALGIERS#8 - Alger	Left side of vehicle	Left side of vehicle	10	8717.249816	10.97721	0.089744
10	8	Polyline M	1	1	Aa_ALGIERS#6 - Alger	Left side of vehicle	Left side of vehicle	8	12255.024117	13.788448	0.12507
11	4	Polyline M	8	1	Aa_ALGIERS#2 - El Marsa Tamenfoust	Left side of vehicle	Right side of vehicle	4	11918.754492	14.785348	0.119057
12	22	Polyline M	5	1	Aa_TIPAZA#1 - Chiffalo	Left side of vehicle	Right side of vehicle	26	12385.308672	16.246857	0.132751
13	26	Polyline M	4	1	Aa_TIPAZA#7 - Cherchell	Left side of vehicle	Left side of vehicle	32	15367.194871	17.122838	0.159815
14	6	Polyline M	8	1	Aa_ALGIERS#4 - El Marsa Tamenfoust	Left side of vehicle	Right side of vehicle	6	12944.861731	17.797606	0.131852
15	18	Polyline M	11	1	Aa_BOUMERDES#5 - Peche el koss	Left side of vehicle	Left side of vehicle	22	18140.851469	18.462544	0.184625
16	5	Polyline M	8	1	Aa_ALGIERS#3 - El Marsa Tamenfoust	Left side of vehicle	Right side of vehicle	5	16748.61566	19.002729	0.166282
17	12	Polyline M	1	1	Aa_ALGIERS#9 - Alger	Left side of vehicle	Left side of vehicle	12	15429.284013	19.026606	0.153867
18	24	Polyline M	13	1	Aa_TIPAZA#4 - Tipaza	Right side of vehicle	Right side of vehicle	29	17053.875122	20.461066	0.174522
19	21	Polyline M	7	1	Aa_BOUMERDES#8 - Djinet	Right side of vehicle	Left side of vehicle	25	21887.122067	20.629684	0.226389
20	2	Polyline M	1	1	Aa_ALGIERS#10 - Alger	Left side of vehicle	Left side of vehicle	2	26521.472928	22.167964	0.261352
21	20	Polyline M	7	1	Aa_BOUMERDES#7 - Djinet	Right side of vehicle	Left side of vehicle	24	22256.096649	23.587693	0.233515
22	7	Polyline M	1	1	Aa_ALGIERS#5 - Alger	Right side of vehicle	Left side of vehicle	7	21226.277058	25.053138	0.21644
23	19	Polyline M	7	1	Aa_BOUMERDES#6 - Djinet	Right side of vehicle	Left side of vehicle	23	27996.736913	28.464079	0.284041
24	14	Polyline M	1	1	Aa_BLIDA#2 - Alger	Left side of vehicle	Left side of vehicle	14	33127.334486	30.168406	0.314308
25	13	Polyline M	1	1	Aa_BLIDA#1 - Alger	Right side of vehicle	Left side of vehicle	13	33715.137369	33.380066	0.315997
26	15	Polyline M	5	1	Aa_BLIDA#3 - Chiffalo	Right side of vehicle	Right side of vehicle	15	31540.999074	37.754293	0.313093
27	16	Polyline M	5	1	Aa_BLIDA#4 - Chiffalo	Right side of vehicle	Right side of vehicle	16	45084.980014	54.369074	0.446365

Figure 5. The attribute table of the Closest Facility Roads (Source: generated by network analyst tool in Arcgis)

	ObjectID *	Shape *	Name	OriginID	DestinationID	DestinationRank	Total_Length	Total_Time_travel ▲	Shape_Length
1	52	Polyline	El Marsa Tamenfoust - Aa_ALGIERS#1	34	67	1	1218.139613	1.593104	0.012949
2	78	Polyline	Madrague - Aa_ALGIERS#7	36	75	1	2654.765835	3.022496	0.022668
3	32	Polyline	Chiffalo - Aa_TIPAZA#3	31	94	1	5304.898387	6.36794	0.035384
4	17	Polyline	Beni Haoua - Aa_TIPAZA#8	28	99	1	5964.029701	6.564162	0.070553
5	90	Polyline	Peche el koss - Aa_BOUMERDES#3	37	86	1	7304.278313	7.680589	0.075605
6	79	Polyline	Madrague - Aa_ALGIERS#11	36	69	2	8124.123816	7.837191	0.066087
7	20	Polyline	Bouharoun - Aa_TIPAZA#3	29	94	1	6767.488721	7.88268	0.043793
8	28	Polyline	Cherchell - Aa_TIPAZA#6	30	97	1	8708.834715	7.939671	0.059659
9	95	Polyline	Sidi Fredj - Aa_ALGIERS#11	38	69	1	6756.228977	7.999079	0.031511
10	1	Polyline	Alger - Aa_ALGIERS#9	27	77	1	8372.772958	8.2165	0.064022
11	2	Polyline	Alger - Aa_ALGIERS#8	27	76	2	9948.18824	9.986973	0.076787
12	3	Polyline	Alger - Aa_ALGIERS#6	27	74	3	13033.40036	11.698992	0.098438
13	62	Polyline	Franco/Rais hamidou - Aa_ALGIERS#7	35	75	1	10630.789388	11.826598	0.088077
14	63	Polyline	Franco/Rais hamidou - Aa_ALGIERS#8	35	76	2	13363.675668	13.060569	0.066984
15	42	Polyline	Dellys - Aa_BOUMERDES#3	32	86	1	12724.520222	13.198905	0.123991
16	96	Polyline	Sidi Fredj - Aa_ALGIERS#7	38	75	2	12691.34836	13.989351	0.09307
17	80	Polyline	Madrague - Aa_ALGIERS#8	36	76	3	12894.712797	14.264778	0.099128
18	53	Polyline	El Marsa Tamenfoust - Aa_ALGIERS#2	34	70	2	11918.754492	14.785348	0.087495
19	64	Polyline	Franco/Rais hamidou - Aa_ALGIERS#9	35	77	3	14446.037631	14.935059	0.121389
20	4	Polyline	Alger - Aa_ALGIERS#4	27	72	4	18191.081442	14.945283	0.140564
21	54	Polyline	El Marsa Tamenfoust - Aa_ALGIERS#4	34	72	3	13220.955745	15.770491	0.07993

Figure 6. Image showing the attribute table of the first 20 OD Lines (Source: Generated by network analyst tool in Arcgis)

4.2. Od cost matrix:

The OD cost matrix and the closest facility solvers perform very similar analyses; the main difference, however, is in the output and the computation speed (Debashis et al., 2019). An origin-destination (OD) cost matrix solver finds and measures the least-cost paths along the network from multiple origins that represent ports in our case to multiple.Destinations representing the activity areas. We can specify the number activity areas to find, as well as a maximum distance from ports to search, which reduces cost and avoids traffic congestion, resulting in less pollution. After adjusting the OD cost matrix settings, we chose the origins to ports and the destinations to activity areas, and then used the OD cost matrix solver tool to store the values in the Lines attribute table reflecting the network distance (Fig 6), not the straight-line distance.

4.3. Hot Spot Analysis

The hot spot analysis tool identifies statistically significant spatial clusters of high values (hot spots) and low values (cold spots). It creates an Output Feature Class province, with a z-score, p-value, and confidence level bin field (Gi-Bin) for each feature in the Input Feature Class. The measures of statistical significance tell whether or not to reject the null hypothesis. The Gi-Bin field identifies statistically significant hot and cold spots. Features in the +/-3 bins reflect statistical significance with a 99 percent confidence level; features in the +/-2 bins reflect a 95 percent confidence level; features in the +/-1 bins reflect a 90 percent confidence level; and the clustering for features in bin 0 is not statistically significant (Debashis et al., 2019).In this paper, we present a hot spot analysis of the commune's population density that includes a portion of the routes from the closest facility analysis. These determinations help government and accessibility routes business entrepreneurs access population hot spots that have the best route to ports or activities; they will also reduce cost and avoid traffic congestion, resulting in less pollution (Figure 7).

	GiZScore	GiPValue	NNeighbors	POP	Gi_Bin ▼	Name
1	2.343059	0.019126	4	80890	2	Bordj El Kiffan
2	2.039609	0.041389	4	181496	2	Bordj El Bahri
3	1.968448	0.049017	5	75241	2	Rouiba
4	2.111661	0.034716	7	49396	2	Sidi Moussa
5	2.287936	0.022141	8	115607	2	Baraki
6	2.03304	0.042048	4	66593	2	Khraissia

Figure 7. Image shwing the attribute table of statistically significant hottest population (Source: generated by network analyst tool in Arcgis)

RESULTS AND DISCUSSION

The functional space of the city of Algiers, measured by the spatial scope and the intensity of commuting to the center of Algiers, covers a vast space that includes several bordering territories. At the heart of the Algiers region, the hyper center of Algiers plays the role of engine of economic and demographic dynamics, but this space remains very vulnerable given the incompatibility between transport supply and demand. The price of land and the displacement of centrality provided by the fast road network lead space-consuming activities to leave the city.A new spatial reality is taking shape, interweaving center and peripheries, in which functional specialization (employment, residence) accentuates the spacing of places frequented on a daily basis, which have been gradually redefined according to this spatial configuration.

The growing dependence on networks is accompanied by a heightened focus on organizing the areas surrounding the capital. This involves prioritizing the enhancement and expansion of the transportation network and the relocation of significant enterprises, particularly industrial ones. These efforts aim to alleviate pressure and reduce the influx of people and activities towards the capital and its center.The authorities responsible for urban planning and transport have made considerable financial efforts to improve the supply of public transport and to try to improve traffic conditions and reduce car use. However, sectoral interventions have not reduced car use or the nuisances associated with it, because at the same time suburbanization has increased the use of cars, including for very short journeys.In this paper, three analyses were done. The facility analysis and the Origins – Destinations cost matrix of the network analyst extension determined the locations of the ports as well as the activity areas for determining the shortest and best paths.

To navigate from one location to another, either the route with the least length (shortest route) or the route with the least travel time (best route) will be selected, depending on the impedance factor we choose to solve and it is necessary to set the attributes of the analysis of the facilities, incidents and origins, destinations, as well as travel type: from ports to activity areas or from activity areas to ports, allowed U-Turns at Junctions, distance units, number of facilities, to find and attribute parameters: curb approach, cut-off length. In this analysis, the road length was chosen as the impedance factor for the closest facility, and the travel time with a cut-off of 40 minutes was chosen as the impedance factor for the origins-distensions cost matrix. The tow results can be represented graphically in figures 8 and 9.The result shows that the distribution of employees in the study area highlights the predominance of the central region (Algiers).

The Grand Urban Project (GPU) was designed as an action strategy aiming to achieve the objective of "metropolisation" by brandishing the issues of influence, image and attractiveness, with the aim of raising Algiers to the

rank and status of metropolis that shines in the Mediterranean (Amina, 2018).From this point, it can be said that transport occupies a central position in the country's development strategies (Mourad, 2019).

The cause of this centralization is indeed the concentration of the majority of activities in the study area. For this problem, Professor Abedelmadjid,B. proposes the relocation of his units aimed at their judicious reorganization of industrial units so as to loosen the state on the metropolitan area by transferring certain industries to the second ring, as recommended by all the planning and urban planning instruments in force (SNAT, SRAT, PDAU) (Abdelmadjid, 2007) declares that "The challenge is clear, the more a city is well connected to the networks, the more its potential for attraction increases, the more its capacity to attract capital, skilled labor and infrastructure structuring increases"(Mohamed, 2018).
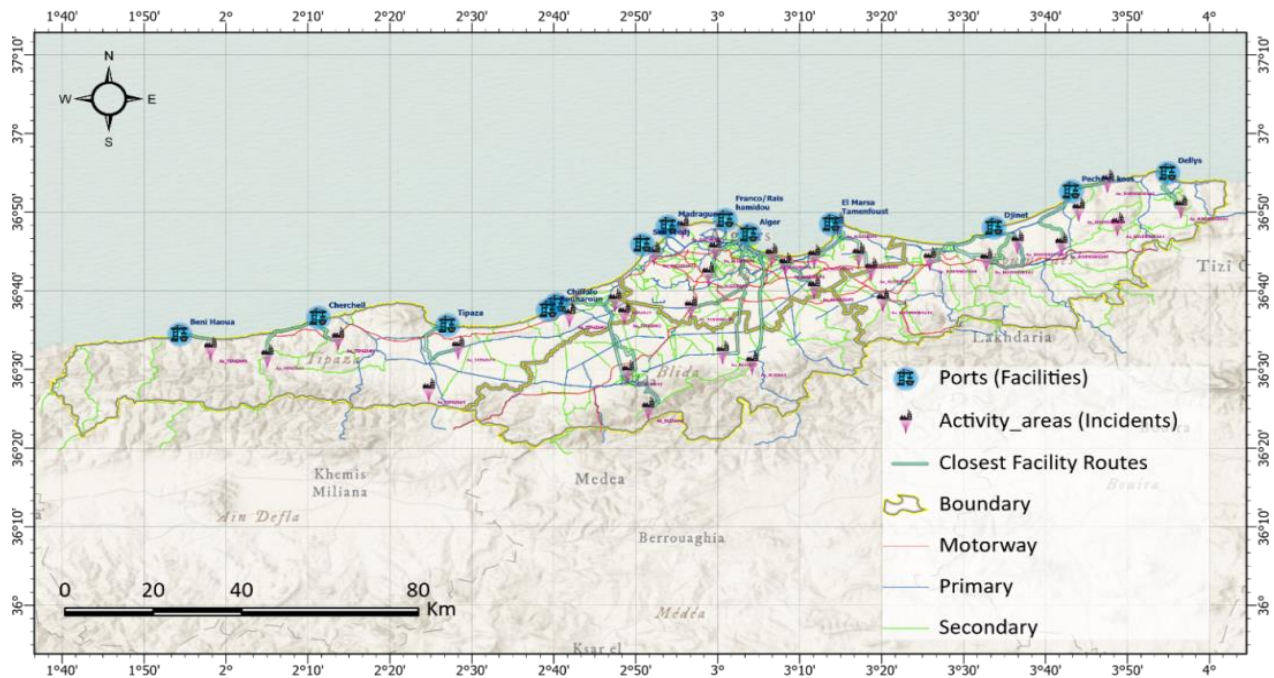
Figure 8. Result of the Closest Facilities Analysis (Source: realised by authors)

Firstly through external articulation with other international metropolises and with those of the Mediterranean in particular. This is how the city of Algiers can hope to be the engine of development for all of Algeria (Tarek et al., 2015).
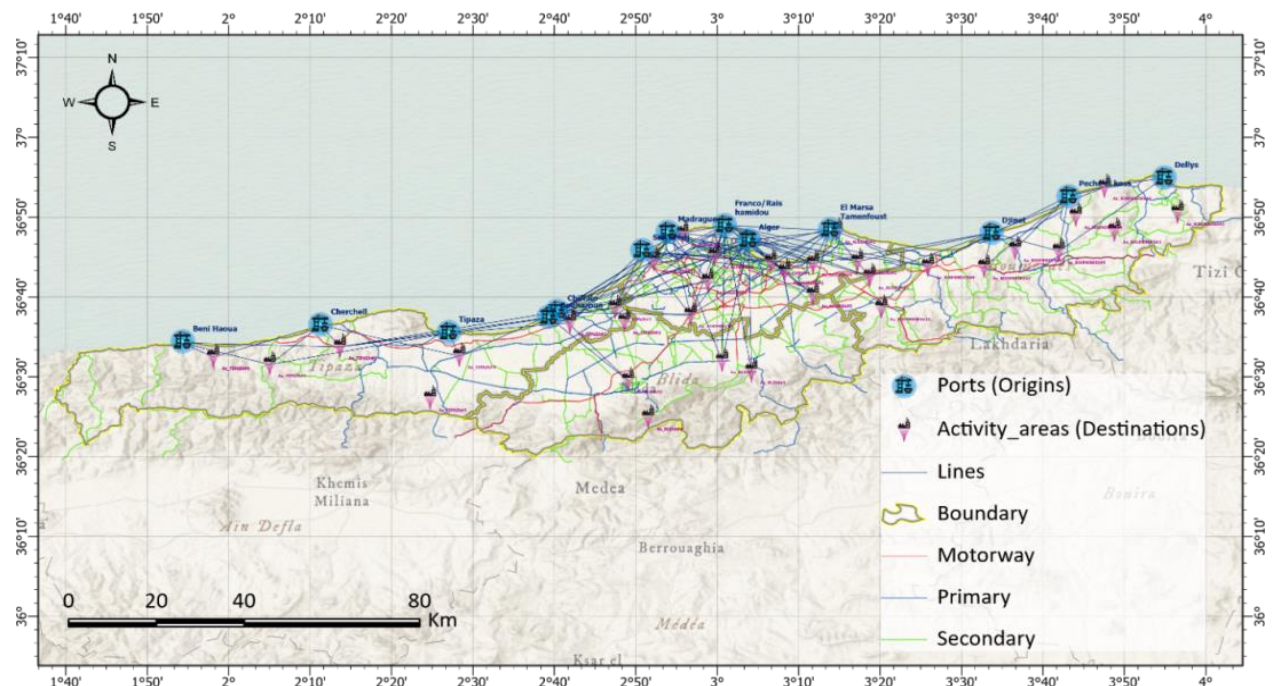
Figure 9. Theresult of origins destinations cost matrix analysis (Source: realised by authors)

For the hot spot analysis, we selected the communes that contained the closest facilities analysis routes with the population density attribute of 2018 to be evaluated as an input field to provide statistically significant communes of the hot population and have the best route accessibility to ports and to the activity areas, and the result isshowed in Figure 10.
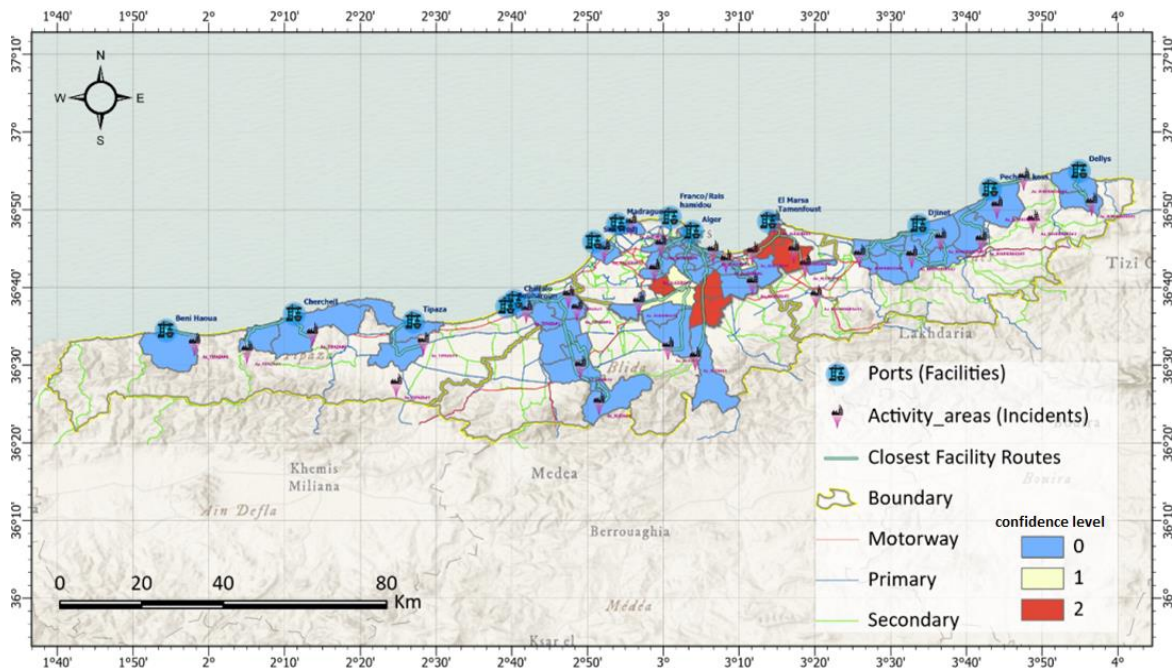
Figure 10. The Result of Hot Spot Analysis (Source: realised by authors)

CONCLUSION

This paper examines the application of GIS on transportation network analysis implemented and applied to the capital Algiers and the three surrounding states Boumerdes, Blida, Tipaza based on spatial analysis methods using ArcGIS components. The Dijkstra best routing algorithm, which is built into the ArcGIS software, is the best method for network analysis, particularly in a densely populated state like Algiers, where it saves transportation costs, time, and avoids traffic congestion. The Network Analyst extension has produced the best routes between port locations and the activity areas on the road network based on travel time and length. Furthermore, the proposed method incorporates historical population data to be used in the hot spot analysis on the communes that contained these routes, identifying statistically significant hot and cold spots population communes with the best transportation accessibility to ports and activity areas. Findings from this study can provide directives for future infrastructure policy development and investment. In general, the study strengthens the idea that GIS has many direct or indirect applications in the field of transportation, because the study of existing road network problems and their solutions can dramatically increase the profitability of a local place to a great extent. The authors of the paper have made a valuable contribution by utilizing GIS software and incorporating road network connectivity, geographic locations of ports and activity areas, and population density to identify statistically significant communes with optimal accessibility to ports and activity areas. Their analysis provides insights into transportation network efficiency and its impact on regional development.

After half a century of urban transformations (consequences of successive urban policies), Algiers today is a sprawling, fragmented agglomeration, fragmented and discontinuous. She is also confronted to real challenges in terms of planning transport and mobility (Mohamed, 2018). To further enhance the study, the authors suggest considering additional factors such as traffic flow, utilizing live data when available, and taking into account road width, road state, road type, and time delays on the road. By incorporating these factors, the analysis can generate more realistic results and improve the overall performance of the model. This suggestion highlights the authors' commitment to refining their research methodology and providing more accurate and comprehensive findings.

REFERENCES

Abdelmadjid, B. (2007). *The impacts of industrialization in Algeria case of the Nord-Centre region*. Doctorat thesis doctorat.Faculty of Earth Sciences and Spatial Planning, University of Science and Technology Houari Boumediene BabEzzouarAlgiers, Algeria, 433-434.

Ahmed, S., Ibrahim, R.F., & Hefny, H.A. (2017). *GIS based Network Analysis for the Roads Network of the Greater Cairo Area*. Proceedings of the International Conference on Applied Research in Computer Science and Engineering ICAR'17, Lebanon, 22-06-2017. https://ceur-ws.org/Vol-2144/paper2.pdf

Amin Hamdi, S. (2019). GIS Based Analysis of Interaction between Port Accessibility and Economy in Saudi Arabia. *Journal of King Abdulaziz University-Engineering Sciences*, 30(1), 21-31. https://doi.org/10.4197/Eng.30-1.2

Amina, T. (2018). *Phenomenon of metropolization and public transport case of Algiers*.Doctorat thesisFaculté des Sciences de la Terre et de l'aménagement de territoire, Université des sciences et de la technologie Houari Boumediene BabEzzouar Alger, Algérie, 243-244.

Amrapali, D., Kale, V., & Yogesh, G. (2015). Network Analysis for Finding Shortest Path in Hospital Information System.*IJARCSSE*, 5(7), July 2015, 618-623. https://paperzz.com/doc/7174781/network-analysis-for-finding-shortest-path-in-hospital

Brooks, M.R., & Pallis, A.A. (2016). *Ports and networks: Strategies, operations and perspectives*. Edward Elgar Publishing.

Debashis, D., Anil, K., Ojha Harlin, K., Partha, P., Baruah, & Mrinal, K.D. (2019). Road network analysis of Guwahati city using GIS. *Springer Nature*, Switzerland AG 2019. https://doi.org/10.1007/s4245260196090764

Environmental Systems Research Institute (Esri). https://www.esri.com/en-us/arcgis/products/arcgis-online/resources

Farid, N., & Tahar, B. (2022). Mobility and Risk Interaction: Vulnerability of Accessibility of the Algiers Metropolis. Eco. Env & Cons. 28(2), 649-663. https://doi.org/10.53550/EEC. 2022.v-28 I 02.012.

Filip, N., & Popa, C. (2014). The Role of Transportation in Economic Development.*Naval Academy Scientific Bulletin*, XVII (2) Constanta, Romania. https://mpra.ub.uni-muenchen.de/70586/1/MPRA_paper_70586.pdf

Khaing, O., Wai, H., & Myat, E. (2018). Using Dijkstra's algorithm for public transportation system in yangon based on GIS. *Int J Sci Eng Appl*. 7(11), 442–4.

Kumar, P., & Kumar, D. (2016). Network analysis using GIS techniques: a case of Chandigarh city. *Int J Sci Res (IJSR)*, 5(2), 409–411.

Kunz, N., & Hesse, M. (2017). *Port development and its impact Apologies for the confusion*.

Lam, J.S.L., & Yap, W.Y. (2019). Evaluating the competitive advantage of ports: A comparative study in Asia. Transportation Research Part E, *Logistics and Transportation Review*, 130, 1-13.

Manel, N., & Djamel, T. (2023). *Contribution of gis in health planning, cases of oncology in Algeria. Ymer*, 22 (12), 392-406.

Manel, N., & Djamel, T. (2022). *The geomatization of the covid-19 care offer for the ORSEC Plan in Algeria*. ALJEST, 8 (03), 2630-2644. https://www.aljest.net/index.php/aljest/article/view/828/713

Mb, S., & Vera, R. (2021). Finding an optimal path with hospital information system using GISbased Network analysis. *Wseas Transactions on Information Science and Applications*. https://doi.org/10.37394/23209.2021.18.1

Mohamed, B. (2018). *Urban mobility and transport network planning in the context of urbanrenewalprojects: the case of Algiers*. Doctorat thesis. Faculty of Earth Sciences and Spatial Planning, University of Science and Technology Houari Boumediene BabEzzouar Algiers, Algeria, 20.

Mourad, A. (2019). *Transport and regional structuring, Case of the North-Central region of Algeria*. Doctorat thesis. Faculty of Earth Sciences and Spatial Planning, University of Science and Technology Houari Boumediene BabEzzouar Algiers, Algeria, 2-3.

Nitin, A., & Kriti, S. (2023). Determinants of intra-regional capital flows in south-Asia-a multilevel generalized structural equation modeling based gravity analysis of intra-SAARC FDI, *Macroeconomics and Finance in Emerging Market Economies*. https://doi. org/10.1080/17520843.2023.2170069

Notteboom, T., & Rodrigue, J.P. (2005). Port regionalization: Towards a new phase in port development. *Journal of Transport Geography*, 82, 102564. 32(3), 297-313. https://doi.org/10.1080/03088830500139885

Notteboom, T., & Rodrigue, J.P. (2018). Port regionalization: Towards a new phase in port development. *Maritime Policy & Management*, 45(2), 139-152. https://doi.org/10.1080/03088839.2017.1410300

Ng, A.K., & Ducruet, C. (2020). Port development in Asia: An overview. *Asian Geographer*, 37(1), 1-12. https://doi.org/10. 1080/10225706.2019.1661681

SDAAM (2010). Project report Ministry of Land Planning and Environment National Spatial Planning Scheme

SNAT (2030). Project report of the national land use planning plan on transport ministry of land use planning and environment 2010.

Tarek, M., M'hamed, S., & Baudelle, G. (2015). Wichmetropolisation for Algiers? *Journal of Mediterranean Geéograhy*, 17(9), 32-33. http://journals.openedition.org/mediterranee/7267

UNCTAD (2020). *Review of Maritime Transport 2020. United Nations Conference on Trade and Development World Bank*. Algeria Port Reform and Privatization. Washington, DC: World Bank Group.

Wilmsmeier, G., & Notteboom, T. (2018). *Port governance and policy: A comparative study of port authorities*. Palgrave Macmillan.

World Bank (2021). *World Development Indicators 2021*. Washington, DC: World Bank.

SOCIO-ECONOMIC SIGNIFICANCE OF TOURISM DEVELOPMENT ON THE GREAT SILK ROAD (KAZAKHSTAN SECTION)

Aitolkyn MOLDAGALIYEVA
Al-Farabi Kazakh National University, Faculty of Geography and Environmental Sciences,
Almaty, Kazakhstan, e-mail: moldagaliyeva.aitolkyn2016@gmail.com

Aliya AKTYMBAYEVA
Al-Farabi Kazakh National University, Faculty of Geography and Environmental Sciences,
Almaty, Kazakhstan, e-mail: aliya.aktymbayeva@kaznu.edu.kz

Yerlan ISSAKOV[*]
Abai Kazakh National Pedagogical University, Institute of Natural Sciences and Geography, Department of Geography
and Ecology, Almaty, Kazakhstan, e-mail: erlan.issakov@gmail.com

Aizhan ASSYLBEKOVA
Al-Farabi Kazakh National University, Faculty of Geography and Environmental Sciences,
Almaty, Kazakhstan, e-mail: aizhan.asylbekova@kaznu.edu.kz

Kuanyshbek KENZHALIN
L.N. Gumilyev Eurasian National University, Faculty of Philology, Department of Kazakh Linguistics,
Astana, Kazakhstan, e-mail: kenkk@mail.ru

Ardak BEISEMBINOVA
Al-Farabi Kazakh Hational University, Faculty of Geography and Environmental Sciences,
Almaty, Kazakhstan, e-mail: ardak_bs@mail.ru

Gulzhanat BEGIMOVA
L.N. Gumilyov Eurasian National University, Faculty of International Relations, Department of Turkology,
Astana, Kazakhstan, e-mail: gukjik_76@mail.ru

Lóránt Dénes DÁVID[*]
John von Neumann University, Faculty of Economics and Business, Kecskemét, Hungary; Hungarian University of Agriculture
and Life Sciences, Institute of Rural Development and Sustainable Economy, Gödöllő, Hungary, e-mail: david.lorant.denes@nje.hu

Abstract: The Great Silk Road is a historical place for Kazakhstan, promoting mutual understanding and peace between peoples, connecting cultures, developing tourism, trade and business. Therefore, a comprehensive study of the tourism and recreational potential of the sites of the Kazakhstan section of the Great Silk Road, the socio-economic significance of tourism development and tourism attractiveness is very important. The purpose of this study was to determine the socio-economic significance of tourism development in the Kazakhstan section of the Great Silk Road. In the study of tourism and recreational resources of the Great Silk Road, the methods of analysing the theoretical basis, studying statistical data and questionnaires were used comprehensively. As a result, the socio-economic significance of tourism development in Kazakhstan, favourable socio-cultural impact of the Great Silk Road in connection with improving the welfare of the population of the territory, increasing the flow of tourists, income from the tourism industry and improving infrastructure was revealed. The survey showed that 40.9 % of respondents rated the level of satisfaction with transport infrastructure from 5 points to 3 points. 34.1 % of respondents rated the quality of roads as 4 points and 13.6 % as 5 points. It was also found that the most visited tourist sites on the Kazakh part of the Great Silk Road in recent times are the mausoleum of Khoja Ahmed Yasawi, Otrar State Archaeological Museum-Reserve, mausoleum of Aisha Bibi and Karakhan. Thus, it was proposed to form an information base of tourist sites of the Kazakhstan part of the Great Silk Road, to attract qualified personnel in the service sector, to popularise tourist sites by improving Internet resources, advertising and shooting feature films.

Key words: The Great Silk Road, tourism, socio-economic significance, tourist and recreational potential, tourist attractiveness

* * * * * *

---

[*] Corresponding author

INTRODUCTION

As the world's ninth largest state by territory, Kazakhstan profits greatly from the growth of transcontinental trade (Gussenov and Sharipov, 2019). The favourable geographical and geopolitical position, Kazakhstan's location on the Northern arm of the Great Silk Road, its border position with China have a positive impact on the development of the modern economy and tourism (Daye et al., 2020). In this regard, the great socio-economic importance of the Great Silk Road for Kazakhstan lies in its location at the epicentre of trading places (Islamjanova et al., 2017; Baltabayeva et al., 2019). Nowadays, with the development of cities and trade and economic relations along the Great Silk Road, Turkic-speaking peoples are closely interacting with each other (Kantarci et al., 2017). In this regard, the volume of trade, exchange of goods, services, new forms of entrepreneurship and economic relations appeared, the socio-economic development of this territory increased. Based on historical data, with the development of the Great Silk Road in the Kazakh land, social consciousness was formed, not only goods but also information was exchanged, special knowledge, crafts and culture developed (Medeu et al., 2017). The Great Silk Road developed trade relations, influenced the strengthening of cultural and diplomatic ties with other countries. The economic growth and development of the Great Silk Road enabled the construction of settlements, strengthening of infrastructure, building of schools, mastering of crafts, creation of historical and cultural monuments, building of beautiful structures and many other things (Mamirkulova et al., 2020).

Currently, great importance is given to the development of tourism on the Kazakhstan section of the Great Silk Road (Kulgildinova et al., 2019). Also in Kazakhstan the issues of increasing competitiveness and tourist attractiveness of the territory of the republic are often discussed (Baisakalova and Garkavenko, 2014). Special attention is paid to state regulation and tourism policy, legislative and regulatory framework of Kazakhstan, relevant normative acts are adopted. The current State programme for the development of the tourism industry of the Republic of Kazakhstan for 2019-2025 confirms its effectiveness, affecting the increase of the socio-cultural impact of tourism (Resolution of the Government of the Republic of Kazakhstan dated May 31, 2019). Priority tourist territories of Kazakhstan with financial support from the state have been identified, where preferences have been defined, allowing the development of small and medium-sized businesses, entrepreneurship in the field of tourism (Yesenov et al., 2017; Issakov et al., 2023a). The emergence of new factors affecting the geopolitics and geo-economics of Kazakhstan has led to the attraction of investments into the economy, the development of export potential, and the establishment of Kazakhstan as a cultural and scientific centre in Central Asia (Werner, 2003). Economic and tourism growth in Kazakhstan is linked to the development of the new Silk Road and participation in various economic associations and unions.

All 33 sites along the Great Silk Road have been inscribed on the UN Educational, Scientific and Cultural Organisation (UNESCO) World Heritage List (Saduov et al., 2019). These include cities and palace complexes of states and empires, trading settlements, Buddhist cave temples, ancient roads and passes, watchtowers, sections of the Great Wall of China, fortresses, tombs and religious buildings over 5,000 kilometres of territory (Usmanova, 2018). Eight cities of the Great Silk Road located in Kazakhstan have been inscribed on the UNESCO World Heritage List: the cities of Aktobe, Kostobe, Kulan, Kayalyk, Talgar, Ornek, Akyrtas and Karamergen (Bayandinova et al., 2019). The purpose of this study was to determine the socio-economic significance of tourism development in the Kazakhstan section of the Great Silk Road. The attractiveness of tourist and recreational facilities of the Kazakhstani part of the Great Silk Road was defined as objectives (Artemyev et al., 2019); socio-economic situation of the regions located in the direction of the Kazakhstan part of the Great Silk Road (Kulakhmetova et al., 2019); qualitative and quantitative analyses of the attendance and ratings of sites and determining the socio-economic importance of tourism development in the regions (Teczke et al., 2022). Because now it is very important to determine the socio-economic importance of tourism development on the Kazakhstan section of the Great Silk Road to accommodate tourists and holidaymakers within the framework of the implementation of the international transport corridor Western Europe-Western China, to provide the necessary services at the unique tourist sites of the country (Kurmanaliyeva et al., 2018). The Great Silk Road is now tourism, developing trade and business, promoting mutual understanding and peace between peoples, linking cultures. The Silk Road promotes the establishment of multilateral ties between countries (Gursoy and Altinay, 2021). The Great Silk Road currently has all the necessary opportunities for prosperity, dynamic development and adaptation. Taking into account this situation, it is possible to intensively develop tourism on the Great Silk Road. The Great Silk Road crosses the famous territories of Kazakhstan. The main tourist sites and resources are gathered in Almaty region and South Kazakhstan, including Turkestan, Taraz and Almaty are of special importance (Baypakov and Nurzhanov, 1992; Nagy, 2019). The Kazakhstan territory of the Silk Road route is a unique complex of monuments of history, archaeology, architecture, town-planning and monumental art, reflecting the deep processes of interaction between nomadic and sedentary-agricultural culture of the peoples of Central Asia (Raimkulov et al., 2021; Issakov et al., 2022). In this regard, the socio-economic importance of tourism development in the Kazakhstan section of the Great Silk Road is high. This is due to the fact that the Great Silk Road is a caravan route starting in China and heading to the Far East and Europe, most of this route passed through the lands of Central Asia and Kazakhstan. Therefore, the development of tourism in the Kazakh territory of this road is of great importance.

Thus, the ancient cities located on the Kazakh section of the Great Silk Road witnessed a number of wars, fires, famines and disasters. In addition, the Great Silk Road not only developed the trade system, but also crossed the Eastern and Western civilisations, established culture and diplomatic relations through the Great Silk Road (Fayzullaev et al., 2021). The caravan, which originated in the VI-VII centuries from China, passed through the ancient cities of Otyrar, Taraz, Sayram (Ispidjab), Turkestan (Yassy), Suyab, Balasagun and others in Semirechye and South Kazakhstan economic region. Earlier, those who saw the trade market in Taraz said: "Taraz market-mirror of the world (Tolstova, 1962). That's because on this side any world could be exchanged, sold and bought. Household items and weapons, clothes and saddles made of

copper were traded. The Otyrar valley included over one hundred and fifty small towns, these settlements were rich in barrow palaces (Akishev et al., 1996). Along with trade, education and science also developed in this region (Lengyel et al., 2019). In addition, the ancient city of Turkestan is now becoming a world centre of tourism (Abdrassilova et al., 2021; Garda, 2022). The hubs of the Great Silk Road were large and small cities settled on the banks of the Syr Darya and Talas, Arys and Irtysh, near passes and crossings, in the mountains and steppes. The names of some of these cities (Taraz, Turkestan) are known to all regions, and many scientific works have been written about them (Aldybayev et al., 2021). Among them, Dmitriyev et al. (2021) surveyed the regions to assess the tourism and recreational potential of Kazakhstan's Great Silk Road sites, local tourism development opportunities and recreational sites of North Kazakhstan region for tourism industry development. Kuralbayev et al. (2017) studied Turkestan residents' perceptions of tourism and their attitudes towards tourism. In addition, Mukayev et al. (2022) investigated the landscape and recreational potential of mountainous areas in Turkestan region of the Republic of Kazakhstan. Also Shalekenov (2014) identified attractive areas and tourist sites along the Great Silk Road and noted the socio-economic importance of tourism development for the economy of Kazakhstan, Asylbekova et al. (2022) nevertheless, the continuity of past and present civilisations, the invaluable experience of spatial movement of past generations, explored the fact that it has not lost its functional importance to this day. Thus, this study is aimed at determining the socio-economic significance of tourism development in the Kazakhstan part of the Great Silk Road and examines the tourist and recreational facilities of the Kazakhstan part of the Great Silk Road, the socio-economic situation of the regions where the facilities are located, and the socio-economic significance of tourism development in the regions.

MATERIALS AND METHODS

The Great Silk Road (Silk Road) is a caravan route that begins in Shi An, China, and heads to the Middle East via Xinjiang, Central Asia (Von Richthofen, 1882). Currently, the Republic of Kazakhstan is an active participant of the International Tourism Project The Great Silk Road. The Great Silk Road is one of the historical monuments of the detachment of human civilisation (Bayandinova et al., 2016). This road, dating back to the 2nd century BC, was a bridge that connected Europe and Asia-West and East. During the period of its crossing with Kazakhstan, starting from the 6th century, two directions were widely developed: the Syr Darya and Tien Shan roads. The first road starts in China and passes through East Turkestan Kashgar to Zhetysu, then along the Syr Darya coast and further along the island to the western countries (Groshev, 1998). In general, the Great Silk Road contributed to the intensive development of science, engineering and technology, interethnic and interregional relations and the exchange of cultural values in general. Because the continuity of past and present civilisations, the invaluable experience of spatial movement of past generations has still not lost its functional significance. In retrospect, the Great Silk Road is a system of caravan routes leading from China to the Middle East and Europe (Akhmetzhanov and Alimzhanova, (2019). The Silk Road as a trade route emerged in the 3rd century BC and existed until the 16th century AD (Zanadiluly, 2022). The northern branch of the ancient caravan route passed through the territory of Kazakhstan. In ancient times the main cities of the country were Otrar, Turkestan, Taraz, Ispidjab (Zhakupov, 2022; Aktymbayeva et al., 2020a). In modern Kazakhstan the main regions connected with the Silk Road route are Turkestan, Zhambyl, Almaty, Mangistau and Kyzylorda regions. At present, 57 historical, cultural and ecological directions have been developed for Turkestan region (Kurmanbayeva and Umirbekova, 2022; Sataeva and Bekseitov, 2017). Within the framework of implementation of the international transport corridor Western Europe-Western China modern tourist infrastructure is being created for accommodation of tourists, holidaymakers and obtaining necessary services at the unique tourism objects of the country and at the western and eastern border gates of the republic (Boranbayeva and Tulentayeva, 2020).

In this regard, the Republic of Kazakhstan announced plans to reconstruct the ancient Great Silk Road. In 1992, the Dostyk-Alashankou international crossing was put into operation, connecting Kazakh and Chinese railways with the new routes of the Trans-Asian Railway (Tursynbayeva et al., 2015). The construction of the transcontinental motorway Western Europe-Western China in 2008 strengthened mutually beneficial trade and economic relations between the countries along this transport corridor. One of the largest transnational projects, geographically large in scale, was the One Belt and One Road project (Mylkaidarov et al., 2020). It made it possible to revive the Great Silk Road route, establishing close ties between the continents at a new qualitative level. The implementation of these projects had a positive impact on the countries' tourism development, revitalisation and restoration of tourist sites and attractions, and improvement of tourism infrastructure. This is confirmed by the increase in tourist flows and the increase in tourist attractiveness of historical and cultural heritage sites of the Great Silk Road on the section of Kazakhstan (Tuyakbayev et al., 2021; Aktymbayeva et al., 2020b). With its diverse and huge tourist and recreational potential, favourable climatic conditions, diverse landscapes, and attractions, the Republic has a unique opportunity to take its place in the world tourism market.

A number of state programmes have had a beneficial impact on the development of the Great Silk Road, one of the first being the 1997 programme Revival of Historical Centres of the Silk Road, Preservation and Continuous Development of the Cultural Heritage of Turkic-speaking States, Creation of Tourism Infrastructure (State program of the Republic of Kazakhstan "Revival of historical centers of the Silk Road, preservation and joint development of cultural heritage of Turkic-speaking states, creation of tourism infrastructure", 1998). In this regard, Turkestan region, unlike other regions, has its own features and opportunities for the formation of the tourism industry in the region. Namely, the presence of the main route of the Great Silk Road and, accordingly, a significant potential of tourist objects of Turkestan region (Sevim et al., 2017). Historical and cultural heritage, high degree of urbanisation and dynamics of population growth as a carrier of culture favourably affect the development of tourism. To date, in Turkestan city, one of the main and popular tourist destinations of the Silk Road, in 2021 in the buffer zone of the cultural reserve Azret-Sultan on an area of 20.5 hectares the largest in Central Asia multifunctional tourist complex Keruen-Saray was opened, where more than 4 thousand permanent

jobs were created (Nurmukhamedova and Myrzakhan, 2023; El Archi et al., 2023a, 2023b, 2023c, 2023d). The development of the Great Silk Road will undoubtedly have a positive impact on the economy, tourism, community life, job creation, infrastructure development, etc. After all, in the data of the Republic of Kazakhstan for 2022 on the Great Silk Road, the dynamics of the tourism industry was high. Therefore, in the course of the study, we conducted a statistical analysis of the current state of tourism development in Kazakhstan. Also, in accordance with the purpose of the study, we received answers to questionnaires aimed at determining the socio-economic importance of tourism development in the Kazakhstan section of the Great Silk Road. 441 respondents voluntarily participated in the survey. 59% of respondents were male and 41% were female. The flowchart of the study is summarised in more detail in Figure 1 below.

Figure 1. Research Flowchart (Source: compiled by the authors)

RESULTS AND DISCUSSION
1. Current state of tourism development on the Kazakhstan section of the Great Silk Road
In the economy of the Republic of Kazakhstan 2022 along the Great Silk Road, in particular, in the field of tourism, there was a high dynamics. It was found that for the year 2022 on domestic tourism (residents) provided services in accommodation 6,407,318 people. In the previous year 2021, 5145217 persons were served and in 2020, 3328614 persons were served. The total number of domestic tourists for the year 2021 was 9003292 persons, of which 5145217 persons were served by accommodation places, which was 57 % (Bureau of National Statistics, 2022). The data show that in 2021, the year of the coronavirus pandemic, there was an increase in domestic travel due to the COVID-19 pandemic and restrictive border crossing measures, which had a positive impact on the revival of domestic tourism infrastructure, increased revenues of local tourism enterprises, and generated domestic tourist flows. During this period, domestic tourist facilities in Kazakhstan were popular. This is confirmed by the given indicators (Table 1).

Table 1. Distribution of domestic visitors by travel purpose, 2021 (Bureau of National Statistics, 2021)

	Total	Holiday and relaxation	Visiting friends and relatives	Education and training	Medical and recreational procedures	religion and pilgrimage	Shopping	Other purposes	Business and professional
Republic of Kazakhstan	9003 292	2 331 851	4 405 554	163 212	657 193	63 824	753 448	100 442	527 768
Akmola	402 241	85 959	192 105	3 998	41 800	-	53 911	5 242	19 226
Aktobe	493 842	78 031	325 263	5 676	24 555	-	44 567	-	15 750
Almaty	1289 694	269 738	658 217	44 081	103 403	6 515	138 306	13 196	56 238
Atyrau	98 741	20 627	49 163	1 697	10 587	-	9 297	1 884	5 486
West Kazakhstan	331 606	105 924	146 824	10 177	22 267	2 707	21 968	3 947	17 792
Zhambyl	501 569	138 017	263 078	7 074	28 872	1 094	45 298	6 220	11 916
Karaganda	686 290	206 327	339 893	9 643	55 054	5 251	30 310	6 930	32 882
Kostanay	454 653	38 510	224 659	6 394	44 528	2 160	93 722	6 056	38 624
Kyzylorda	424 661	113 148	203 763	17 299	38 263	5 022	26 938	-	20 228
Mangystau	307 589	49 767	207 090	7 066	33 463	1 760	-	-	8 443
Pavlodar	334 529	65 712	153 328	2 411	31 030	532	57 370	12 153	11 993
North Kazakhstan	244 087	54 790	120 010	1 257	23 612	1 660	30 604	2 608	9 546
Turkestan	883 893	172 256	420 416	13 854	79 781	28 341	121 712	22 118	25 415
East Kazakhstan	651 301	196 218	284 878	5 480	49 411	4 662	71 594	188	38 870
Astana city	703 826	366 082	247 722	9 149	25 848	952	3 041	1 684	49 348
Almaty city	716 134	287 459	298 216	10 354	21 237	385	1 983	-	96 500
Shymkent city	478 636	83 286	270 929	7 602	23 482	2 783	2 827	18 216	69 511

One of the largest historical and cultural objects of Turkestan region and the most visited object is the state historical and cultural reserve-museum Azret Sultan (Concept of cultural policy of the Republic of Kazakhstan for 2023-2027). According to official data, the state historical and cultural reserve-museum Azret Sultan for 5 months of 2022 was visited by 296 919 people, in 2021-1417372 people, in 2020-382606 people, in 2019-1148426 people. The number of visits of foreigners is increasing, before the lockdown visited up to 2000 people in the warm period from April to September, during the year from 60 to 300 foreigners per month, depending on the time of year (Official website of the Hazrat Sultan state historical and Cultural Reserve-Museum, 2023). Taking into account the ethno-cultural peculiarities of Kazakhstan, the main purpose of domestic trips in 2021 was to visit friends and relatives (4,405,554 people), for recreation purposes-2,331,851 people, for medical and health purposes-657,193 people, 753,448 Kazakhstanis, for business and professional purposes-527768 tourists (Resolution of the Government of the Republic of Kazakhstan, 2021). Pandemic and postpandemic periods formed a favourable trend of domestic tourism growth among Kazakhstanis, which led to the creation of a competitive business environment, promotion of domestic tourism product. Currently, in Kazakhstan, public libraries,

cultural and leisure organisations, museums, amusement and recreation parks, cinemas, theatres, concert organisations, zoos and circuses provide services on tourist and local lore objects (Issakov et al., 2023b). In 2022, libraries (51239.3 thousand visits), cinemas (17047.5 thousand visits), amusement and recreation parks (14273.7 thousand visits), museums (6097.3 thousand visits) had the largest number of visitors. At the same time, the largest number of events was held by cultural and leisure organisations (196,700 units), theatres (15,400 units), amusement and recreation parks (6,700 events) and concert organisations (5,900 units) (Official Information Resource of the Prime Minister of the Republic of Kazakhstan, 2023). Statistical data shows the sufficiency of leisure facilities in the Republic of Kazakhstan. The development of domestic tourism has a positive trend, inbound tourism is related to visits to places of interest, business purposes, relatives and family events.

Analysing the data of socio-economic development, living standards and employment of the population of Kazakhstan, in the city of Almaty, according to the estimates of the Bureau of National Statistics of the Agency of the Republic of Kazakhstan on Strategic Planning and Reforms, the average per capita nominal cash income of the population for the 1st quarter of 2023 was 230743 tenge, which is 15.8% higher compared to the 1st quarter of 2022. Money income for the period decreased by 2.9 per cent. Average per capita nominal monetary income of the population in Astana city for the first quarter of 2023 was estimated at 226196 tenge. 16.1% in nominal growth compared to the corresponding period of 2022 -. and decreased by 5.1% in actual cash income. In Almaty region in the I quarter of 2023, the average per capita nominal cash income of the population was 119,029 tenge, which is 111.4% higher compared to the I quarter of 2022, for this period real cash income decreased by 5.6%. Average per capita nominal cash income of the population in Zhambyl oblast estimated in the first quarter of 2023 was 121857 tenge, the growth compared to the corresponding period of 2022 was 21.2% in nominal income and 1.5% in actual cash income. Average per capita nominal cash income of the population in Turkestan region in the first quarter of 2023 in average per month amounted to 91576 tenge and increased by 20.1% compared to the corresponding period of 2022, and real cash income remained at the level of (Nakhipbekova et al., 2023).

According to the data of the sample survey of employment in the first quarter of 2023 in various sectors of the economy of Kazakhstan employed 9 million people, of which 6.9 million people (76.4% of the total number of employed in the economy) employed by hired labour, 2.1 million people (23.6% of the total number of employed in the economy) self-employed. Compared to the first quarter of 2022, total employment increased by 250.8 thousand people, mainly due to hired workers (197.7 thousand people), the number of self-employed (53.1 thousand people) (Figure 2) (Bureau of National Statistics, 2023).
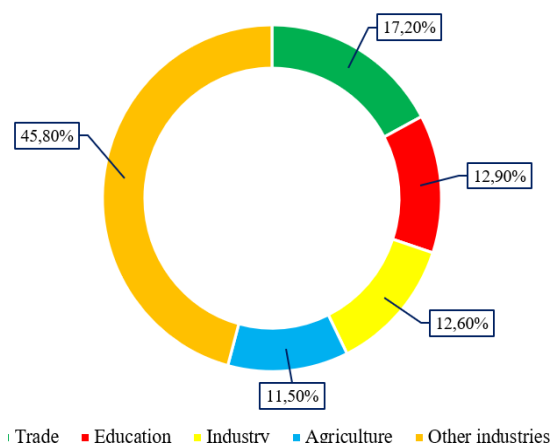
Figure 2. Share of employment, 2023 (Figure based on information from the National Bureau of Statistics, 2023)
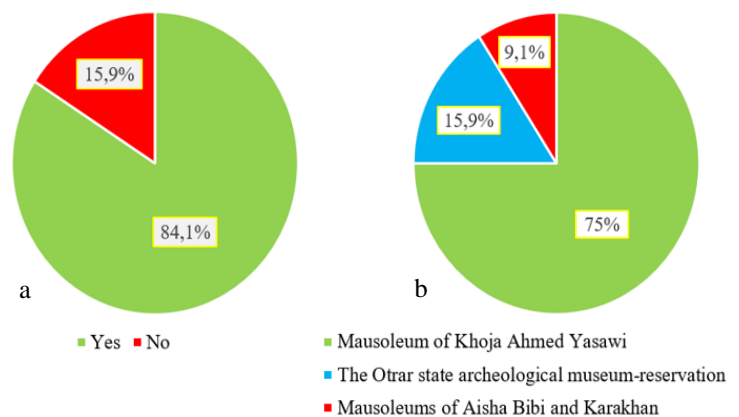
Figure 3. a) Tourists visiting unique sites on the Kazakhstan section of the Great Silk Road, %. b) According to respondents, the most interesting objects of the Great Silk Road are, % (Source: compiled by the authors)

Thus, in the capital of the republic Astana and Almaty city of republican importance, cash incomes are 45-50% higher than in the southern regions, respectively, the standard of living, accessibility of tourist facilities and travel for the population is higher. In addition, in the densely populated Turkestan region, the population's income was 91576 tenge. According to the World Travel and Tourism Council (WTTC) in 2021, Kazakhstan ranks 129th on the list with a tourism share of 6.2% of GDP and a monetary volume of 77.9 billion, with the Government of the Republic of Kazakhstan making ambitious plans to increase the industry's contribution to GDP to 15% within five years. It should be noted that consumption in relation to tourism within the country increased by 40.1 per cent in nominal terms to KZT 1,131 billion in 2021 (KZT 807.2 billion in 2020), including KZT 344.4 billion for business travel. Expenditure related to inbound tourism in 2020 is $568.9 billion from KZT in 2021 $786.4 billion to KZT. Of this, inbound tourism expenditure in 2021 was $324.5 billion, domestic tourism expenditure-461.9 billion (in 2020, $233.1 billion and $335.8 billion respectively).

In 2021, the expenditure of resident visitors prevails, whose share in total domestic tourism consumption is 58. 7% (the share of non-resident visitors' expenditure is 41.3% respectively). In 2020, the share of expenditure of non-resident visitors in the structure of tourism consumption within the country is 41%, resident visitors: 59%. So, the analysis of demographic indicators, the main indicators of economic development, tourism, employment of the population showed a positive trend in the development of tourism, its significant socio-economic importance for the studied region.

2. Results of the survey on the level of attractiveness of Silk Road sites in Kazakhstan

A total of 441 respondents took part in the survey to determine the level of attractiveness of the Great Silk Road sites in Kazakhstan. 59% of respondents were male and 41% were female. 39% of respondents were young people aged between

16 and 34, 61% of respondents were aged between 35 and 54. 88.6% of respondents work in private business, education, construction, government, etc. And the vast majority have higher education. 84.1% of respondents visited unique objects of historical and cultural heritage of the Great Silk Road (Figure 3a). The most interesting in historical and cultural terms for tourists were the mausoleum of Khoja Ahmed Yassawi (75% of respondents), in the next rating are Otyrar State Archaeological Museum-Reserve (15.9%) and the mausoleum of Aisha Bibi and Karakhan (9.1%) (Figure 3b). 47.7 % of respondents share of respondents visiting the Great Silk Road sites once in 1-4 years, 13.6 % per year (Figure 4).
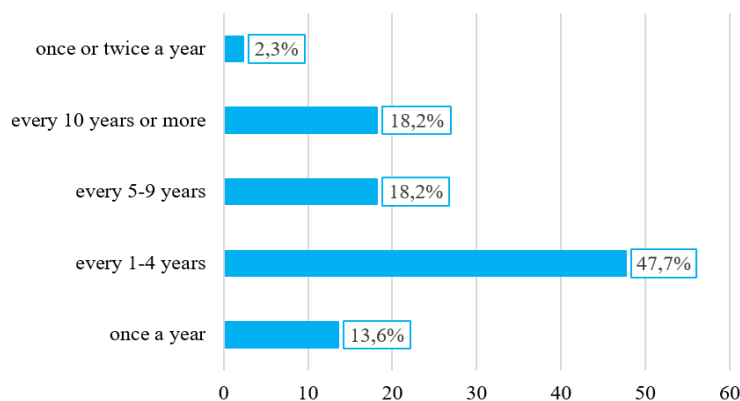
Figure 4. Frequency of tourist visits to the Great Silk Road sites, % (Source: compiled by the authors)

The survey found that 40.9% of respondents rated the level of satisfaction with transport infrastructure as 3 points out of 5. 34.1% of respondents rated the quality of roads as 4 points, 13.6% - as 5 points. Thus, the transport infrastructure provided by the transcontinental road corridor Western Europe - Western China satisfies tourists with the quality of road traffic. The level of satisfaction with service at catering enterprises was rated by 45.5% of respondents as 3 points, 20.5% - as 4 points, 11.4% - as 5 points. Excursion activities were evaluated by the majority of respondents, i.e. 34.1% - by 3 points and 40.9% - by 4 points, 15.9% - by 5 points (Figure 5a). In general, the service at the Silk Road facilities is rated at 3 points. The question Assess the level of attractiveness of the Great Silk Road facilities in Kazakhstan was answered with 5 points (47.6% of respondents), 4 points - 30.8% (Figure 5b). The question "Assess the tourism potential of the Great Silk Road sites for visiting foreign tourists" was answered by 52.3% of respondents, 31.8% - 4 points (Figure 5c).
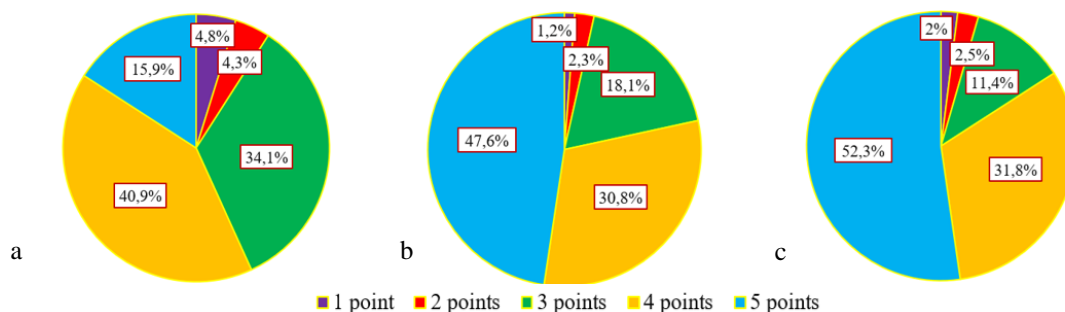
Figure 5. Survey results: a) level of excursion service. b) The level of attractiveness of the Great Silk Road sites in Kazakhstan. c) Assessment of the potential of the Great Silk Road to attract foreign tourists (points) (Source: compiled by the authors)

Those who suggested to their acquaintances to visit the Great Silk Road sites rated 63.6% - 5 points and 20.5% - 4 points. In addition, the popularity of the Great Silk Road sites in Kazakhstan was rated by 43.2% of respondents as 5 points and 31.8% as 4 points. Thus, on the basis of the conducted research the most priority and visited historical and cultural objects of the Kazakhstani part of the southern arm of the Great Silk Road were identified, the socio-economic importance of tourism development was studied, problems in the organisation of tourist services were identified, recommendations were developed in terms of creating and improving the quality of information on historical and cultural objects of the Kazakh part of the Great Silk Road for the promotion and popularisation of tourist routes (Ogutu et al., 2023).

CONCLUSIONS

Thus, the Great Silk Road remains an innovative trade route that provides an outstanding model of long-term peaceful relations between different cultures, societies and civilisations. As a result of the analysis of the study, it was found that in the southern part of the Kazakh section of the Great Silk Road, unique historical and cultural sites included in the UNESCO World Heritage List play an important role in welcoming tourists. The historical past and the role of the Great Silk Road in our time are enormous. Western Europe-Western China makes an invaluable contribution to the development of tourism through a modern transport corridor and increasing tourist flow in the study area. The fact that the region has favourable natural-geographical and socio-economic prerequisites is evidenced by the increase in tourism revenues, the increase in the number of travellers, and the employment of people in the hospitality industry of this region. The city of Turkestan has gained significant recognition as a new attractive destination. The study provides a thorough and detailed overview of the

study of this area. The importance of the Great Silk Road in the development of the population of this area in relation to trade and social construction of the population is identified. In addition, the Great Silk Road is one of the best world-class brands. The Great Silk Road can become a region where interesting cultural tourism routes can be created for different tourists to travel along. Kazakhstan land plot of historical and cultural heritage of the Great Silk Road is a sustainable factor in the development of tourism industry. The Great Silk Road has all opportunities and advantages to attract travellers at the way station and in Kazakhstan. Due to the fact that cultural tourism is one of the most demanded and fast-growing types of tourism at the international stage, its further development in Kazakhstan should be carried out through state support.

So, as a result of the survey it was found that the most visited tourist sites on the Kazakh section of the Great Silk Road in recent times are the mausoleum of Khoja Ahmed Yassawi, Otyrar State Archaeological Museum-Reserve, mausoleum of Aisha Bibi and Karakhan. Catering and accommodation services were found to have problems that should be addressed. The deficit of qualified personnel was felt in the sphere of tour guide services. Respondents also offered the following recommendations to improve the services for tourists along the Great Silk Road route, which can be categorised in the following areas: - attracting qualified personnel to the tourism industry;

- formation of the information base of the Great Silk Road tourist sites;

-popularisation, promotion of tourist sites, development of souvenir farming through the creation of Internet resources, advertising, documentaries and feature films about the Great Silk Road sites;

- improvement of infrastructure and service, material and technical base, development of competitive market of accommodation and catering enterprises, alternative instruments of accommodation and catering;

- strengthening the work of the tourist police. In conclusion, it was found that the most visited tourist sites on the Kazakhstan section of the Great Silk Road are the mausoleum of Khoja Ahmed Yasawi, the state archeological museum-reserve Otyrar, the mausoleums of Aisha Bibi and Karakhan. It will be effective to form an information base of tourist sites of the Kazakhstan section of the Great Silk Road, attract qualified personnel in the service sector, popularise tourist sites by improving Internet resources, advertising and shooting feature films.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study may be obtained on request from the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCES

Abdrassilova, G.S., Murzagaliyeva, E.T., & Kuc, S. (2021). Mausoleum of Khoja Akhmed Yassawi as the element of regional identity formation in modern architecture of Kazakhstan. *Periodicals of Engineering and Natural Sciences,* 9(1), 127-138. http://dx.doi.org/10.21533/pen.v9i1.1783

Akhmetzhanov, D., & Alimzhanova, A. (2019). Ұлы Жібек жолы мәдениеттерінің өзара әсері [The interaction of the cultures of the Great Silk Road]. *Journal of Philosophy, Culture and Political Science*, 2 (68), 121-128, (In Kazakh). https://doi.org/10.26577/jpcp.2019.v68.i2.013

Akishev, K.A., Baypakov, K.M., Ismagulov, O.I., & Komekov, B.E. (1996). *История Казахстана (с древнейших времен до наших дней) [History of Kazakhstan (from ancient times to the present)]*. Almaty publishing house, Almaty, Kazsakstan, 544, (In Russian).

Aktymbayeva, A., Assipova, Z., Moldagaliyeva, A., Nuruly, Y., & Koshim, A. (2020a). Impact of small and medium-sized tourism firms on employment in Kazakhstan. *GeoJournal of Tourism and Geosites*, 32(4), 1238-1243. https://doi.org/10.30892/gtg.32407-563

Aktymbayeva, B., Koshkimbayeva, U., Abisheva, Z., Tokbergenova, U., & Tumazhanova, M. (2020b). Tourism industry development and governance: a comparative stage review of Kazakhstan's experience for the years of independence, 1991-2020. *GeoJournal of Tourism and Geosites,* 34(1), 69-76. https://doi.org/10.30892/gtg.34110-621

Aldybayev, B., Gubarenko, A., Imangulova, T., Ussubaliyeva, S., & Abdikarimova, M. (2021). Popularization of objects of the cultural and historical Heritage of the republic of Kazakhstan as a factor for the development of ethnocultural tourism of the country. *GeoJournal of Tourism and Geosites,* 39, 1450-1460. https://doi.org/10.30892/gtg.394spl16-789

Artemyev, A., Abdreyeva, S., & Batbaatar, Z. (2019). Tour guiding as a factor of tourism development along the route of the Great Silk Road in Kazakhstan. *In 1st International Conference One Belt, One Road, One Tourism (ICOBOROT 2018),* 145-148, Atlantis Press. https://doi.org/10.2991/icoborot-18.2019.1

Asylbekova, A.A., Moldagalieva, A.E., Torebek, S.G., & Kudaibergenov, M.K. (2022). Қазақстан Республикасындағы Ұлы Жібек жолының туристік тартымдылығы [Tourist attraction of the Great Silk Road in the Republic of Kazakhstan]. Vestnik ENU named after L.N. Gumilev, Series Chemistry. Geography. Ecology, 3(140), 71-79, (In Kazakh). https://doi.org/10.32523/2616-6771-2022-140-3-71-79

Baisakalova, A., & Garkavenko, V. (2014). Competitiveness of tourism industry in Kazakhstan. *Tourism in Central Asia: Cultural Potential and Challenges,* 15-39.

Baltabayeva, A.Y., Yesbalayeva, R. Z., Shaikhystamova, M.B., Yildiz, N., & Beskempirova, A.U. (2019). Development of Turkestan From the Great Silk Road. *Bulletin of the National Academy of Sciences of the Republic of Kazakhstan*, 6(382), 24 – 33. https://doi.org/10.32014/2019.2518-1467.142

Bayandinova, S.M., Shiderina, G.N., & Abdullaeva, A. (2019). *Исследование развития инфраструктуры туризма вдоль Великого Шелкового пути казахстанского участка [Research of tourism infrastructure development along the Great Silk Road of Kazakhstan section].* Abai KazNPU, *Bulletin of the Social and Political Sciences Series*, 3(67), 129-134, (In Russian). http://sp.kaznpu.kz/docs/jurnal_file/file20200119094150.pdf#page=129

Bayandinova, S.M., & Shiderina, G.N. (2020). *Современное состояние и туристскии потенциал культурно-познавательного туризма вдоль Великого Шелкового пути [Current state and tourism potencial of cultural tourism along the Great Silk Road].* Bulletin of KazNPU named after. Abay, Series "Sociological and Political sciences", 2(70), 244-248, (In Russian). http://sp.kaznpu.kz/docs/jurnal_file/file20200915013155.pdf#page=244

Baypakov, K., & Nurzhanov, A. (1992). *The Great Silk Road and medieval Kazakhstan*. Almaty, Kazakhstan, 208, [in Kazakh].

Bayandinova, S.M., Tychkov, N.V., Babazova, F.I., Sapieva, A.Z., & Komekova, A.Z. (2016). *Инновационные проекты международной транспортной магистрали вдоль Великого Шелкового пути [Innovative projects of international transport route along the Great Silk Road].* KazNU Bulletin, Geography series, 2 (43), 5-12, (In Russian). http://dx.doi.org/10.26577/JGEM.2016.2.319

Boranbayeva, B.S., & Tulentayeva, K.A. (2020). *Ұлы Жібек жолының Сарайшық қаласының дамуындағы алатын орны [A role of the Silk way in developing the city of Sarayshyk].* Bulletin of KazNPU, Series "Historical and socio-political sciences", 3(66), 64-69, (In Kazakh). https://sdgs.abaiuniversity.edu.kz/uploads/green-development/Series_Historical_and_Soci-1.pdf

Daye, M., Charman, K., Wang, Y., & Suzhikova, B. (2020). Exploring local stakeholders' views on the prospects of China's Belt & Road Initiative on tourism development in Kazakhstan. *Current Issues in Tourism*, 23(15), 1948-1962. https://doi.org/10.1080/13683500.2019.1700941

Dmitriyev, P.S., Fomin, I.A., & Wendt, J.A. (2021). Assessment and zoning of recreational facilities north Kazakhstan region for the development of the tourism industry. *GeoJournal of Tourism and Geosites*, 38(4), 1069-1075. https://doi.org/10.30892/gtg.38411-745

El Archi, Y., & Benbba, B. (2023a). The Applications of Technology Acceptance Models in Tourism and Hospitality Research: A Systematic Literature Review. *Journal of Environmental Management & Tourism,* 14(2), 379–391. https://doi.org/10.14505/jemt.v14.2(66).08

El Archi, Y., Benbba, B., Nizamatdinova, Z., Issakov, Y., Vargáné, G.I., & Dávid, L.D. (2023b). Systematic Literature Review Analysing Smart Tourism Destinations in Context of Sustainable Development: Current Applications and Future Directions. *Sustainability*, 15(6), 5086. https://doi.org/10.3390/su15065086

El Archi, Y., Benbba, B., Kabil, M., & Dávid, L.D. (2023c). Digital Technologies for Sustainable Tourism Destinations: State of the Art and Research Agenda. *Administrative Sciences,* 13(8), 184. https://doi.org/10.3390/admsci13080184

El Archi, Y., Benbba, B., Zhu, K., El Andaloussi, Z., Pataki, L., & Dávid, L.D. (2023d). Mapping the Nexus between Sustainability and Digitalization in Tourist Destinations: A Bibliometric Analysis. *Sustainability,* 15(12), 9717. https://doi.org/10.3390/su15129717

Fayzullaev, K., Cassel, S.H., & Brandt, D. (2021). Destination image in Uzbekistan heritage of the Silk Road and nature experience as the core of an evolving Post Soviet identity. *The Service Industries Journal*, 41(7-8), 446-461. https://doi.org/10.1080/02642069.2018.1519551

Garda, B. (2022). An Investigation on the Urban Tourism Marketing Potential of Turkestan. *Balkan & Near Eastern Journal of Social Sciences (BNEJSS)*, 8(2). https://www.ibaness.org/bnejss/2022_08_02/06_Garda.pdf

Groshev, V.A. (1998). To questions of classification of forms of irrigated agriculture in the south of Kazakhstan and Semirechye in antiquity and the Middle Ages. *Problems of Study and Preservation of Historical Heritage*, 203-208. https://archeo-lib.kz/assets/%D0%93%D1%80%D0%BE%D1%88%D0%B5%D0%B2_%D0%9A%20%D0%B2%D0%BE%D0%BF%D1%80%D0%BE%D1%81%D1%83_1998.pdf

Gussenov, B., & Sharipov, A. (2019). Features of development of foreign economic activity in the era of globalization (the Great Silk Road). N ews of the national Academy of sciences of the Republic of Kazakhstan. *Series of social and human sciences*, 5(327), 151-155. https://doi.org/10.32014/2019.2224-5294.180

Gursoy, D., & Altinay, L. (2021). The Silk Road and the service industries. *The Service Industries Journal*, 41(7-8), 441-445. https://doi.org/10.1080/02642069.2021.1928823

Islamjanova, A., Iddrisu, I., Suy, R., Bekbauova, D., & Suleiman, A.S. (2017). The impact of silk road economic belt on economic development of the Republic of Kazakhstan: The Case of Khorgos City. *Journal of Social Science Studies*, 4(2), 177-192. http://jsss.macrothink.org/

Issakov, Y., Kamelkhan, G., Imanbekova, B., Zhoya, K., Zheldibayev, A., Molzhigitova, D., & Dávid, L.D. (2023a). Study of the Problems and Prospects of Small Tourism Business Development in the City of Almaty. *GeoJournal of Tourism and Geosites*, 46(1), 293–303. https://doi.org/10.30892/gtg.46133-1027

Issakov, Y., Laiskhanov, S., Mazbayev, O., Ussenov, N., Zheldibayev, A., Kamelkhan, G., & Dávid, L.D. (2022). Opportunities to use mobile GIS applications in the formation of tourist and local lore competencies in students: case study in Almaty, Kazakhstan. *GeoJournal of Tourism and Geosites,* 41(2), 597-605. https://doi.org/10.30892/gtg.41234-868

Issakov, Y., Imanbekova, B., Beisembinova, A., Moldgaliyeva, A., Abisheva, Z., Ussenov, N., & Dávid, L. (2023c). Study of the effectiveness of tourism and local lore activities of geography teachers in Kazakhstan. *GeoJournal of Tourism and Geosites*, 48(2spl), 741–750. https://doi.org/10.30892/gtg.482spl08-1074

Kantarci, K., Başaran, M.A., & Özyurt, P.M. (2017). Comparative analysis of Central Asian tourism product from point of view of Turkish travelers: A case of Kyrgyzstan, Kazakhstan, Tajikistan, Uzbekistan and Turkmenistan. *Eurasian Economies in Transition*, 339-357. https://www.avekon.org/papers/1241.pdf

Kulgildinova, T.A., Zhubanova, M.H., Aytbaeva, G.D., Tusupbekova, G.M., & Abdikerimova, G. (2019). Some problems of formation of the tourism industry at the Kazakh sectors of the Silk Routes. *New Trends and Issues Proceedings on Humanities and Social Sciences*, 6(8), 46-53. www.prosoc.eu

Kulakhmetova, G.A., Hnatkovych, O.D., Rusnak, A.V., & Shcherbakova, N.A. (2019). The way to the leading positions in world tourism: Case study of Kazakhstan. *Journal of Environmental Management and Tourism*, 9(6), 1289-1295. https://doi.org/10.14505/jemt.9.6(30).18

Kuralbayev, A., Sevim, B., & Myrzaliev, B. (2017). Tourism Perception of Turkestan Residents and Their Attitudes Towards Tourism. *Bulletin of Karaganda University, Economy Series,* 87 (3), 30-40. https://www.elibrary.ru/download/elibrary_44675197_12231271.pdf

Kurmanaliyeva, A., Aljanova, N., & Manassova, M. (2018). The Marginocentric Cultural Features of Cities along the Great Silk Road in the territory of Kazakhstan. *CLCWeb: Comparative Literature and Culture*, 20(2), 5. https://doi.org/10.7771/1481-4374.3236

Kurmanbayeva, S.K., & Umirbekova, Z.K. (2022). Historical traces of the Great Silk Road in the national consciousness. *Bulletin of the L.N. Gumilyov ENU, Historical sciences. Philosophy. Religion Series,* 3 (140), 39-58. https://doi.org/10.32523/2616-7255-2022-140-3-39-58

Lengyel, A., Szőke, S., Kovács, S., Dávid, L.D., Bácsné, B.É., & Müller, A. (2019). Assessing the essential pre-conditions of an authentic sustainability curriculum. *International Journal of Sustainability in Higher Education*, 20(2), 309-340. https://www.emerald.com/insight/content/doi/10.1108/IJSHE-09-2018-0150/full/html

Mamirkulova, G., Mi, J., Abbas, J., Mahmood, S., Mubeen, R., & Ziapour, A. (2020). New Silk Road infrastructure opportunities in developing tourism environment for residents better quality of life. *Global Ecology and Conservation*, 24, e01194. https://doi.org/10.1016/j.gecco.2020.e01194

Medeu, A., Askarova, M., Plokhikh, R., Skorintseva, I., & Bekkuliyeva, A. (2015). Great silk road on the territory of kazakhstan: from past to future. *Journal of Resources and Ecology,* 6(2), 114-118. https://doi.org/10.5814/j.issn.1674-764X.2015.02.009

Mukayev, Z., Ozgeldinova, Z., Dasturbayev, S., Ramazanova, N., Zhanguzhina, A., & Bektemirova, A. (2022). Landscape and recreational potential of the mountainous territories of the Turkestan region of the Republic of Kazakhstan. *Geo Journal of Tourism and Geosites*, 41(2), 362-367. https://doi.org/10.30892/gtg.41204-838

Mylkaidarov, A.T., Egizbay, A.S., & Dastan, A.B. (2020). The New Silk Road is a fundamental factor in the economic, social sphere of the "One Belt, One Road" project. *Young scientist,* 18 (308), 573-576. https://moluch.ru/archive/308/69575

Nagy, B. (2019). Tourism with No Resources? *Acta Universitatis Sapientiae, Economics and Business.* 7(1), 5-22. https://doi.org/10.1515/auseb-2019-0001

Nagy, B., Gabor, M.R., Bacoș, I.B., Kabil, M., Zhu, K., Dávid, L.D. (2023). Google and Apple mobility data as predictors for European tourism during the COVID-19 pandemic: a neural network approach. *EQUILIBRIUM,* 18(2), 419-459. https://doi.org/10.24136/eq.2023.013

Nakhipbekova, S., Sadykov, Z., Abdiqadyr, N., Dzhaksilikov, A., & Kazakbayeva, T. (2023). Determination of the Role of Elements Affecting the Formation of the City Image of Turkestan. *Eurasian Journal of Economic and Business Studies,* 67(3), 72–84. https://doi.org/10.47703/ejebs.v3i67.266

Nurmukhamedova, S.S., & Myrzakhan, N.D. (2023). Түркістан қаласындағы туристік объектілердің бүгіні мен болашағы [Present and future of tourist attractions in Turkestan]. *Bulletin of the International University of Tourism and Hospitality,* 1(1), 86-98, (In Kazakh). https://journal.iuth.edu.kz/index.php/main/article/view/21/19

Ogutu, H., El Archi, Y., & Dénes Dávid, L. (2023). Current trends in sustainable organization management: A bibliometric analysis. *Oeconomia Copernicana,* 14(1), 11–45. https://doi.org/10.24136/oc.2023.001

Raimkulov, M., Juraturgunov, H., & Ahn, Y.J. (2021). Destination attractiveness and memorable travel experiences in silk road tourism in Uzbekistan. *Sustainability,* 13(4), 2252. https://doi.org/10.3390/su13042252

Saduov, A., Mukanov, B., Asanova, M., Rakhimzhanova, R., & Raimbekov, B. (2019). Questions of Cluster Interaction of Tourism Development along the Silk Road. *Journal of Environmental Management & Tourism,* 10 (6 (38)), 1235-1241. https://doi.org/10.14505/jemt.v10.6(38).05

Sataeva, B., & Bekseitov, G. (2017). *Ұлы Жібек жолы бойындағы ортағасырлық Тараз шахарының зерттелу мәселелері аясында [In the context of the problems of studying the medieval Taraz Shahar along the Great Silk Road].* Bulletin of KazNPU, Series "Historical and socio-political sciences", 3, 66-72, (In Kazakh). http://sp.kaznpu.kz/docs/jurnal_file/file20201106111430.pdf

Sevim, B., Kuralbayev, A., & Myrzaliev, B. (2017). Tourism Perception of Turkestan Residents and Their Attitudes Towards Tourism. *Bulletin of KazNPU, Series Economics,* 3 (121), 105 – 116. https://elibrary.kaznu.kz/wp-content/uploads/2021/06/vestnik-kaznu.-seriya-ekonomicheskaya_2017-121-3.pdf#page=105

Shalekenov, U. (2014). *Scientific labours.* Zhibek zholy Publishing House, Almaty, Kazakhstan, 584.

Teczke, M., Kaliyeva, T., Sembiyeva, L., Zhagyparova, A., Zholamanova, M., & Zhussupova, A. (2022). Silk Roads Routes. Sustainable Tourism after COVID-19. *Journal of Environmental Management & Tourism,* 13(4), 1192-1206. https://www.ceeol.com/search/article-detail?id=1096568

Tolstova, S.P. (1962). *The peoples of Central Asia and Kazakhstan.* Publishing House of the Academy of Sciences, Moscow, USSR, 768.

Tursynbayeva, A., Ilyassova, Z., & Shamakhay, S. (2015). The Great Silk Road as Cultural Phenomena. *Handbook on Business Strategy and Social Sciences,* 3, 29-43. https://www.conscientiabeam.com/ebooks/4-3rdICBSSS-741-(29-34).pdf

Tuyakbayev, M., Saipov, A., & Dmitriyev, Y. (2021). Architectural and construction characteristics of the old Turkestan pantheon buildings for their dating and identification. *Industrial Technology and Engineering,* 2(39), 53-63. https://www.elibrary.ru/item.asp?id=46344146

Usmanova, S. (2018). Prospects of Intensive Institutional Cooperation in Tourism Development in Central Asia: The Case of Uzbekistan. *Journal of Tourismology,* 4(1), 55-66. https://dergipark.org.tr/en/pub/iuturizmoloji/issue/38710/471858?publisher=istanbul

Von Richthofen, F. (1882). *China: Ergebnisse eigener Reisen, und darauf gegründeter Studien (Vol. 2).* Verlag von Dietrich Reimer, Berlin, 1877-1912.

Werner, C. (2003). The new silk road: Mediators and tourism development in Central Asia. *Ethnology,* 141-159. https://doi.org/10.2307/3773779

Yesenov, M.N., Beisakhmet, A.A., Kalimbetov, E.A., & Artemyev, A.A. (2017). Tourism Opportunities for Kazakhstan on the Great Silk Road. *Bulletin of the KazNU. Geographical series,* 47(4), 181-189. https://bulletin-geography.kaznu.kz/index.php/1-geo/article/view/450/409

Zanadiluly, N. (2022). *Ұлы жібек жолы және Қазақстан [Great Silk Road and Kazakhstan].* Iasaui universitetinin habarshysy, 3 (125), 302–315, (In Kazakh). https://doi.org/10.47526/2022-3/2664-0686.27

Zhakupov, Z.A. (2022). *Ұлы жібек жолындағы қазақ астионимдері [Kazakh astionims on the Great Silk Road].* Bulletin of Karaganda University, The series "Philology", 3(107), 71-77, (In Kazakh). https://doi.org/10.31489/2022Ph3/71-77

***Bureau of National Statistics. Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (2021-2023). https://stat.gov.kz/ru/industries/business-statistics/stat-tourism/

***Concept of cultural policy of the Republic of Kazakhstan for 2023-2027. https://adilet.zan.kz/kaz/docs/P2300000250

***Kazakh Tourism, (2021). https://qaztourism.kz/about-company/reporting/

***Official Information Resource of the Prime Minister of the Republic of Kazakhstan, (2023). Tourism development in Kazakhstan after the pandemic - the first six months of 2022 summarised. https://primeminister.kz/ru/news/reviews/razvitie-turizma-v-kazahstane-posle-pandemii-podvedeny-itogi-pervyh-shesti-mesyacev-2022-goda-237546

***Official website of the State Historical and Cultural Reserve-Museum "Azret Sultan", (2023). https://azretsultan.kz/

***Resolution of the Government of the Republic of Kazakhstan dated December 29, 2021 No. 948 on approval of the development strategy of the Joint Stock Company" National Company "Kazakh Tourism" for 2022-2031. https://adilet.zan.kz/kaz/docs/P2100000948

***Resolution of the Government of the Republic of Kazakhstan dated May 31, 2019 No. 360 on approval of the state program for the development of the tourism industry of the Republic of Kazakhstan for 2019-2025.

***State program of the Republic of Kazakhstan "Revival of historical centers of the Silk Road, preservation and joint development of cultural heritage of Turkic-speaking states, creation of tourism infrastructure". Resolution of the Government of the Republic of Kazakhstan, October 28, 1998 N 1096, (In Kazakh). https://adilet.zan.kz/kaz/docs/P980001096_

GENERAL CONDITION ASSESSMENT METHOD FOR
SIGNALIZED INTERSECTIONS: THE CASE OF IBAGUE, COLOMBIA

Juan GOMEZ
Universidad de Ibagué, Programa de Ingeniería Civil, Facultad de Ingeniería,
Ibagué, Colombia, e-mail: 2520191009@estudiantesunibague.edu.co

Karen TRIANA[*]
Universidad de Ibagué, Programa de Ingeniería Civil, Facultad de Ingeniería,
Ibagué, Colombia, e-mail: 2520191037@estudiantesunibague.edu.co

Mario VARGAS
Universidad de Ibagué, Programa de Ingeniería Civil, Facultad de Ingeniería,
Ibagué, Colombia, e-mail: 2520191038@estudiantesunibague.edu.co

Diego ESCOBAR
Universidad Nacional de Colombia sede Manizales, Departamento de Ingeniería Civil,
Grupo de Investigación en Movilidad Sostenible, Manizales, Colombia, e-mail: daescobarga@unal.edu.co

Juan ZULUAGA-VILLERMO
Universidad de Ibagué, Programa de Ingeniería civil, Grupo de Investigación MYSCO, Ibagué, Colombia, e-mail: juan.zuluaga@unibague.edu.co

Abstract: This study proposes a new method created to perform a universal assessment on the status of signalized intersections implemented in the city of Ibague, Colombia. The condition of each signalized intersection is classified according to parameters established to improve vehicular and pedestrian traffic, as well as the long-term development of the city. To achieve the research objective, the aspects to be evaluated are divided in two categories: Functionality and Utility, as well as specific criteria for each of them. Therefore, field data is collected using a geospatial tool and assigning levels of importance associated with a numerical scale that is plotted on maps of influence. We can therefore conclude that the proposed assessment method is not only necessary, but suitable for the evaluation of signalized intersections, which effectively assess the pertinent aspects, granting a rating supported by their respective analysis, and making the comparison of their specific conditions over time possible. For example, in the case study of Ibague 2023, according to the evaluation method, 59% of the intersections were ranked in the lowest states of the scale, also showing that between 2018 and 2023 there was an overall decay, as most of the intersections (85%) lowered their ratings and degraded to a greater extent compared to those with improvements.

Key words: Signalized intersections, Ibague, development, traffic signal network, criteria, evaluation, comparison

* * * * * *

INTRODUCTION

The method proposed in this article was applied to the signalized intersections in the city of Ibague, Colombia. Ibague is a city located in the central zone of the country as shown in Figure 1, it has easy access from various surrounding regions, a pleasant climate, and a low cost of living compared to other capital cities, which makes it a very attractive place to live. The city went from having 529,635 inhabitants in 2018 to 542,046 in 2023, a fact that reflects the uniform growth of the city in every aspect (Reyes et al., 2021), in addition, after the most critical stage of the pandemic, the automobile market increased by 32.8% in Colombia (Cuellar, 2021). The traffic light network of the city is based on traffic lights with fixed times.

According to the municipal mayor's office in 2019, there were 92 traffic-light intersections that included 567 vehicular traffic lights, 233 pedestrian traffic lights and 75 traffic light controllers (Secretariat of Mobility, 2019). Fabian Tinoco, operating director of this entity, mentioned that along with the "Strategic Public Transportation System" (SETP for its acronym in Spanish), they are working to replace the current controllers that regulate traffic, which are more than 15 years old (Secretariat of Mobility, 2022). Despite the different plans proposed such as the one from 2019 in which the secretariat of mobility allocated 145 million Colombian pesos for preventive and corrective maintenance, and another 6.000 million Colombian pesos for the modernization of the traffic lights in the city center, there is no evidence of a change on a daily basis (Secretariat of Mobility, 2019). This problem affects the population and is reflected in crashes caused by synchronization errors (El Olfato, 2020), this situation is aggravated by insecurity, since the wiring is occasionally stolen (Alerta Tolima, 2021) being a complex problem with no definitive solution so far (El Nuevo Día, 2022).

---

[*] Corresponding author
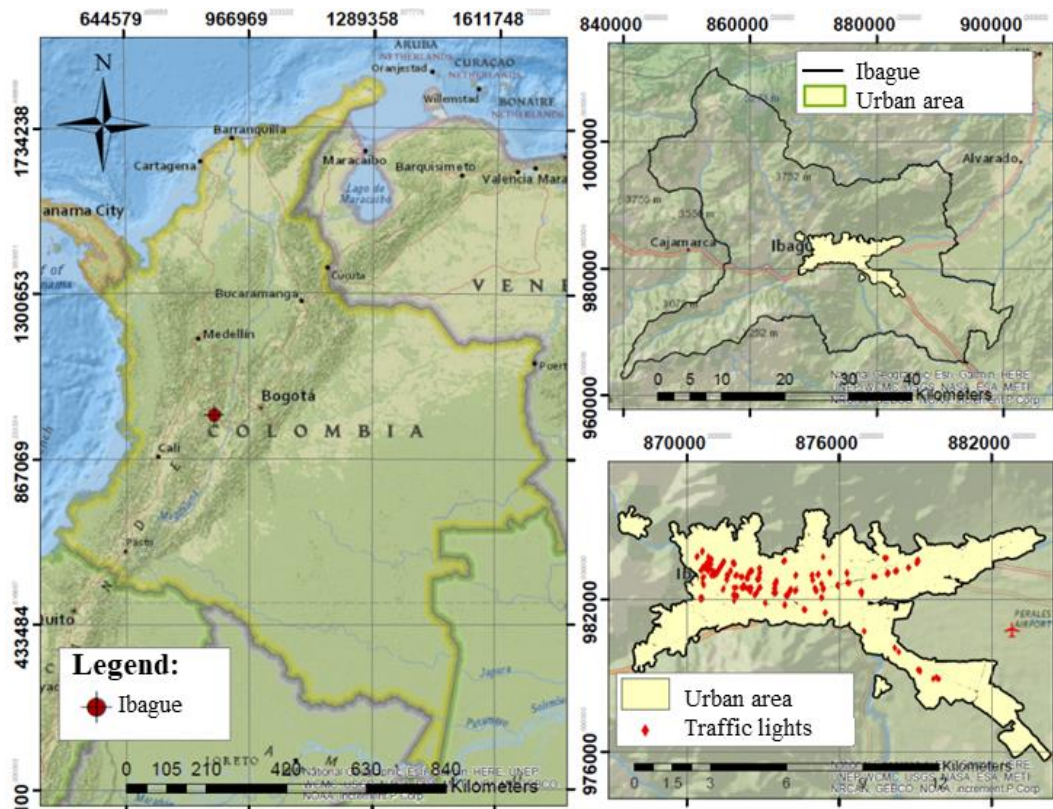
Figure 1. Location map (Source: Authors)

Generally speaking, by having traffic signalized intersections as the object of research, it is essential to consider that the concentration of vehicles at an intersection can eventually overwhelm the capacity of an entire system. Thus, vehicle and pedestrian traffic lights are key to guarantee safety and optimal traffic flow (O'Flaherty, 2018). At the same time, the essential element of traffic signalized intersections are traffic lights, which are useful devices not only to alternate the traffic of a vehicular or pedestrian flow, but also to regulate speeds. They control the circulation by lanes and minimize the number and the severity of potential collisions, providing order and safety. For this reason, the implementation of a method to evaluate and classify the condition of a signalized intersection is of the utmost importance to ensure that these are properly maintained and supervised for optimal functionality within the city, aiming to promote its organization and development. In this context, a research was carried out in the same city (Ibague), which highlights the importance of studying its urban change and provides criteria for analysis (Francel, 2017).

Multiple sources have addressed the issue of analyzing and evaluating urban intersections as an alternative towards the improvement of their condition, highlighting the importance of carrying out this assessment to benefit transportation and the proper functioning of the entire road network, as stated in a study on the importance of intersections for urban mobility, if an intersection does not meet its functionality, the entire road network is affected (Garcia et al., 2015); similarly, proposals aiming to address this issue are based on the use of traffic signals, reduction of delays and the elimination of conflict points, such a situation is evaluated in a study of the most important signalized intersections in Managua, Nicaragua, which brought up the need for the traffic light network to provide a better service, especially considering the growth of the vehicle fleet and the high accident rate at such critical traffic points, therefore, structural elements such as the type and condition of metal brackets, traffic lights, faces and traffic light controllers should be considered (Vega and Guevara, 2012). Likewise, a work of approximation to road safety models in traffic signalized intersections in Medellin, together with the geographic location, geometric conditions, and their composition, also considers other aspects of the road environment such as lighting and the presence of bus stops (Betancur, 2018). On the other hand, a study from New York University highlights the importance of models and simulations to evaluate the safety of signalized intersections, where data is a solid basis for decision making through the implementation of geospatial tools (Yang et al., 2021). In addition, aspects such as the study of demarcation influence on driver behavior were considered, concluding that the information that drivers receive visually is decisive for road safety, being presented in a clear and coherent way (Fiolić et al., 2023), as well as recognizing the pedestrian as a fundamental individual in urban dynamics not only improves safety at intersections, but also contributes to the creation of more inclusive and sustainable urban environments (Belge and Ercan, 2022).

Other important issues in the development of this work, such as criteria to be evaluated and their respective levels of importance were previously studied by taking into account categories such as functionality, utility, congestion, and pedestrian phase. The functionality category according to the authors is composed of criteria such as signaling (25%), painting (15%), phases (17%), position (13%), brightness (18%), and visibility (12%). On the other hand, the utility category is divided into the following criteria with their respective levels of importance: necessity and appropriateness (40%), pedestrian friendliness (30%), and disability (30%) (Gonzalez and Lopez, 2018).

The method faces considerable challenges, being especially vulnerable to changes in intersection infrastructure, which raises concerns about the stability and consistency of the assessments over time in a dynamic environment. Despite the use of georeferencing tools, the complexity in data collection requires considerable refinement and simulation, introducing the possibility of errors and inaccuracies that affect the integrity of the results and the reliability of the assessments. The reliance on data assimilation also raises doubts about objectivity, as interpretation by the analyst can significantly influence the final ratings. As in the research carried out in Doha, Qatar when proposing a method for evaluating sidewalks, concluding that it could allow policymakers, practitioners, consultants, and others to make fast and accurate decisions regarding required improvements. In this sense, this research is timely, since promoting walkability has become a challenge which applies especially to developing countries (Shaaban, 2019).

Therefore, it is possible to reach an ideal such as the one presented in the city of Osaka, Japan, where the transition to safer streets is proposed through an integrated and inclusive design (Doi et al., 2016). Based on the application of the method in the city of Ibague Colombia, improvements can be sought in the traffic signal network and infrastructure at signalized intersections. Examples in other Latin American countries, such as Ecuador, show research on adaptive traffic signal systems that regulate traffic according to demand, increasing safety and flow efficiency. In Ecuador, this approach has been applied in cities such as Cuenca and Guayaquil, using computerized intersections that monitor traffic volumes in real time using video detection cameras (Lojano, 2013). Likewise, Hertogenbosch, The Netherlands, is an example of traffic light modernization, where automation allows green signals when users are approaching, traffic permitting. When there is only one user waiting, the green light lasts 4 seconds; if there are several, the last one with a yellow signal is given way. This strategy demonstrates that proper automation can provide safe and efficient circulation for all road users (Equipo Digital, 2019).

MATERIALS AND METHODS
The methodology of this research is described in six stages explained below and shown in Figure 2.
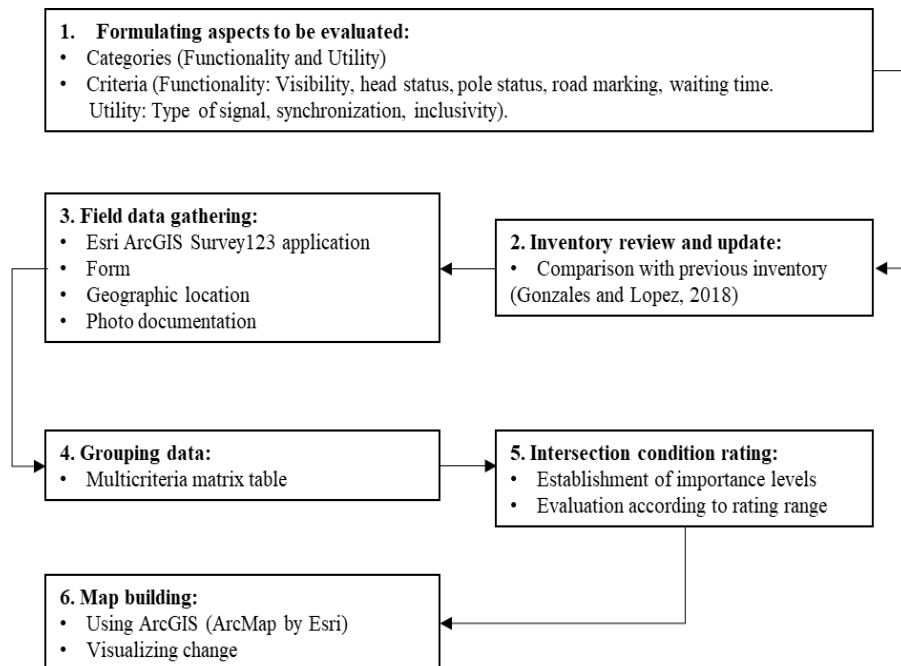
Figure 2. Research methodology

1. Formulating aspects to be evaluated. At this stage, the evaluating elements to be considered for the assessment of the signalized intersections are detailed. They were divided into two main categories, each with their respective criteria, explained below.

A. Functionality: This category refers to the status of the infrastructure of the traffic signalized intersection and the different elements that have an influence on its proper functioning and fulfillment of its purpose.

1. Visibility: Everything related to being able to see the signals and the traffic light modules without difficulty was considered. This variable was evaluated through two dichotomous questions consisting of the presence of obstacles and upper and/or lower head.

2. Head status: It is important to assess the quality of the traffic lights, as this is crucial to ensure that the intended signal or warning reaches the users correctly. In this criterion, the type of light, the condition of the luminous module, the brightness and the presence of a visor were considered.

3. Pole status: This aspect is considered relevant because the poles not only serve as a support but also to warn about the presence of a traffic light. This criterion considers the existence of the reflective coating, its condition, and the type of material the pole is made of.

4. Road marking: The existence and condition of road marking is of great importance as they inform and warn to drive with caution and comply with the provisions of these signs. It was reviewed for this study whether the intersections had the

necessary markings for a signalized intersection, which should include a continuous stop line, crosswalk, blocking restriction, direction indicator arrow and lane line (Road Signage Manual, 2015).

5. Waiting time: This was evaluated by verifying the correct functioning of the traffic lights at the signalized intersection by being able to measure all waiting times.

B. Utility: This category is designed to check the accessibility and inclusion of traffic signalized intersections, i.e., whether they guarantee ease of flow for people regardless of their mobility condition. The criteria considered are the type of indication, synchronization and inclusivity.

1. Type of signal: This category is proposed with the objective of checking that intersections provide pertinent signal indications not only to drivers but also to pedestrians. This includes vehicular, vehicular with direction, pedestrian, and pedestrian with countdown.

2. Synchronization: This assessment checks whether vehicular and pedestrian circulation alternate correctly, otherwise accidents could occur.

3. Inclusivity: It is evaluated due to the importance of equal conditions for all people to be able to move around without major problems. Thus, the criterion takes into account the existence of ramps and tactile signage.

2. Inventory review and update: Based on the inventory proposed as part of the undergraduate Project entitled Development of inventory of traffic signalized intersections in the city of Ibague (Gonzalez and Lopez, 2018), and to verify such inventory, an inspection was carried out throughout the city. It was concluded that the inventory of signalized intersections remains the same, with only one update in the entire city, this being the intersection at 14 Av. and 110th St. (Surti Plaza Ambala).

3. Field data gathering: Once the list of intersections to be analyzed has been defined, the field work is carried out by filling in a form previously prepared for each signalized intersection, using the Esri ArcGIS Survey123 application. This is a form-based solution that allows collecting the most significant data on the actual state of each object of study, which also records the geographic location and produces photographic evidence.

4. Grouping data: The data obtained previously was tabulated with the purpose of consolidating the information and being able to make it easier for visualizing the analysis in a much clearer manner. The format is shown in Table 1 specifying each percentage.

Table 1. Multicriteria matrix

#	Intersection	Category	Criteria	%	Score	Rating			Condition
						Partial	Total	Intersection total	
Intersection number	Intersection address with entry	Functionality	Visibility	19%					
			Head status	26%					
			Pole status	22%			100%		
			Road marking	33%					
			Waiting time	--					
		Utility	Type of signal	30%					
			Synchronization	40%					
			Inclusivity	30%					
	Intersection address with entry	Functionality	Visibility	19%					
			Head status	26%					
			Pole status	22%					
			Road marking	33%			100%		
			Waiting time	--					
		Utility	Type of signal	30%					
			Synchronization	40%					
			Inclusivity	30%					

5. Intersection condition rating: With the information already analyzed, percentages are assigned to each of the criteria according to their level of importance, which was defined according to a similar study conducted by Gonzalez and Lopez in 2018 and following the hierarchy of importance and proportionality stated therein and in accordance with the 2022 Road Signage Manual. It is worth clarifying that the two main categories equally affect the final rating. Thus, the levels of importance affect to a greater or lesser extent the total rating of each criterion. The following section shows some of the aspects considered to define the levels of importance according to the Road Signage Manual.

A. Functionality:

1. Visibility: It is essential to consider the location of poles at an intersection as this has a direct impact on the safety and visibility of traffic signals. In addition, it is important that traffic elements are visible at all times, regardless of weather conditions or time of day (Road Signage Manual, 2022).

2. Head status: The head condition of traffic light modules is essential for road safety as it ensures the correct display of signals to drivers. It includes key components such as the face, light module, lenses, visor, contrast plate and controller. These requirements are fundamental for the reliable operation of traffic signals and the prevention of road accidents (Road Signage Manual, 2022).

3. Pole status: Road safety depends to a large extent on the condition of the poles supporting the traffic lights. These poles must follow NTC 47393 standards, with the appropriate materials to guarantee their retro-reflectivity and specific colors. The poles may be traffic yellow or white and must have four black stripes 25 cm wide each, separated by 25 cm. These standards ensure the visibility of traffic lights and ultimately contribute to road safety (Road Signage Manual, 2022).

4. Road marking: Demarcation at intersections regulated by traffic lights is essential for road safety. It includes a continuous stop line and crosswalk lines that should allow drivers to identify the traffic light signals. These markings must be slip-resistant to avoid incidents and be retro-reflective to improve visibility. In addition, it is mandatory for roads to have a definitive and well-maintained demarcation. These regulations are crucial for safe and efficient traffic at intersections with traffic lights (Road Signage Manual, 2022).

5. Waiting time: Defining waiting times in a combined phase for pedestrians and vehicles is essential for road safety. It is recommended to consider the number of possible conflicts. The operation of a waiting system must be consistent and adapted to traffic needs, which requires the confrontation of updated traffic count information to regulate changes in traffic volumes efficiently. These practices are fundamental to traffic management and safety at intersections (Road Signage Manual, 2022).

B. Utility:

1. Type of signal: The indication provided by traffic signals intended to control pedestrians, cyclists and other users is vital for road safety. These devices are installed for the exclusive purpose of providing safety and regulating traffic for this group of users. Traffic signals are recommended in areas with a high volume of pedestrians and at intersections that relate to infrastructure for these users. In addition, it is suggested that they are located close to school areas or institutions. These measures significantly improve the safety of pedestrians and cyclists on the roads (Road Signage Manual, 2022).

2. Synchronization: Traffic signal synchronization allows for a continuous flow of vehicles at intersections. During normal operation, no one should regulate traffic against the traffic light signals. Cycles of 60 to 120 seconds are used, with possible exceptions in special cases, but cycles longer than 150 seconds are not recommended. These practices are essential to manage traffic efficiently and ensure safety at intersections (Road Signage Manual, 2022).

3. Inclusivity: Floor markings with tactile surfaces are essential in pedestrian zones and areas surrounding road infrastructure. These surfaces should be slip-resistant and preferably have contrasting color. Their purpose is to safely guide pedestrians, especially those with visual impairment or low vision, by providing information, warnings and signage of possible obstacles or hazards in pedestrian areas and at intersections. This is vital to ensure the safety and accessibility of all people in urban environments (Road Signage Manual, 2022).

Once the scores for each criteria are tabulated in the evaluation rubric (table 1), the values are analyzed mathematically. First, by using the weighted average formula, called partial rating by criteria (Pr) in this specific study as shown in equation 1, in which, each value is taken according to each criteria score (cr) and then multiplied by its percentage (cp), then every result is added, obtaining the partial qualification for a single category. Partial rating by criteria (Pr):

$$P_r = \sum (cp * cr) \qquad (1)$$ (Source: developed by authors)

With the above and knowing that the two categories have the same value in the final consideration, both, partial functionality rating (P_{fr}) and partial utility rating (P_{ur}), are arithmetically averaged to obtain the score of only one entry or traffic light (T_{er}). Total entry rating (Ter):

$$T_{er} = \frac{P_{fr} + P_{ur}}{2} \qquad (2)$$ (Source: developed by authors)

Depending on the number of traffic lights or entries (N = as they are called in this case), the scores of the entries (T_{er}) should be averaged to calculate the total rating of the intersection (Tir). Scores and other ratings are represented in proposed dimensionless units from 0 to 5. Total intersection rating (Tir):

$$T_{ir} = \frac{\sum_{i=1}^{N} T_{er}}{N} \qquad (3)$$ (Source: developed by authors)

A graphic example of the characteristics that would merit each of the qualifications of the established scale is presented in Figure 3.

Deficient 0.00 -1.99	Poor condition 2.00 -2.99	Average 3.00 -3.99	Good condition 4.00 -4.99	Excellent 5.00
• Light modules do not work. • There is no road marking. • There are no ramps or tactile marking.	• It is obstructed. • Cover in bad condition. • There is no road marking. • There are no ramps or tactile marking.	• Cover in regular state. • Partially visible road markings. • It only has ramps and tactile marking in some entries.	• Good visibility. • The light modules work. • Most of the roas markings are visible. • It has ramps and tactile marking.	• Excellent visibilidad. • The light modules work. • Road marking in excellent condition. • It has ramps and tactile marking.

Figure 3. Examples of qualification scales (Source: Authors)

Map building: Having all the necessary data and qualifications, we proceed to make different maps to show location of the analyzed points and the status of the signalized intersections for the year 2018 and 2023, and finally a comparison to be able to visualize their improvement or degradation. This is carried out using the Esri's ArcGIS software and its ArcMap program as a geo-referencing and mapping tool in order to finally reach an adequate analysis of the results by using a geostatistical interpolation method (Kriging) with a linear regression analysis. This procedure generates an estimated surface from a scattered set of points based on the value of each of the ratings and matching them to the color scale. For example, if there are nearby points with high ratings, they will be visualized with a color closer to green, which symbolizes a good condition of the zone. On the other hand, if there are points with lower ratings, they are related to a color closer to red indicating poor condition. In this order of ideas, the Kriging geostatistical analysis uses the probabilistic concept of variance (equation 4), combining it with the input data such as the scores of the intersections (Tir) and the distances (h) between them. By fitting a linear function to the map expressing in which points the value of the dependent variable (Tir) has the greatest impact.

$$v = c_0 + c * h \quad (4) \qquad c_0 + c: Asymptotic\ variance, values\ of\ Tir \quad h: Distance\ between\ points.$$ (Source: Krige, 1951)

RESULTS AND DISCUSSION

Initially, the intersections in the area were rated using a multi-criteria matrix and assigning ratings to each criterion. This allows the calculation of partial ratings per category, then a rating per traffic light, and finally a total rating for the intersection condition. Table 2 describes process for the first intersection analyzed shown in Figure 4, 1st Av. and 10th ST.

Figure 4. Signalized Intersection No. 1 - 1st. Av. and 10th St. (Source: Authors, 2022)

Table 2. Evaluation of Signalized Intersection No.1 - 1st Av. and 10th St.

| # | Intersection | Category | Criteria | % | Score | Rating | | | Condition |
						Partial	Total	Intersection total	
1	1st Av. -1st St. (West entry)	Functionality	Visibility	19%	4.30	4.34	4.19	3.81	Average
			Head status	26%	4.70				
			Pole status	22%	4.60				
			Road marking	33%	3.90				
			Waiting time	--	Complete				
		Utility	Type of signal	30%	3.00	4.05			
			Synchronization	40%	4.50				
			Inclusivity	30%	4.50				
	1st Av. -1st St. (East entry)	Functionality	Visibility	19%	4.20	3.25	3.42		
			Head status	26%	4.60				
			Pole status	22%	4.20				
			Road marking	33%	1.00				
			Waiting time	--	Complete				
		Utility	Type of signal	30%	3.00	3.60			
			Synchronization	40%	4.50				
			Inclusivity	30%	3.00				

Subsequently, with the help of the ArcGIS tool, a set of software products in the field of Geographic Information Systems and the Kriging geostatistical method, the results were captured graphically as an influence map, initially forming the representation of the status of each traffic-light intersection in the city of Ibague corresponding only to the year 2023, as shown in Figure 5, in which red means deficient condition, orange means poor, yellow means average, light green means good condition and dark green means excellent. As illustrated in Figure 6 according to the context of the city. It is essential to visualize the changes on the physical and technological conditions of the signalized intersections in the city of Ibague between 2018 and 2023. Improvements are shown in intense green, decay in intense red and milder degradations in yellow and orange. In the map in Figure 6, the main avenues of the city are highlighted as reference points. It should be noted that the Kriging analysis is limited to the relevant data of the study, which explains the blank areas, where there are no traffic lights nearby. Finally, to conceptualize what was found, a graphical representation was prepared through a circular diagram in Figure 7 relating the amount of data and the percentage of intersections corresponding to the different type of status for the year 2023.
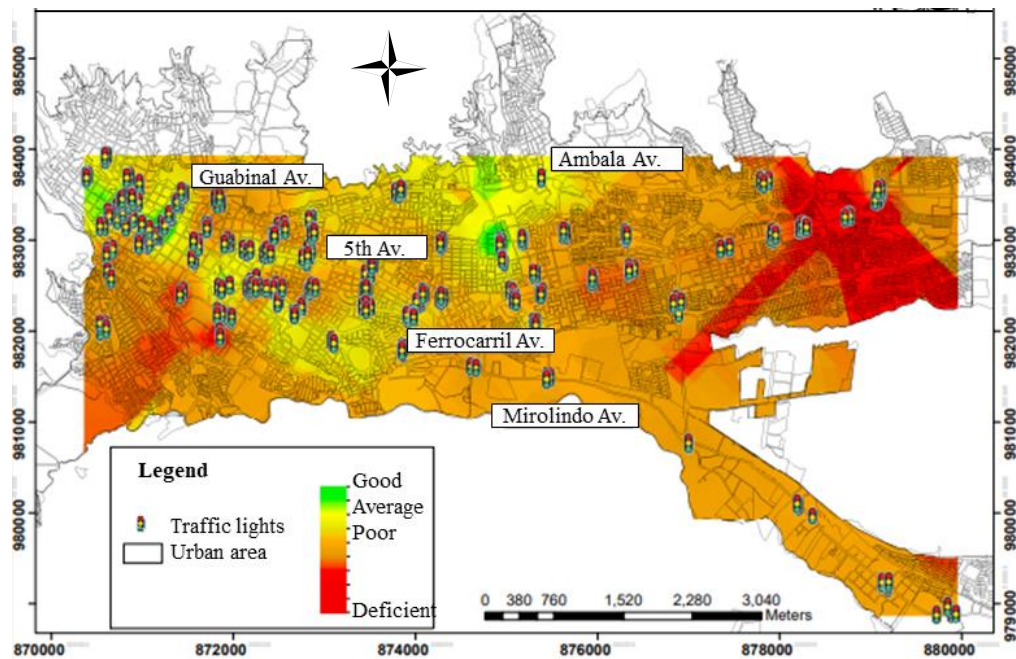
Figure 5. Map of traffic signalized intersection status 2023 (Source: Authors)
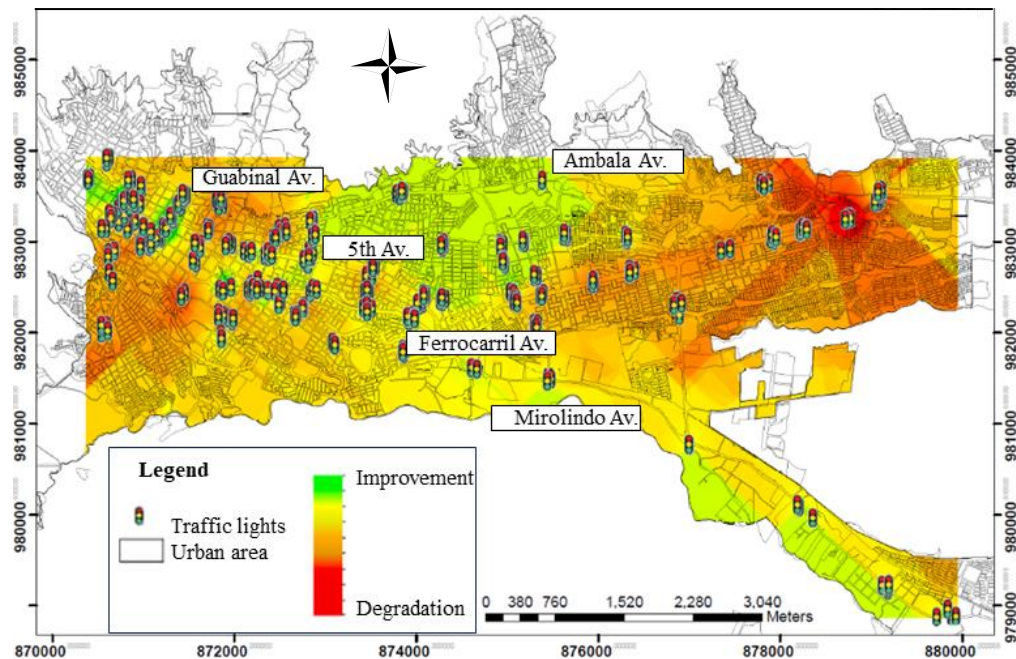
Figure 6. Comparison map of Signalized intersections year 2018 vs 2023 (Source: Authors)
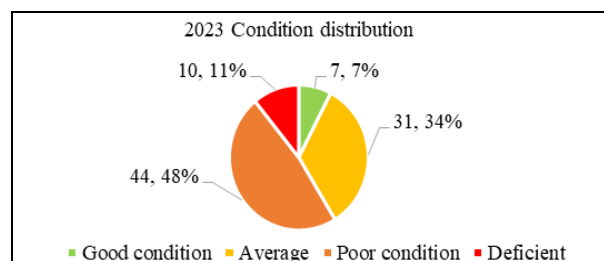
Figure 7. Status of signalized intersections 2023

CONCLUSION

This research reaches the following main conclusions: 1) The method is suitable for evaluating intersections and can be used to specify their characterization, as well as to provide a rating that allows for analysis and monitoring over time. 2) The application of this assessment method is important for planning the maintenance of these road infrastructure elements, which in fact, must be done by the competent entities. 3) The limitations of this method consist of susceptibility to changes in the infrastructure, extensive data cleaning, and subjective interpretation by the analyst. 4) By

implementing this method in the case study of Ibague, Colombia, it can be concluded that between 2018 and 2023 most of the total number of intersections (85%) lowered their rating and in turn deteriorated to a greater extent compared to those that presented improvements. Additionally, a significant deterioration is observed since in the first year of study a minimum percentage of intersections were in the lowest states of deterioration, the majority in regular condition and a higher percentage in good condition with respect to the assessment results of 2023. Therefore, lack of maintenance and lack of adaptation to mobility needs are the main causes of degradation.

Author Contributions: Conceptualization, D.E. and J.Z.; methodology, J.Z.; software, J.G. and K.D. and M.V.; validation, D.E.; formal analysis, J.G. and K.D. and M.V.; investigation, J.G. and K.D. and M.V.; data curation, J.G. and K.D. and M.V.; writing - original draft preparation, J.G. and K.D. and M.V.; writing - review and editing, J.G. and K.D. and M.V. and D.E. and J.Z.; visualization, J.G. and K.D. and M.V.; supervision, D.E. and J.Z.; project administration, D.E. and J.Z. . All authors have read and agreed to the published version of the manuscript.

REFERENCES

Alerta, T. (2021). *No paran los robos de semáforos en Ibagué, sin luz quedó el de la calle 25 con carrera Quinta. [The theft of traffic lights in Ibague does not stop, the one on 25th Street and 5th Avenue was left without lights].* Alerta Tolima. Ibague (in Spanish).

Belge, Z.S., & Ercan, M.A. (2022). Mobility and the Role of Pedestrian in the Making of Public Space: The Case Study of Mersin. *Elsevier,* 60, 386-393. https://doi.org/10.1016/j.trpro.2021.12.050

Betancur, B.R. (2018). *Aproximación a modelos de seguridad vial en intersecciones semaforizadas de Medellín. [Approximation to road safety models at traffic signalized intersections in Medellín],* Master's Dissertation, National University of Colombia, Medellin, Colombia.

Cuellar, J. (2022). *Mercado automotor en el Tolima aumentó un 35,44% durante 202.1 [Automotive market in Tolima increased 35.44% in 2021].* El Nuevo Dia Newspaper. Ibague (in Spanish).

Doi, K., Sunagawa, T., Inoi, H., & Yoh, K. (2016). Transitioning to safer streets through an integrated and inclusive design. *IATSS,* 39, 87-94. http://dx.doi.org/10.1016/j.iatssr.2016.03.001

El Nuevo, D. (2022). *Semáforos de Ibagué, sin solución a corto plazo. [Traffic lights in Ibagué, no solution in the short term].* El Nuevo Dia Newspaper. Ibague (in Spanish).

El Olfato. (2020). *Aparatoso accidente de tránsito en el centro de Ibagué por fallas en los semáforos. [Traffic accident in downtown Ibague due to traffic light problems].* El Olfato, Ibague (in Spanish). https://www.elolfato.com/

Equipo Digital. (2019). *Esto sí es el futuro! Así funcionan los semáforos más "inteligentes" del mundo. [This is the future! This is how the "smartest" traffic lights in the world work].* Canal Uno, Bogota (in Spanish).

Fiolić, M., Babić, D., Babić, D., & Tomasović, S. (2023). Effect of road markings and road signs quality on driving behaviour, driver's gaze patterns and driver's cognitive load at night-time. *Elsevier,* 99, 306-318. https://doi.org/10.3390/safety6020024.

Francel, A. (2017). *La superposición de cartografía histórica como método de análisis morfológico y toma de decisiones urbanísticas. [The superimposition of historical cartography as a method of morphological analysis and urban planning decision making].* Urbe Revista Brasileira de Gestão Urbana, 9(2), 293–313 (in Spanish).

Garcia, E., Vidaña, J., & Rodriguez, A. (2015). *Análisis y Evaluación de Intersecciones Urbanas. [Analysis and assessment of urban intersections].* Culcyt//Vialidad (in Spanish).

Gonzalez, P., & Lopez, D. (2018). *Desarrollo de inventario de intersecciones semaforizadas de la ciudad de Ibagué. [Development of an inventory of traffic signalized intersections in the city of Ibague],* Undergraduate Dissertation, University of Ibague, Ibague, Colombia.

INVIAS. (2023). Manual de señalización vial [Road signage manual]. Ministry of transportation, Colombia.

Lojano, J.P.G. (2013). *Propuesta para la implementación de un modelo semafórico adaptativo a sistemas integrados de transporte. [Proposal for the implementation of an adaptive traffic light model for integrated transportation systems],* Master's Dissertation, Pontifical Catholic University of Ecuador, Quito, Ecuador.

O'Flaherty, C.A. (2018). *Transport Planning and Traffic Engineering*, Elsevier, The Netherlands.

Reyes, A., Bulla, B., & Quijano, A. (2021). *Informe de calidad de vida Ibagué 2021 [Ibague 2021 quality of life report].* DANE (in Spanish).

Secretariat of mobility. (2022). *Entérese de las causas de algunos daños en la red semafórica en Ibagué. [Find out the causes of some damages in the traffic light network of Ibague],* Ibague Mayor's office, Ibague, Colombia.

Secretariat of mobility. (2019). *Inició etapa precontractual para modernizar red semafórica de Ibagué. [Pre-contractual stage for the modernization of Ibague's traffic light network has begun],* Ibague Mayor's office, Ibague, Colombia.

Shaaban, K. (2019). Assessing Sidewalk and Corridor Walkability in Developing Countries. *MDPI,* 11, 3865. https://doi.org/10.3390/su11143865

Vega, F., & Guevara, A. (2012). *Estudio de las principales intersecciones semaforizadas: En distrito uno y cinco. [Study of the main traffic signalized intersections: In districts one and five],* Undergraduate Dissertation, National University of Engineering, Managua, Nicaragua.

Yang, D., Ozbay, K., Xie, K., Yang, H., & Zuo, F. (2021). A functional approach for characterizing safety risk of signalized intersections at the movement level: An exploratory análisis. *Elsevier,* 163, 10-12. https://doi.org/10.1016/j.aap.2021.106446

SUSTAINABILITY ASSESSMENT OF HIGHER EDUCATION INSTITUTIONS: FACULTY MEMBERS PERSPECTIVE IN SAUDI UNIVERSITIES

Rommel AlAli[*]
The National Research Center for Giftedness and Creativity, King Faisal University, Al-Ahsa, Saudi Arabia, e-mail: ralali@kfu.edu.sa

Yusra Zaki ABOUD
The National Centre of Giftedness and Creativity at King Faisal University, Al-Ahsa, Saudi Arabia, e-mail: yozaki@kfu.edu.sa

Abstract: Sustainability in higher education involves the integration of sustainable principles, practices, and values into the fundamental functions of educational institutions, addressing environmental, social, and economic dimensions. This study aims to evaluate sustainability practices in Saudi higher education institutions, focusing on faculty members' perceptions. The primary objective is to assess the extent of sustainability implementation across academic, research, social, and environmental dimensions in Saudi universities. By leveraging faculty members' insights, the study seeks to identify areas of strength and weakness in current sustainability practices. The research adopts a descriptive and analytical approach, utilizing an electronic questionnaire as the primary data collection tool. A random sample of 275 faculty members from diverse Saudi universities actively participates in the study. Descriptive and inferential statistical methods are applied for data analysis and hypothesis testing. The findings indicate a limited implementation of sustainability practices within Saudi universities across various dimensions, as perceived by faculty members. Weaknesses are identified in academic, research, social, and environmental spheres. The study recommends that universities prioritize sustainability by establishing dedicated committees and drawing inspiration from successful institutions in the field. A clear strategic vision for sustainability is crucial for advancing these practices within higher education institutions in Saudi Arabia.

Key words: Sustainability of universities, Academic sustainability, Research sustainability, Social sustainability, Environmental sustainability

* * * * * *

INTRODUCTION

The increasing global interest in sustainability within higher education institutions reflects a growing recognition of the importance of addressing environmental, social, and economic challenges. This interest is evident through the organization of numerous international conferences and initiatives that emphasize the need to integrate sustainability into the fabric of higher education. These gatherings provide platforms for experts, researchers, and practitioners to share knowledge, exchange ideas, and recommend strategies for embedding sustainability within universities.

The recommendations put forth by these conferences and initiatives highlight the significance of adopting a holistic approach to sustainability or focusing on specific pillars such as environmental stewardship, social equity, and economic viability. This comprehensive and integrated perspective acknowledges that sustainability requires a multidimensional effort that transcends disciplinary boundaries and requires collaboration from various stakeholders within higher education institutions (Griebeler et al., 2022; Grano and Prieto, 2020).

Universities, as key players in the field of sustainability, have a pivotal role to play in shaping a sustainable future. They have the capacity to contribute to societal progress and development by fostering innovation in sustainable practices and solutions. By aligning their efforts with the needs and aspirations of contemporary society, universities can actively participate in spreading the culture of sustainability. This can be achieved by prioritizing sustainability as a core value, integrating it into institutional policies and strategies, and making it a central topic for scientific research and education. To further promote sustainability and effect long-term social changes, the establishment of dedicated centers for peace and education is crucial. These centers serve as hubs for interdisciplinary collaboration, knowledge dissemination, and capacity building in sustainability. They facilitate cross-sector partnerships, engage with local communities, and develop initiatives that address pressing sustainability challenges. By enhancing awareness, education, and research in sustainability, these centers contribute to transforming societies and fostering a more sustainable future.

Despite the progress made in recent years, the higher education sector still faces challenges in fully embracing sustainability. The relative novelty of sustainability within the university context and the complexity of implementing comprehensive and emerging sustainability models contribute to this lag. However, the increasing number of sustainable universities worldwide signifies a growing momentum and commitment toward sustainability in higher education (Leal Filho et al., 2023; Leal Filho et al., 2021; Bauer et al., 2021). Universities are playing a crucial role in driving sustainable

---

[*] Corresponding author

development by integrating sustainability into their operations, education, research, and community engagement. Sustainable universities prioritize not only reducing negative environmental impacts but also supporting sustainable development locally and globally. They demonstrate key features such as implementing entrepreneurial practices, following regulations and guidelines, and collaborating with local communities to create positive change. Each university may focus on specific aspects of sustainability that align with their unique context, creating a diverse and impactful role for sustainable universities in promoting sustainability across different fields (Abunasser et al., 2022).

The United Nations has recently launched seventeen sustainable development goals that encompass a range of societal challenges. Education has been identified as a crucial component in achieving these goals, with a focus on providing quality, inclusive education and lifelong learning opportunities. Sustainable development education has gained significance as it has the potential to address pressing issues such as environmental degradation, social inequality, and economic instability. By integrating sustainability principles into curricula and educational practices across all levels, education can equip learners with the knowledge, skills, and values needed to tackle these challenges. It promotes an understanding of the interconnectedness of social, economic, and environmental systems, empowering individuals to contribute to sustainable development. Additionally, sustainable development education fosters critical thinking, creativity, and problem-solving abilities by engaging learners in real-world sustainability issues and encouraging innovative solutions. This approach aims to cultivate responsible and active global citizens who can make meaningful contributions towards creating a more sustainable future. Ultimately, the integration of sustainable development in education is vital in preparing learners with the necessary tools to address complex global challenges and shape a sustainable world (AlAli et al., 2023).

STUDY PROBLEM

Certainly! In this study, the aim is to delve deeper into the current state of sustainability practices within Saudi higher education institutions. The focus is to go beyond the traditional emphasis on strengthening sustainability in the fundamental functions of universities, such as education, academic achievement, and community service. Instead, the study seeks to prioritize environmental stewardship as an integral component of sustainability efforts. By examining the key pillars of higher education sustainability, namely academic sustainability, physical sustainability, social sustainability, and environmental sustainability, the research aims to provide a comprehensive assessment of sustainability practices within these institutions. Academic sustainability involves evaluating how universities integrate sustainability principles into their educational programs and curricula. It encompasses teaching sustainability-related subjects, promoting research on sustainability issues, and fostering a culture of sustainability among students and faculty. Physical sustainability pertains to the eco-friendly practices and resource management within university campuses. This includes energy conservation, waste management, water efficiency, and the promotion of sustainable transportation options. Social sustainability focuses on the well-being and inclusivity of the university community, including aspects such as diversity, equity, and social responsibility initiatives. Lastly, environmental sustainability examines how higher education institutions contribute to the preservation and protection of the natural environment. This includes efforts in environmental conservation, reducing carbon emissions, promoting biodiversity, and addressing climate change.

Based on the information provided above, the main research question that can be formulated is as follows: To what extent is sustainability applied in higher education institutions from the perspective of faculty members in Saudi universities?

To further clarify the scope of the study, the following sub-questions are proposed:
1. To what extent is academic sustainability being implemented in Saudi universities?
2. To what extent is research sustainability implemented in Saudi universities?
3. To what extent is social sustainability being practiced in Saudi universities?
4. To what extent is environmental sustainability being implemented in Saudi universities?

STUDY HYPOTHESES

In order to address the research questions, the following hypotheses have been formulated: Main hypothesis:

H1: Sustainability is applied in higher education institutions from the point of view of faculty members in Saudi universities, with a significance level of 0.05.

Sub-hypotheses:

H2: Academic sustainability is applied in Saudi universities, with a significance level of 0.05.

H3: Research sustainability is applied in Saudi universities, with a significance level of 0.05.

H4: Social sustainability is applied in Saudi universities, with a significance level of 0.05.

H5: Environmental sustainability is applied in Saudi universities, with a significance level of 0.05.

The significance of the study

The present study carries great importance due to its scientific subject matter and its practical application within the context of evolving circumstances and changes observed in higher education institutions. The following points highlight the significance of this study:

• Establishing a connection between the core functions of universities and sustainability by examining the key pillars of higher education sustainability, namely academic sustainability, research sustainability, social sustainability, and environmental sustainability.

• Leveraging the concepts of academic, research, social, and environmental sustainability in universities to enhance sustainable awareness, foster the dissemination of sustainability culture, and promote its application both within and beyond the university campus.

• Making a scientific contribution by enriching applied studies on sustainability issues in universities. This study can serve as a valuable resource for researchers to further explore areas that were not covered in the previous research.

• Generating added value through the study's findings, insights, and recommendations, which are expected to be implemented on the ground, leading to the establishment of sustainable practices in Saudi universities. These outcomes have the potential to drive positive change and foster sustainability in the higher education sector.

Objectives of the study

The study encompasses several primary objectives, each contributing to a comprehensive exploration of sustainability in higher education:

1. Conceptualization and Significance: Define the concept of university sustainability. Explore the importance, underlying motives, and key stages of implementing sustainability in higher education institutions.

2. Current State Assessment: Evaluate the existing state of sustainability application in Saudi higher education institutions. Gather insights from faculty members regarding their perceptions of sustainability practices within universities.

3. Level of Sustainability Application: Determine the extent of sustainability application in higher education institutions based on faculty perspectives in Saudi universities.

4. Strategic Proposals: Propose a diverse set of strategic approaches aimed at aiding higher education institutions, particularly universities, in the effective implementation of sustainability practices.

These objectives collectively seek to advance our understanding of sustainability in higher education, assess its current status, and offer strategic recommendations tailored to support the successful integration of sustainability principles across various higher education institutions, with a specific emphasis on universities.

Previous studies

The study conducted by Beringer and Adombent (2008) meticulously examined the status of sustainable research and development projects within universities, focusing specifically on projects at the University of Luneburg in Germany and the University of Prince Edward Island in Canada. Through a descriptive methodology, the researchers identified that sustainable projects aim for institutional transformation through strategic and methodological approaches. They recognized universities as dynamic systems capable of both education and change, emphasizing the crucial integration of sustainability principles into core operations. Wooltorton et al.'s study (2011) assessed the outcomes of the second phase of the "Transformation to Sustainability: ECU Southwestern" project at Edith Cowan University. Employing a descriptive methodology, the study highlighted inadequate work-life balance, mainly due to limited time availability, as a significant obstacle to the success of social sustainability transformation projects. These findings underscore a tangible challenge requiring attention to facilitate the progress of sustainability initiatives within organizations.

AlAli et al.'s research in 2023 delved into the effectiveness of STEM-based teaching in achieving sustainable development goals among educators in Saudi Arabia. The study revealed the potential of STEM pedagogy to realize sustainable development goals in learning, with goals systematically ranked based on perceived effectiveness. Notably, the study underscored the highest average score for the goal of inclusive and equitable quality education. Leal Filho et al. (2020) explored sustainability leadership in Higher Education Institutions (HEIs), aiming to understand key characteristics and challenges. Through purposive sampling, participants in top management positions provided information-rich perspectives, emphasizing inclusivity in leadership styles. Urbanski and Filho's study (2014) comprehensively investigated the application of sustainability in American and Canadian universities, employing a descriptive approach. Findings highlighted varying commitment levels among universities, with a growing interest in the Sustainability Tracking, Evaluation, and Rating System (STARS). Sebire and Sabeles-Flores (2023) stressed the importance of incorporating education for sustainable development in higher education practices. They advocated for strategies to seamlessly integrate sustainable development across disciplines, positioning higher education institutions as leaders in sustainability.

Al-Khawaldeh's study (2016) explored obstacles to sustainability in higher education, focusing on faculty perceptions in Jordanian universities. The findings uncovered substantial obstacles, emphasizing challenges that demand attention for long-term sustainability. Bosaha and Bahous (2019) emphasized the role of universities in sustainable development, highlighting shortcomings in university center performance. Importantly, demographic variables did not significantly influence perceptions of sustainable development. Badrakhan et al.'s study (2022) assessed private universities' role in sustainability, revealing varied perceptions among teaching staff across academic, research, political, and economic dimensions. The study emphasized the need for improvements and further research. Al-Kurd's study (2018) in Palestine aimed to identify the anticipated role of universities in promoting sustainable development, emphasizing priorities such as intellectual capital, international collaborations, technical education, creativity, and innovation. The shift in focus from employment to job creation aligned with sustainable development objectives.

The collective studies delve into sustainability initiatives in higher education, presenting a comprehensive overview. Beringer and Adombent's (2008) scrutiny of German and Canadian universities underscores the pursuit of institutional transformation through strategic sustainability approaches. Wooltorton et al.'s (2011) study at Edith Cowan University highlights the challenge of work-life balance hindering social sustainability projects. AlAli et al. (2023) research showcases the potential of STEM-based teaching, particularly in achieving inclusive and equitable quality education. Leal Filho et al. (2020) focus on sustainability leadership in HEIs, emphasizing inclusive leadership styles. Urbanski and Filho's (2015) comprehensive investigation reveals varying commitment levels in American and Canadian universities. Sebire and Sabeles-Flores (2023) stress the importance of integrating sustainable development into higher education practices. Al-Khawalda's (2016) study in Jordan identifies substantial obstacles to sustainability. Bosaha and Bahous (2019) underscore

the role of universities in sustainable development, with minimal influence from demographic variables. Badrakhan et al. (2022) assessment of private universities highlights varied perceptions, emphasizing the need for improvements. Al-Kurd's (2018) study in Palestine identifies anticipated roles, emphasizing intellectual capital and job creation in alignment with sustainable development objectives. Reviewing existing studies on sustainability in higher education institutions, the literature generally focused on identifying barriers and challenges. In contrast, the present study distinguishes itself by concentrating specifically on Saudi universities. While building upon existing knowledge, this research contributes by examining the nuanced application of sustainability within the unique context of Saudi higher education institutions. This targeted approach aims to unravel distinctive challenges, opportunities, and practices, providing insights that could inform tailored strategies for promoting sustainability in the Saudi higher education landscape.

The Concept of University Sustainability and Its Significance:
The significance of sustainability in education, particularly in higher education institutions, has witnessed a notable increase. Over the years, there has been a growing awareness of the importance of sustainability in education, particularly in higher education institutions. This recognition stems from the understanding that universities play a crucial role in shaping future leaders, professionals, and citizens who can contribute to sustainable development. Universities are seen as key drivers of change and innovation in addressing global challenges such as climate change, resource depletion, and social inequality. United Nations' Focus on Sustainability in Education: The United Nations has played a significant role in highlighting the importance of sustainability in education. During the years 1975 to 1995, the United Nations International Environmental Education Program acknowledged the concept of sustainability in higher education.

This recognition marked a significant milestone in promoting sustainability as a fundamental aspect of education. Decade of Education for Sustainable Development: The United Nations declared the years 2005 to 2014 as the Decade of Education for Sustainable Development. This initiative aimed to integrate the principles, values, and practices of sustainable development into all aspects of education and learning. The goal was to equip learners with the knowledge, skills, and attitudes necessary to address sustainability challenges and contribute to a more sustainable future.

Holistic Approach to Education: The concept of sustainability in higher education goes beyond environmental concerns and encompasses social, economic, and cultural dimensions. It emphasizes a holistic approach to education that integrates sustainability principles, values, and practices into curriculum design, teaching methodologies, research, campus operations, and community engagement. This approach seeks to provide students with a comprehensive understanding of sustainability issues and empower them to become agents of change in their respective fields. Future-Oriented Vision: Embracing sustainability in higher education institutions reflects a forward-thinking vision. It recognizes that sustainable development is not only essential for the present but also for future generations. By integrating sustainability into education, universities contribute to creating a more sustainable society by fostering knowledge, critical thinking, and innovative solutions that address complex sustainability challenges.

The Concept of University Sustainability
Education stands as one of the most influential and powerful avenues for promoting and advancing sustainability. The concept of university sustainability recognizes that education has the power to bring about transformative change. It goes beyond simply imparting knowledge and skills and aims to cultivate a mindset and values that prioritize sustainability. Sustainable education seeks to create a shift in thinking and behavior, empowering individuals to make informed decisions that contribute to the well-being of both society and the environment. University sustainability involves an interdisciplinary approach that integrates various fields of study, such as environmental science, social sciences, economics, and humanities.

It recognizes that sustainability is a complex and multifaceted issue that requires collaboration and diverse perspectives to address effectively. Through interdisciplinary education and research, universities can foster a more comprehensive understanding of sustainability challenges and develop innovative solutions. University sustainability emphasizes the importance of balancing human and economic prosperity with the preservation of natural resources and environmental integrity. It recognizes that sustainable development is not solely about economic growth but also about ensuring the well-being of current and future generations. By incorporating sustainability principles into education, universities can equip students with the knowledge and skills to navigate the complexities of sustainable development and contribute to a more balanced and equitable society. The concept of university sustainability acknowledges the importance of preserving cultural traditions and diversity. It recognizes that culture plays a vital role in shaping sustainable practices and promoting a sense of identity and belonging. By integrating cultural dimensions into sustainability education, universities can foster an appreciation for diverse cultural perspectives and encourage sustainable practices that respect and preserve cultural heritage. University sustainability underscores the role of education in promoting environmental stewardship and social cohesion. It aims to empower individuals to become responsible stewards of the environment, promoting sustainable practices and mitigating environmental degradation. Moreover, sustainable education fosters social cohesion by addressing social inequalities and promoting inclusivity, diversity, and social justice (Ismail and Khidr, 2019).

Interest in sustainability and its transition is often observed to be more feasible in universities compared to other educational institutions, primarily due to two main factors (Al-Omari, 2018):

• Higher Degree of Autonomy and Flexibility: Universities typically enjoy a higher degree of freedoms and flexibility compared to other educational institutions. This autonomy allows them to implement sustainability initiatives and integrate sustainability principles into their operations, curriculum, and research more readily. The academic environment within universities often fosters innovation and experimentation, providing a conducive setting for the exploration and advancement of sustainability practices.

- External and Internal Pull Factors: Universities are subject to both external and internal pull factors that drive their interest in sustainability. External pull factors include the influence of government policies, civil society movements, professional organizations, and accreditation agencies. These stakeholders often advocate for sustainability and encourage universities to incorporate sustainable practices into their operations and educational programs. Internal pull factors arise from the motivation and commitment of university leaders, faculty, staff, and students who recognize the importance of sustainability and actively push for its integration. Their passion and dedication play a crucial role in driving sustainability initiatives within the university. A sustainable university can be defined as an institution of higher education that strives to minimize negative environmental, economic, and societal impacts by maximizing the efficient use of its resources and core functions of teaching, education, awareness, collaboration, and oversight. Its overarching purpose is to facilitate the transition of society towards sustainable lifestyles and models (Too and Bajracharya, 2015). Furthermore, it can be described as an educational institution that actively works towards integrating the principles of sustainability and their associated requirements into its mission and future vision. As a vital hub for academic knowledge, a sustainable university ensures that its graduates possess a well-rounded understanding of sustainability and are equipped to apply this knowledge in their respective fields (Ting and Others, 2012). Universities make continuous and multifaceted efforts to achieve sustainability in the present and future. These efforts go beyond mere preparation and awareness initiatives and encompass all aspects of their operations, including education, research, and community service. Additionally, universities strive to optimize resource utilization and minimize energy consumption within their campuses. By adhering to the fundamental principles of sustainability in university education, they aim to preserve the environment, protect natural resources, and prevent adverse impacts (Al-Omari, 2018).

Academic sustainability refers to the comprehensive endeavors and initiatives undertaken by universities and their affiliated entities, both within and beyond the confines of the university campus, to promote and pursue sustainability in all facets of academic life. These efforts encompass a wide range of activities, including education, training, awareness campaigns, and educational programs. The primary goal is to enhance sustainability practices and principles throughout the academic community, fostering a holistic approach that integrates sustainability into teaching, research, operations, and engagement with external stakeholders.

Research Sustainability: Research sustainability refers to the endeavors and activities conducted by universities and their affiliated entities, both within and beyond the university setting, to advance sustainability through research, innovation, inventions, and development. These efforts aim to enhance and pursue sustainable practices and solutions, addressing key sustainability challenges and fostering long-term sustainability outcomes.

Social Sustainability: Social sustainability encompasses the efforts and activities undertaken by universities and their affiliated entities, both within and beyond the university campus, that target social aspects and community service. The primary objective is to promote and seek sustainable behaviors and practices, fostering social well-being, equity, and inclusivity. These endeavors extend to activities that benefit society as a whole, regardless of their proximity to the University City.

Environmental Sustainability: Environmental sustainability refers to the ongoing efforts and activities conducted by universities and their affiliated entities, whether within or outside the university campus, to address various environmental aspects. The aim is to prevent the depletion or degradation of natural resources and to promote long-term environmental sustainability. These endeavors encompass practices that minimize negative environmental impacts, promote conservation, and foster the preservation of ecosystems for future generations. The importance of sustainability for universities stems from the recognition of their significant role in promoting sustainable education and development. Various international initiatives have underscored the significance of sustainability in higher education institutions.

One notable initiative is the **Talloires Declaration**, which was established in 1990 during a global conference organized by Jean Mayer, the President of Tufts University. The conference, held in Talloires, France, was facilitated by the University Leaders for a Sustainable Future (ULSF), an organization based in Washington, DC. The Talloires Declaration outlines a ten-point action plan aimed at integrating sustainability and environmental literacy into education, research, operations, outreach, and policies within universities. It represents the first official statement declaring the commitment of higher education institutions to become world leaders in the development, promotion, support, and maintenance of sustainability. To date, the Talloires Declaration has garnered signatures from more than 122 university leaders across over 50 countries (Association of University Leaders for a Sustainable Future, 1990). This initiative highlights the global recognition of the pivotal role that universities play in advancing sustainability and emphasizes the need for concerted efforts within the higher education sector to drive sustainable practices forward.

Kyoto Declaration on Sustainable Development in Higher Education: This declaration was adopted at the United Nations University in Kyoto, Japan, in 1993 during the "Universities' Commitment to the Environment and Sustainable Development" conference organized by the International Association of Universities (IAU). The declaration serves as a guiding framework for universities to take concrete steps in their pursuit of sustainable development. It emphasizes the importance of universities in conducting research and engaging with society based on the principles of sustainable development. The Kyoto Declaration calls for increased environmental awareness, the promotion of environmental ethics within universities and society, and encourages universities to review their operations to align with sustainable development principles (International Association of Universities, 1993).

The UNESCO World Conference on Education for Sustainable Development took place in 1998. During this conference, the tasks and functions of higher education were defined, with a key emphasis on their contribution to

sustainable development and the creation of a sustainable society. UNESCO called for the promotion of scientific excellence, prosperity, and the advancement of new knowledge in the context of education for sustainable development. To achieve the goals of education for sustainable development, UNESCO encouraged the participation of networks of higher education institutions and organizations during the Decade of Education for Sustainable Development. The conference emphasized the mobilization of universities' core functions, namely education, research, and service to society, to enhance global and international knowledge about education for sustainable development (UNESCO, 1998). The adoption of sustainability by universities is driven by compelling motives, as it has evolved from being a discretionary choice to an imperative requirement. To attain the vision of a sustainable university, a series of essential steps are followed to ensure the institution's ongoing and future capacity to achieve sustainability while maintaining continuity. The application of sustainability involves a deliberate and systematic approach that aligns with the urgent need for universities to address environmental, social, and economic challenges and secure a sustainable future. Motivations for universities to embrace sustainability are multifaceted and encompass various key factors. These motives contribute to the commitment of higher education institutions in incorporating sustainability principles within their campuses. Some of these motivations include: (Ismail and Khidr, 2019).

1. Organizational Motives: Universities, as significant consumers of resources, recognize their role in minimizing negative impacts on the local and global environment. Embracing sustainability aligns with their responsibility to reduce environmental footprints and contribute positively to society.

2. Cognitive Reasons: Universities serve as beacons of knowledge and scientific advancements. Since sustainability is an evolving and complex issue, universities play a crucial role in generating new knowledge and solutions to address emerging sustainability challenges.

3. Social Responsibility Motives: As integral parts of society, universities have a broader responsibility to foster sustainable practices and produce a competent generation that embraces contemporary sustainability trends. By prioritizing sustainability in their educational programs, universities contribute to social well-being and the development of future leaders committed to sustainable practices.

4. Legal Motives: Countries worldwide are subject to laws and regulations that support sustainable development. Universities must comply with these legal requirements as sustainability has become a cultural imperative in society, necessitating their adherence to relevant regulations.

5. Motives for Optimal Effectiveness: Integrating sustainability requirements into university curricula ensures that graduates are equipped to meet the demands of the labor market. By forging partnerships with the business sector and society, universities foster community engagement and resource management. Graduates, armed with the knowledge acquired at universities, are well-positioned to handle available resources efficiently and contribute to sustainable solutions.

6. Motivations for community support arise when a university's mission explicitly focuses on promoting sustainable development. When the university establishes a clear and robust commitment to sustainability, it generates broad support from external stakeholders, including government entities, businesses, tourism organizations, and others. This support stems from the recognition of the university's dedication to advancing sustainability and its potential to contribute positively to the community and its various sectors. By aligning with sustainability goals, universities can foster meaningful partnerships and collaborations with external parties, collectively working towards sustainable development objectives.

The application of sustainability in universities involves distinct stages aimed at leveraging their role in supporting sustainable practices. Universities fulfill this role through the provision of knowledge, technical expertise, training, and simulations that contribute to guiding society towards a sustainable future. To achieve these objectives, universities integrate sustainability issues into their curricula, following a series of stages outlined as follows (Lozano et al., 2013):

1. Incorporating sustainable development into all curricula and systems: Universities prioritize the integration of sustainable development principles across all academic disciplines and educational programs. By infusing sustainability into their curricula, universities ensure that students are equipped with the knowledge and skills necessary to address sustainability challenges.

2. Encouraging research in the field of sustainable development: Universities actively promote research activities focused on sustainable development. By fostering a research culture that emphasizes sustainability, universities contribute to the generation of new knowledge, innovative solutions, and evidence-based practices that advance sustainability goals.

3. Guiding campus operations for sustainability: Universities adopt sustainable practices within their own campus operations. This includes implementing environmentally friendly measures, resource conservation strategies, waste management systems, and adopting sustainable energy sources. By leading by example, universities demonstrate their commitment to sustainable practices and inspire broader societal change.

4. Collaboration with other universities in the field of sustainability: Universities actively collaborate with other academic institutions to share best practices, exchange knowledge, and develop joint initiatives focused on sustainability. Through partnerships and networks, universities strengthen their collective impact and promote collaboration towards achieving sustainability goals.

5. Collaboration with policy makers, governments, NGOs, and businesses: Universities engage in partnerships and collaborations with various stakeholders, including policy makers, governments, non-governmental organizations (NGOs), and businesses. By working together, these entities leverage their collective expertise, resources, and influence to drive sustainable development at local, regional, and global levels.

For universities to effectively implement sustainability and establish a sustainable university model, several key steps need to be taken. These steps involve setting a sustainability vision, forming a sustainability committee, and defining policies and goals aligned with the university's mission. Additionally, a set of sustainability principles should be published, addressing the following main areas:

1. Education: The university should incorporate sustainability topics into its educational programs, equipping students with knowledge and fostering positive attitudes toward environmental issues. This ensures that students are prepared to tackle sustainability challenges and contribute to sustainable practices in their future endeavors.

2. Scientific research: The university should emphasize and prioritize scientific research that addresses sustainability issues. This includes developing innovative solutions and advancing knowledge in areas relevant to sustainability. By conducting research that focuses on sustainability, universities contribute to the development of practical solutions and evidence-based approaches to address environmental and social challenges.

3. Community service: Universities have a responsibility to increase awareness of the importance of sustainability within the broader community. This can be achieved through various outreach initiatives, educational campaigns, and collaborations with community organizations. By promoting sustainability principles and goals, universities actively engage with the community and encourage sustainable practices among stakeholders.

4. Campus operations: Universities should lead by example and strive to reduce their environmental impacts through sustainable practices in their own operations. This involves implementing strategies to minimize energy and water consumption, reduce waste generation, and promote sustainable transportation options. By practicing sustainable principles on campus, universities demonstrate their commitment to environmental stewardship and inspire others to adopt similar practices. To attain sustainability in its holistic sense, it is crucial for universities to pursue sustainability across all diverse domains in a synchronized and consistent manner. This underscores the interconnected nature of sustainability. By unifying and integrating administrative processes, scientific research, education, teaching, and community engagement, universities can bolster the transformative journey towards sustainability. This approach not only fosters excellence and leadership for the institution but also ensures that sustainability is pursued collectively rather than in isolated fragments. By embracing this comprehensive approach, universities can embrace sustainability as an overarching goal, fostering a culture of sustainability and striving for excellence in each individual area, ultimately contributing to a more sustainable future (Beringer and Adombent, 2008).

METHODOLOGY

The study utilized a descriptive analytical approach. It is a research method that aims to examine and describe the current state or characteristics of a particular phenomenon or system. In this study, the approach was chosen to assess the reality of sustainability application within Saudi higher education institutions. By employing this approach, the researchers sought to provide a comprehensive and accurate description of the current practices, policies, and challenges related to sustainability in these institutions. To build the theoretical framework for the study, the researchers relied on scientific references and sources. They conducted an extensive review of existing literature on sustainability in higher education, seeking relevant theories, models, and frameworks that could guide their investigation. This process involved synthesizing and integrating key concepts

Figure 1. flow chart of the sequential steps involved in the study

and theories from multiple sources to form the foundation for their analysis and evaluation. For the practical aspect of the study, the researchers designed an electronic questionnaire to collect data from faculty members. The questionnaire was carefully constructed to address the specific research objectives and capture relevant information related to sustainability application. It likely included questions about institutional policies, curriculum integration, research initiatives, student involvement, and other aspects of sustainability practices within higher education institutions. During the first semester of the 2022/2023 academic year, the electronic questionnaire was distributed to faculty members across various departments. This approach allowed for broad participation and ensured representation from different areas of the institution. The researchers likely employed appropriate strategies to encourage high response rates, such as reminders, incentives, and assurances of confidentiality. The collected data from the questionnaire would serve as the empirical basis for analyzing and evaluating the current application of sustainability in Saudi higher education institutions.

Study population and sample

The study population comprised all faculty members and lecturers employed at Saudi universities during the first semester of the academic year 2022/2023. These universities were geographically distributed across five regions, namely the north, south, east, west, and middle regions of the Kingdom of Saudi Arabia. The sample for this study was randomly selected from faculty members across all colleges within Saudi universities, resulting in a sample size of 270 faculty members and lecturers.

Procedures

After formulating the initial research framework, a comprehensive literature review was conducted to gather relevant scientific literature on the study topic. Subsequently, the research instrument was developed and subjected to rigorous validation and expert assessment. To ensure the ethical integrity, validity, and reliability of the instrument, necessary approvals were obtained from the University's Committee on the Ethics of Scientific Research, along with necessary permissions for application. Data collection commenced with a deliberate selection of five universities from the study
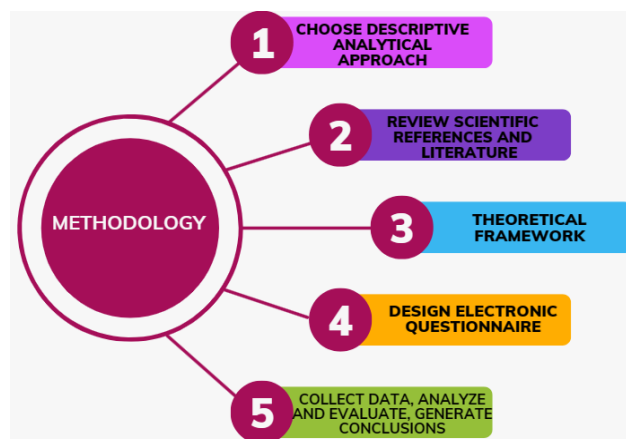
population, aiming to capture diverse perspectives from different geographical regions. Educational materials and a link to the instrument were distributed through WhatsApp, utilizing a Google form to collect responses in an Excel file format. Colleagues from the selected universities actively assisted in the distribution process, while the WhatsApp message included clear instructions and reassurances for the participating faculty members. Additionally, the instrument included confirmation instructions. In cases where universities exhibited a low response rate, the instrument was reapplied, and researchers personally engaged with faculty members to encourage their participation, aided by the cooperation of their colleagues from those universities. The research team was committed to ensuring a representative study sample.

Research Instrument Development

In line with the comprehensive literature review and examination of previous studies, an instrument was meticulously developed to serve the research objectives. The instrument's dimensions were determined following a clear definition of the research objectives, and subsequently, the instrument items were formulated. To ensure the instrument's robustness, certain criteria and items from relevant studies within the theoretical framework were incorporated into the instrument development process. The instrument comprised four distinct dimensions, namely, Application of Academic Sustainability (AAS) (8 items), Application of Research Sustainability (ARS) (8 items), Application of Social Sustainability (ASS) (8 items), and Application of Environmental Sustainability (AES) (8 items). Consequently, the final version of the instrument consisted of a total of 32 items, systematically designed to capture the multifaceted aspects of the research domain. The instrument's validity and reliability were rigorously examined and established through a series of procedures. Initially, ten experts from Saudi Universities evaluated the instrument's items and provided their expert opinions. Based on their valuable feedback, the researchers made necessary modifications and reformulations to certain items, while also omitting others. To further ensure the instrument's validity and reliability, a pilot test involving 25 faculty members was conducted, and their responses and feedback were utilized to refine the final version of the instrument. Data analysis was performed using SPSS version 26. In order to assess the validity of the instrument, the discriminant coefficient (corrected item-total correlation) was calculated using SPSS. Items with a discriminant coefficient below 0.20 were excluded from further analysis. Sample responses were then utilized to calculate matrix correlation coefficients between the instrument's dimensions. The total score, as presented in Table 1, illustrates the matrix correlation coefficients between the means of the dimensions and the mean of the total score (overall average). The observed correlation coefficients, ranging from 0.88 to 0.93, indicate a relatively high level of correlation. This suggests that all dimensions effectively contribute to the measurement of a single concept, highlighting the interrelatedness of sub-scores with the total score.

Table 1. Correlation matrix of the scale ** (Correlation is significant at the 0.01 level (2-tailed)

		AvAAS	AvARS	AvASS	AvAES
AvAAS	Pearson Correlation	1	.905[**]	.900[**]	.875[**]
	Sig. (2-tailed)		.000	.003	.000
AvARS	Pearson Correlation	.905[**]	1	.893	.869[**]
	Sig. (2-tailed)	.000		.016	.000
AvASS	Pearson Correlation	.900[**]	.893	1	.967
	Sig. (2-tailed)	.003	.116		.217
AvAES	Pearson Correlation	.635[**]	.869[**]	. 967	1
	Sig. (2-tailed)	.000	.000	.013	
AvTOT	Pearson Correlation	.890[**]	.882[**]	.910[**]	.928[**]
	Sig. (2-tailed)	.000	.000	.000	.000

To ensure the construct validity of the instrument, Rasch model analysis was employed as a robust tool for evaluating measurement properties. This analytical approach is known for its objectivity in psychological and educational measurement. The collected data underwent analysis utilizing the Rasch Model to assess validity and reliability. The analysis encompassed several aspects. Item polarity analysis was conducted using point-measure correlation (PTMEA) to assess item consistency, with acceptable values falling within the range of 0.2 to 1. Additionally, the Infit and outfit mean square (MNSQ) values were examined, with values between 0.4 and 1.5 considered appropriate. The standardized fit statistic (Zstd) values were also evaluated, with values ideally falling within the range of -2 to 2. In terms of dimensionality, a minimum criterion of 40% was set to ensure that the dimensions adequately captured the variation in the data. The unexplained variance in the first contrast should be below 15%, indicating a coherent dimension structure. Furthermore, item and persons separation were assessed. Acceptable item reliability was established by setting a criterion of item reliability exceeding 0.50. Adequate discrimination between individuals was indicated by a minimum separation value of 2, ensuring effective differentiation (AlAli and Al-Barakat, 2022; AlAli and Saleh, 2022). By employing the Rasch model analysis, the study aimed to thoroughly evaluate the instrument's construct validity, ensuring the reliability and accuracy of the measurement process.

The results of the dimensionality data analysis, consistent with the calibration measurement analysis, are presented in Table 2 below. The findings demonstrate that the measures effectively account for a raw variance exceeding 40%, indicating a satisfactory representation of variation within the data. Furthermore, the unexplained variance in the first contrast falls below the threshold of 15%. These outcomes affirm that the dimensionality data align appropriately with the Rasch model, validating its suitability for the study. The instrument's validity was evaluated through the examination of infit mean square (MNSQ) values, indicating a satisfactory level of validity. The MNSQ values, which assess the fit of the instrument, were found to fall within the recommended range of 0.4 to 1.5, indicating a good fit.

Table 2. Item Dimensionality of the Applying sustainability in higher education instrument

	Empirical		Modeled
Total raw variance in observations	23.5	100.0%	100.0%
Raw variance explained by measures	9.6	44.3%	34.7%
Raw variance explained by persons	3.5	9.6%	14.3%
Raw Variance explained by items	6.0	22.1%	22.2%
Raw unexplained variance (total)	16.0	61.8% 100.0%	63.7%
Unexplained variance in 1st contrast	2.3	7.9% 11.8%	
Unexplained variance in 2nd contrast	1.7	7.4% 10.9%	
Unexplained variance in 3rd contrast	1.6	6.1% 9.9%	
Unexplained variance in 4th contrast	1.4	4.8% 6.8%	
Unexplained variance in 5th contrast	1.2	4.4% 6.8%	

This finding is consistent with the results of the item polarity analysis, as demonstrated by the point-measure correlation (PTMEA) values, which should ideally range from 0.2 to 1. Additionally, the instrument displayed an appropriate standardized fit statistic (Zstd) value, falling within the range of -2 to 2, as presented in Table 3 below. These outcomes collectively support the instrument's validity, indicating its suitability for measuring the desired constructs.

Table 3. Item Fit Analysis for applying sustainability in higher education instrument

items	Measure	Model S.E	Infit		outfit		Pt-measure	
			MNSQ	ZSTD	MNSQ	ZSTD	CORR	EXP
ASS4	0.06	0.03	1.54	1.9	1.95	1.9	0.63	0.62
ARS5	0.33	0.06	1.46	1.7	1.69	1.9	0.61	0.58
ARS4	0.11	0.06	1.44	1.8	1.41	1.8	0.59	0.64
AAS3	0.57	0.05	1.15	0.8	1.16	1.6	0.58	0.57
AES3	0.65	0.05	0.96	1.4	0.97	1.4	0.64	0.58
AAS1	0.27	0.05	1.11	1.6	0.98	1.2	0.67	0.62
ARS6	0.18	0.04	0.94	1.5	0.93	1.5	0.68	0.61
AES1	0.17	0.05	0.92	1.5	0.89	1.4	0.68	0.62
AES2	0.15	0.05	0.92	1.4	0.88	1.2	0.71	0.64
ARS2	0.03	0.04	0.93	1.3	0.91	1.2	0.71	0.65
ASS7	0.17	0.07	0.88	1.2	0.89	1.6	0.73	0.64
ARS7	0.13	0.04	0.81	1.1	0.80	1.2	0.73	0.63
AAS5	0.59	0.05	0.84	-1.3	0.78	1.1	0.74	0.63
AAS4	0.14	0.05	0.94	-0.7	0.92	-1.1	0.75	0.69
AES7	0.29	0.04	0.79	-1.2	0.76	-0.9	0.65	0.65
ARS3	0.18	0.05	0.79	-1.5	0.73	-1.3	0.76	0.63
ASS5	0.36	0.04	0.78	-1.4	0.77	-1.3	0.77	0.66
AES6	0.28	0.05	0.93	1.5	0.89	1.2	0.77	0.62
ASS3	0.27	0.04	0.95	1.5	0.88	1.7	0.78	0.64
ASS2	0.25	0.07	0.93	1.4	0.91	1.4	0.78	0.65
ASS1	0.13	0.04	0.89	1.3	0.89	1.2	0.73	0.64
AES4	0.19	0.05	0.84	1.4	0.81	1.3	0.74	0.66
AAS6	0.14	0.05	0.87	1.1	0.78	1.5	0.75	0.64
AAS7	0.58	0.04	0.91	-1.4	0.91	1.2	0.67	0.69
ASS6	0.24	0.05	0.80	-0.8	0.77	-1.1	0.71	0.65
ARS1	0.39	0.06	0.83	-1.3	0.71	-1.3	0.74	0.67
AES5	0.28	0.06	0.88	-1.6	0.78	-1.4	0.73	0.69

The "Sustainability in Higher Education" instrument utilized a five-category scale to capture respondents' perspectives. The scale categories were defined as follows: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. Table 4 and Figure 2 present a summary of the category structure, illustrating the gradation and size of the intersections related to the application of sustainability in higher education. In the observation section, the columns display the respondents' answers based on the ranking scale (observed count).

As depicted in Table 5, the most frequently selected response by respondents was scale 4, with a count of 11 (43%). The next most common scale chosen by respondents was scale 5, with 6 (25%) responses. Scale 3 received 5 (21%) responses, while the least frequently selected scale was scale 2, with 2 (7%) responses. Scale 1 had the fewest responses, with 1 (4%) respondent. The observed averages reflect the pattern of responses, which is expected to follow a relatively normal distribution with a systematic progression from negative to positive, as indicated in Table 4.

Table 4. Calibration scaling analysis of applying sustainability in higher education instrument

Category Label	Observed Count	%	Observed Average	Infit MNSQ	Outfit MNSQ	Structure Calibration	Category Measure
1	1	4	-0.62	0.97	0.95	None	(-2.53)
2	2	7	-0.22	1.19	1.15	-1.19	-1.05
3	5	21	0.15	0.91	0.80	-0.57	-0.55
4	11	43	0.41	0.79	0.87	-0.40	0.84
5	6	25	1.15	1.10	1.15	1.66	(2.99)
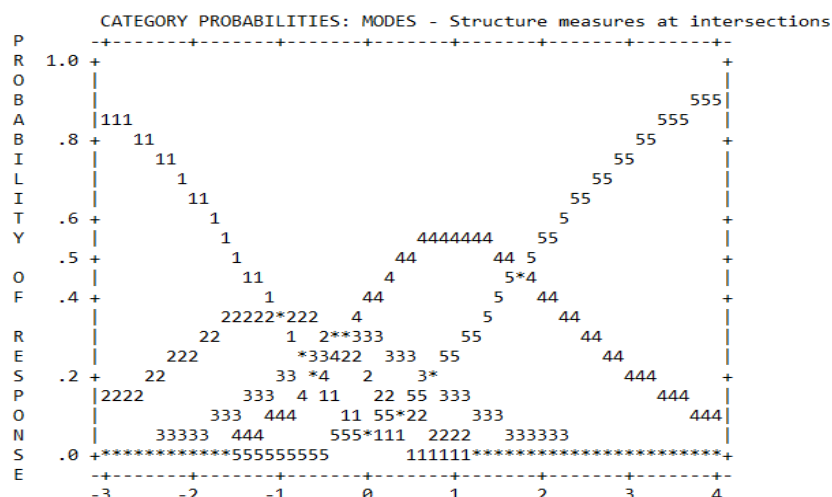
Figure 2. The summary of the category structure of Applying sustainability in higher education instrument

To evaluate reliability using the Rasch model, it is crucial to assess both person reliability and item reliability. Reliability criteria exceeding 50% are considered satisfactory. Moreover, item and person separation values exceeding 2 are deemed acceptable, in accordance with previous studies (AlAli and Al-Barakat, 2022; AlAli and Saleh, 2022). In this study, the scale's reliability was examined by measuring both person reliability and item reliability. The results indicated that the scale demonstrated an appropriate level of reliability for its items, as depicted in Table 5.

Table 5. Person and Item separation and reliability of applying sustainability in higher education instrument

	Score	Count	Measure	Error	Infit MNSQ	Infit ZSTD	Outfit MNSQ	Outfit ZSTD
Mean	109.9	28.0	.84	.29	1.01	-.5	1.02	- .4
S.D	14.0	.0	1.07	.05	.74	2.6	.70	2.5
Real rmse	.26							
Adj. sd	1.01							
Separation	3.49							
Person reliability	.92							
Mean	490.8	100.0	.00	.13	0.99	- .3	1.02	.1
S.D	23.7	.0	.35	.02	.29	1.8	.36	2.3
Real rmse	.15							
Adj. sd	.32							
Separation	2.25							
Item reliability	.91							
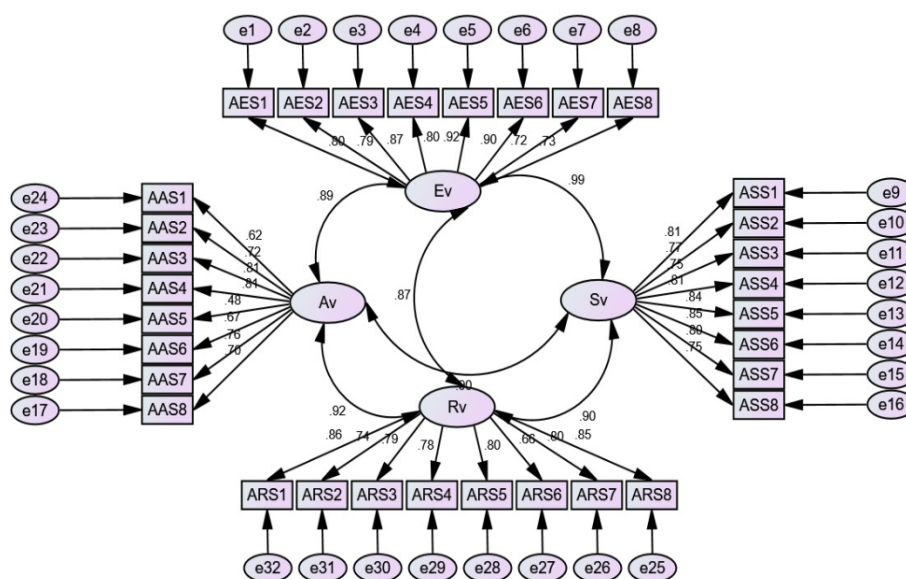
Figure 3. Results of the confirmatory factor analysis of the model adopted for the relationship of the scale items to its dimensions

Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis was utilized to ascertain the factorial construct validity of the scale. The final version of the scale was administered to the study sample to conduct confirmatory factor analysis of the scale items within their respective dimensions. The adopted model illustrated the interrelationships among the scale's 32 items, which were categorized into four

distinct dimensions, as depicted in Figure 3. Figure 3 exhibits the loading factors of each item within its corresponding dimension. The analysis revealed that each item exhibited a high degree of loading, indicating a strong association between the items and their respective dimensions. Moreover, the results indicated a robust correlation among the dimensions of the scale. The alignment of the model with the data signifies that all indicators meet the predetermined criteria of the study. Consequently, these findings provide evidence for the stability of the model in capturing the relationships among the scale items.

RESULTS

This section presents the findings of the study, focusing on addressing the first research question concerning the dimensions of the instrument regarding the extent of applying academic sustainability in higher education. The analysis involved calculating the means, standard deviation, ranks, and levels of agreement related to the application of academic sustainability in higher education. Table 6, displayed below, provides an overview of the means, standard deviation, ranks, and degree of applying academic sustainability in higher education for the scale.

According to the findings presented in Table 6, faculty members in Saudi universities generally exhibited a moderate level of approval regarding the application of academic sustainability in higher education institutions. The average rating was 2.95, with a standard deviation of 2.13. Moreover, there was noticeable variation in the degree of agreement among the study sample, as indicated by the difference of (2.38 – 3.65). Most items received a moderate level of agreement, with two exceptions: one item received a high degree of agreement, while another received a weak degree of agreement based on the responses of the study participants. Item 3, which states "The university organizes courses, study days, and scientific forums on sustainability topics and issues," received a high level of approval, with a mean of 3.65 and a standard deviation of 1.09. On the other hand, item 6, which states "The university holds competitions among relevant parties and offers prizes to integrate and activate sustainability in their work, tasks, and practices," obtained high approval with a mean of 2.38 and a standard deviation of 1.08. To answer the second question concerning the dimensions of the instrument regarding the extent of applying research sustainability in higher education. Table 7, displayed below, provides an overview of the means, standard deviation, ranks, and degree of applying research sustainability in higher education for the scale.

Table 6. The means, standard deviation, ranks, and degree of applying academic sustainability on the scale

Rank	Items	Mean	Std. Deviation	Degree of Applicability
2	AAS1	3.06	1.19	Medium
6	AAS2	2.89	1.14	Medium
1	AAS3	3.65	1.09	High
3	AAS4	2.96	1.12	Medium
5	AAS5	2.92	1.23	Medium
8	AAS6	2.38	1.08	Low
4	AAS7	2.92	1.16	Medium
7	AAS8	2.79	1.12	Medium
	Overall average	2.95	1.13	Medium

Table 7. The means, standard deviation, ranks, and degree of applying research sustainability on the scale

Rank	Items	Mean	Std. Deviation	Degree of Applicability
4	ARS1	3.08	1.14	Medium
1	ARS2	3.51	1.10	High
5	ARS3	2.95	1.02	Medium
8	ARS4	2.58	1.08	Low
2	ARS5	3.12	1.19	Medium
7	ARS6	2.69	1.08	Medium
6	ARS7	2.76	1.09	Medium
3	ARS8	3.11	1.02	Medium
	Overall average	2.98	1.08	Medium

Based on the data presented in Table 7, it is evident that faculty members in Saudi universities expressed a moderate level of approval regarding the application of research sustainability in higher education institutions. The average rating was 2.98, with a standard deviation of 1.08. Furthermore, there was a noticeable disparity in the degree of agreement among the study participants, as indicated by the difference of (2.58 – 3.51). Most items received a moderate level of agreement, except for two items. One item garnered a high degree of agreement, while the other received a weak degree of agreement based on the responses of the study sample. Item 2, which states "The university organizes and hosts research projects and scientific conferences on sustainability and its topics," obtained a high degree of agreement, with a mean of 3.51 and a standard deviation of 1.10. On the other hand, item 1 received weak approval, with a mean of 2.58 and a standard deviation of 1.08. This item states, "The university provides the resources, incentives, and capabilities necessary for sustainable research, inventions, and innovations on campus."

To answer the third question concerning the dimensions of the instrument regarding the extent of applying Social sustainability in higher education. Table 8, displayed below, provides an overview of the means, standard deviation, ranks, and degree of applying social sustainability in higher education for the scale.

Based on the data presented in Table 8, it is evident that faculty members in Saudi universities expressed a moderate level of approval regarding the application of social sustainability in higher education institutions. The average rating

was 3.07, with a standard deviation of 1.09. Moreover, there was a notable variation in the degree of agreement among the study participants, as indicated by the difference of (2.82-3.41). Most items received a moderate level of agreement, with the exception of one item that garnered a high degree of agreement according to the responses of the study participants. Item 5, which states "The university participates in local, national, and international conferences, seminars, and programs to exchange experiences in the fields of sustainability," obtained a high degree of approval, with a mean of 2.82 and a standard deviation of 3.41. On the other hand, item 8 received moderate approval, with a mean of 2.82 and a standard deviation of 1.19. This item states, "The university strives to develop its skills and expertise in the field of sustainability by integrating members of the local community with its sustainability teams".

Table 8. The means, standard deviation, ranks, and degree of applying social sustainability on the scale

Rank	Items	Mean	Std. Deviation	Degree of Applicability
6	ASS1	2.90	1.09	Medium
3	ASS2	3.13	1.07	Medium
4	ASS3	3.12	1.09	Medium
7	ASS4	2.89	1.07	Medium
1	ASS5	3.41	1.09	High
2	ASS6	3.19	1.13	Medium
5	ASS7	3.11	1.03	Medium
8	ASS8	2.82	1.19	Medium
	Overall average	**3.07**	**1.09**	**Medium**

To answer the fourth question concerning the dimensions of the instrument regarding the extent of applying Environmental sustainability in higher education. Table 9, displayed below, provides an overview of the means, standard deviation, ranks, and degree of applying Environmental sustainability in higher education for the scale.

Table 9. The means, standard deviation, ranks, and degree of applying Environmental sustainability on the scale

Rank	Items	Mean	Std. Deviation	Degree of Applicability
3	AES1	3.06	1.19	Medium
5	AES2	2.89	1.15	Medium
1	AES3	3.65	1.09	High
4	AES4	2.96	1.12	Medium
8	AES5	2.58	1.08	Low
2	AES6	3.12	1.19	Medium
7	AES7	2.69	1.08	Medium
6	AES8	2.76	1.09	Medium
	Overall average	**2.97**	**1.10**	**Medium**

Based on the data presented in Table 9, it is evident that faculty members in Saudi universities expressed a moderate level of approval regarding the application of environmental sustainability in higher education institutions. The average rating was 2.97, with a standard deviation of 1.10. Furthermore, there was a noticeable disparity in the degree of agreement among the study participants, as indicated by the difference of (2.58 – 3.65). Most items received a moderate level of agreement, with two exceptions: one item received a high degree of agreement, while another obtained weak agreement based on the responses of the study sample. Item 3, which states "The university publishes programs on its page to develop water resources in the present and future," obtained a high degree of approval, with a mean of 3.65 and a standard deviation of 1.09. On the other hand, item 5 received weak approval, with a mean of 2.58 and a standard deviation of 1.08. This item states, "The university allocates containers on campus to sort waste and work on recycling it."

Testing Hypotheses

The study hypotheses were tested, including both the main hypothesis and the sub-hypotheses, to evaluate the degree of sustainability application in Saudi universities. The T-test was utilized, along with the corresponding level of significance, to assess each hypothesis. Table 10 displays the outcomes of the T-test and the significance level in evaluating the application of sustainability in Saudi universities across different dimensions of the scale.

Table 10. T-Test and Significance Levels for Assessing the
Application of Sustainability in Saudi Universities for all dimensions of the scale

Dimension	Mean	Std. Deviation	Application percentage	T-Value	Sig.	Statistical significance
First hypothesis	2.95	0.83	58.9%	1.01	0.32	Not statistically significant
Second hypothesis	2.98	0.84	59.5%	0.48	0.64	Not statistically significant
Third hypothesis	3.07	0.92	61.4%	1.29	0.19	Not statistically significant
Fourth hypothesis	2.97	0.83	59.3%	0.65	0.51	Not statistically significant
Main hypothesis	2.95	0.78	59.1%	0.97	0.33	Not statistically significant

Table 10 presents an overview of the application of sustainability in Saudi universities. The findings indicate that the application of academic sustainability yielded an arithmetic mean of 2.95 and a standard deviation of 0.83. Additionally, the table provides information on the percentage of academic sustainability application in Saudi universities, with an average rate of 58.9. The calculated T-value was 1.01, associated with a significance level of 0.32, which exceeds the critical value of 0.05. Consequently, the alternative hypothesis is rejected, and the null hypothesis is accepted.

The null hypothesis states that academic sustainability does not demonstrate significant application, as perceived by faculty members in Saudi universities, at a significance level of 0.05. The findings further revealed that the application of research sustainability exhibited an arithmetic mean of 2.98 and a standard deviation of 0.84. The table also presents the percentage of research sustainability application in Saudi universities, indicating an average rate of 59.5. The calculated T-value was 0.48, with a significance level of 0.64, exceeding the critical value of 0.05. Consequently, the alternative hypothesis is rejected, and the null hypothesis is accepted. The null hypothesis posits that research sustainability does not demonstrate significant application, as perceived by faculty members in Saudi universities, at a significance level of 0.05.

The findings also revealed that the application of social sustainability yielded an arithmetic mean of 3.07 and a standard deviation of 0.92. The table further presents the percentage of social sustainability application in Saudi universities, with an average rate of 61.4. The calculated T-value was 1.29, associated with a significance level of 0.19, which exceeds the critical value of 0.05. As a result, the alternative hypothesis is rejected, and the null hypothesis is accepted. The null hypothesis states that social sustainability is not applied at a significance level of 0.05, as perceived by faculty members in Saudi universities. Further, the findings indicated that the application of environmental sustainability exhibited an arithmetic mean of 2.97 and a standard deviation of 0.83. The table also presents the percentage of environmental sustainability application in Saudi universities, with an average rate of 59.3. The calculated T-value was 0.65, associated with a significance level of 0.51, surpassing the critical value of 0.05. Consequently, the alternative hypothesis is rejected, and the null hypothesis is accepted. The null hypothesis posits that environmental sustainability is not applied at a significance level of 0.05, as perceived by faculty members in Saudi universities. Lastly, the results revealed that the application of sustainability in Saudi universities demonstrated an arithmetic mean of 2.5157 and a standard deviation of 2.80211. The table also presents the percentage of sustainability application in Saudi universities, with an average rate of 2.802. The calculated T-value was 1.220, associated with a significance level of 2.011, surpassing the critical value of 2.21.

As a result, the alternative hypothesis is rejected, and the null hypothesis is accepted. The null hypothesis posits that sustainability is not applied at a significance level of 0.05, as perceived by faculty members in Saudi universities.

DISCUSSION

The present study revealed that higher education institutions, as perceived by teaching staff at universities, have not effectively implemented sustainability. Specifically, academic, research, social, and environmental sustainability are lacking in Saudi higher education institutions. The study also yielded several findings pertaining to the evaluation of the sustainability landscape within these institutions. The study identified a lack of universities in organizing competitions involving relevant parties and a dearth of prizes for integrating and promoting sustainability in their work, tasks, and practices. This implies that universities are not actively engaging stakeholders in collaborative efforts or recognizing and incentivizing sustainable initiatives. This result is consistent with the study of (Mohammadi et al., 2023; Khaldi and Mekimah, 2022; McCowan et al., 2021). This is attributed to the fact that it can competitions can serve as a valuable platform for fostering innovation, creativity, and collaboration among various parties, including students, faculty, staff, and external stakeholders. By organizing competitions focused on sustainability, universities can encourage the development and implementation of innovative ideas and practices that contribute to a more sustainable campus and community.

Additionally, offering prizes for sustainability initiatives can provide tangible recognition and rewards for individuals or teams who actively engage in sustainable practices. Prizes can range from financial rewards to public recognition, scholarships, or opportunities for further research or professional development. Such incentives can motivate and inspire individuals to actively contribute to sustainability efforts, leading to a more sustainable culture within the university. However, the absence of these competitions and prizes suggests a missed opportunity for universities to harness the collective wisdom and creativity of their community members in addressing sustainability challenges. It indicates a need for universities to establish mechanisms that promote and reward sustainability-related initiatives, fostering a culture of sustainability and encouraging meaningful participation from all relevant parties.

The study found that while universities do publish sustainability programs on their electronic platforms, the extent of these publications is limited. Specifically, there is a lack of comprehensive coverage, such as the inclusion of lectures on modern international studies in the field of university sustainability. This result is consistent with the study of (Demele et al., 2021; Nicolò et al., 2021). This is attributed to the fact that publishing sustainability programs on electronic pages is a positive step towards promoting sustainability within universities. It allows for the dissemination of information and resources related to sustainability initiatives, policies, and practices. These publications can serve as valuable references for students, faculty, staff, and external stakeholders who are interested in engaging with sustainability issues.

However, the limited extent of these publications suggests that universities may not be fully utilizing their digital platforms to provide comprehensive and up-to-date information on sustainability. Lectures on modern international studies in the field of university sustainability, for example, can offer valuable insights into global best practices, emerging trends, and innovative approaches to sustainability in higher education. Expanding the scope and depth of sustainability programs published on electronic platforms can contribute to raising awareness, knowledge, and engagement in sustainability among the university community. By providing access to a broader range of resources and educational materials, universities can

empower individuals to deepen their understanding of sustainability and inspire them to take action towards creating a more sustainable future. To address this gap, universities could consider enhancing their electronic publications by incorporating a wider range of sustainability-related content, including lectures, case studies, research findings, and success stories from both local and international contexts. This would enable stakeholders to access diverse perspectives and knowledge, fostering a more comprehensive and robust understanding of university sustainability.

The study revealed that a majority of universities do not adequately provide the necessary resources, incentives, and capabilities to support individuals engaged in sustainable research, inventions, and innovations on campus. This result is consistent with the study of (McCowan et al., 2021; Živojinović et al., 2019). This finding suggests a significant gap in the support systems and infrastructure required to foster and nurture sustainable initiatives within higher education institutions. For sustainable research, universities should ideally provide researchers with access to relevant data, funding opportunities, research facilities, and collaborative networks. These resources are crucial for conducting in-depth studies, collecting empirical evidence, and generating knowledge that can contribute to sustainable practices and solutions. Insufficient availability of such resources can hinder the progress and impact of sustainability-focused research. Incentives play a vital role in motivating individuals to pursue sustainable research, inventions, and innovations. Universities can establish recognition programs, grants, scholarships, or awards specifically targeted towards sustainability-related projects.

By offering these incentives, universities can encourage faculty, staff, and students to actively engage in sustainable initiatives, fostering a culture of innovation and problem-solving. Additionally, universities need to provide the necessary capabilities and support mechanisms for individuals undertaking sustainable research or developing sustainable inventions and innovations. This includes access to specialized training, mentorship programs, technical expertise, and guidance on intellectual property rights and commercialization. Building a supportive ecosystem enables individuals to navigate the complexities of sustainable research and innovation, increasing their chances of success and impact. By addressing the lack of resources, incentives, and capabilities, universities can create an enabling environment that empowers individuals to pursue sustainable research, inventions, and innovations. This, in turn, can lead to the development of practical and impactful solutions for sustainability challenges, benefiting both the university community and the wider society.

The study found that while universities do provide students with practical experiences, these opportunities are not predominantly focused on practicing and participating in sustainability research through collaboration with relevant parties. This suggests a gap in the integration of sustainability principles and interdisciplinary cooperation within practical learning experiences at universities. This result is consistent with the study of (Khaldi et al., 2021; Kioupi and Voulvoulis, 2019). Practical experiences are valuable for students as they provide hands-on learning opportunities, allowing them to apply theoretical knowledge, develop skills, and gain real-world insights. However, when it comes to sustainability, it is crucial to go beyond individual projects or isolated activities and emphasize the collaborative nature of addressing sustainability challenges. Sustainability challenges are complex and multifaceted, requiring interdisciplinary approaches and engagement with various stakeholders. By providing students with practical experiences that involve cooperation with relevant parties (such as local communities, organizations, policymakers, or industry partners), universities can enhance the students' understanding of sustainability as a broader societal issue and promote the development of sustainable solutions that are inclusive and contextually appropriate.

Through collaborations, students can learn to navigate diverse perspectives, engage in problem-solving processes, and develop skills in teamwork, communication, and negotiation. Furthermore, working with external partners can expose students to real-world sustainability initiatives, challenges, and best practices, fostering a deeper understanding of the practical implications and complexities of sustainability. To address this gap, universities can explore opportunities to integrate sustainability-focused projects or modules that encourage interdisciplinary collaboration and engagement with relevant stakeholders. This can be achieved through partnerships with external organizations, community-based initiatives, or research projects that involve interdisciplinary teams of students, faculty, and external experts. By incorporating sustainability research and collaboration into practical experiences, universities can better prepare students to address sustainability challenges and contribute meaningfully to sustainable development in their future professional endeavors.

The study indicates that universities allocate some time to developing their skills and expertise in the field of sustainability by integrating the community's desire to engage with sustainability issues. This result is consistent with the study of (Mohammadi et al., 2023; Khaldi and Mekimah, 2022; Tilbury, 2011). This finding suggests that universities recognize the importance of responding to the needs and aspirations of the broader community regarding sustainability. Universities have a unique role to play in addressing sustainability challenges. They serve as hubs of knowledge, research, and education, and have the potential to influence and shape sustainability practices within their communities. By considering and incorporating the community's desire to engage with sustainability issues, universities can ensure that their efforts align with the needs and priorities of the stakeholders they serve. Integrating the community's desire involves actively seeking input, feedback, and collaboration from various community members, including local residents, businesses, non-profit organizations, and government entities. This can be done through community engagement initiatives, public consultations, partnerships, or participatory research projects. By involving the community in decision-making processes and co-creating sustainability initiatives, universities can foster a sense of ownership and relevance, ensuring that their efforts are well-aligned with local needs and aspirations. Furthermore, universities can also leverage the expertise, knowledge, and resources available within the community. This can include collaborating with local organizations, experts, and practitioners who are actively working on sustainability issues. By establishing partnerships and engaging in knowledge exchange, universities can tap into the existing expertise and experiences, gaining valuable insights and enhancing their own capacity to address sustainability challenges effectively. By spending time on developing skills and

expertise in sustainability in response to the community's desire, universities demonstrate their commitment to being responsive and accountable institutions. This approach helps to ensure that sustainability efforts are rooted in the reality of local contexts, effectively addressing the specific challenges and opportunities that exist within the community.

The study indicates that while universities encourage stakeholders to document their distinctive work and contributions in the field of sustainability, this encouragement is not largely evident. This suggests that universities may not be fully leveraging the potential of showcasing and disseminating sustainability-related achievements through internet platforms. This result is consistent with the study of (Khaldi and Mekimah, 2022; Mian et al., 2020; Leal Filho et al., 2017). Documenting and sharing distinctive work and contributions in sustainability is important for several reasons. Firstly, it allows for recognition and celebration of the efforts and achievements of individuals, groups, or departments involved in sustainability initiatives. Recognizing and highlighting their work can inspire others and create a positive culture of sustainability within the university community. Secondly, publishing these contributions on the internet can have a broader impact by reaching a wider audience beyond the immediate university community. It can inspire other institutions, researchers, practitioners, and the general public, and contribute to the collective knowledge and understanding of sustainable practices and innovations. Additionally, sharing sustainability-related work on the internet can foster collaboration and knowledge exchange. It provides a platform for stakeholders to connect, learn from each other, and build networks, which can lead to new ideas, partnerships, and opportunities for joint initiatives. To address the limited extent of encouraging stakeholders to document and publish their sustainability contributions on the internet, universities can take proactive steps. This can include establishing dedicated platforms or digital repositories where stakeholders can share their work, creating guidelines and incentives for documenting and showcasing sustainability initiatives, and actively promoting and disseminating the published content through various channels, including social media, newsletters, and university websites. By enhancing these efforts, universities can amplify the impact of sustainability initiatives, foster a culture of transparency and collaboration, and facilitate the sharing of best practices and lessons learned, ultimately contributing to the broader advancement of sustainability in academia and society.

The study reveals that universities do not allocate containers for sorting waste and actively working on recycling it. This finding suggests that there is a lack of emphasis on waste management and recycling practices within university campuses. This result is consistent with the study of (Khaldi and Mekimah, 2022; Tangwanichagapong et al., 2017; Bailey et al., 2015). Waste management and recycling are vital components of sustainable practices. By implementing proper waste sorting systems and recycling initiatives, universities can significantly reduce the amount of waste sent to landfills, conserve resources, and minimize the environmental impact of their operations. Allocating containers for waste sorting is an essential first step in establishing an effective waste management system. These containers typically include separate bins for different types of waste, such as recyclables (e.g., paper, plastic, glass, metal), organic waste, and non-recyclable waste. By providing clear and easily accessible containers for waste sorting, universities can encourage individuals to participate in responsible waste disposal and recycling practices. In addition to waste sorting, universities should also actively work on recycling the collected materials. This involves establishing partnerships with recycling facilities or waste management companies, implementing recycling programs, and ensuring that the collected recyclables are properly processed and reused. Recycling initiatives can be extended to various areas on campus, including classrooms, offices, cafeterias, and dormitories. By incorporating waste sorting containers and recycling initiatives on campus, universities can educate and engage the university community in sustainable waste management practices. This can include raising awareness about the importance of waste reduction, recycling guidelines, and providing educational materials and campaigns to encourage active participation. Furthermore, universities can also consider implementing strategies to reduce waste generation, such as promoting the use of reusable products, implementing composting programs, and encouraging sustainable procurement practices. Overall, allocating containers for waste sorting and actively working on recycling not only demonstrates a commitment to environmental stewardship but also provides practical opportunities for individuals within the university community to actively contribute to sustainability efforts. The study suggests that universities provide somewhat specialized scientific courses in the field of environmental protection for various members of society. This result is consistent with the study of (Khaldi and Mekimah, 2022; Al-Omari, 2018; Al-Khawalda, 2016). This finding indicates that universities recognize the importance of offering educational opportunities that focus on environmental protection and sustainability. Specialized scientific courses in environmental protection serve several purposes. Firstly, they provide individuals with the knowledge and skills necessary to understand and address environmental challenges. These courses typically cover topics such as environmental science, ecology, conservation, climate change, pollution, and sustainable resource management. By offering specialized courses, universities enable students and other members of society to develop a deeper understanding of environmental issues and equip them with the tools to contribute to solutions. Secondly, these courses can serve as a platform for interdisciplinary learning and collaboration. Environmental protection is a complex field that requires expertise from various disciplines, including biology, chemistry, geology, engineering, policy, and social sciences. Specialized courses bring together individuals from diverse backgrounds, fostering collaboration and the exchange of ideas. This interdisciplinary approach helps to develop holistic and well-rounded perspectives on environmental challenges and encourages innovative thinking and problem-solving. Furthermore, specialized courses in environmental protection can cater to different members of society, including students, professionals, and the general public. Universities often offer these courses through continuing education programs, professional development initiatives, or open enrollment, allowing individuals to access education and training in the field of environmental protection regardless of their educational background or career stage. By providing specialized scientific courses in environmental protection, universities contribute to building a more environmentally literate society. These courses empower individuals with the knowledge and skills needed to make informed decisions, contribute to sustainable practices in their respective

fields, and become advocates for environmental stewardship. However, it is important to note that the extent and availability of specialized courses may vary among universities. Some institutions may offer a wide range of specialized courses, while others may have more limited offerings. Nonetheless, the provision of these courses demonstrates the recognition of the importance of environmental protection and sustainability within higher education.

CONCLUSION

The study findings indicate that Saudi higher education institutions, according to teaching staff, have not effectively implemented sustainability in various aspects. This includes academic, research, social, and environmental sustainability. The study identifies several key areas that need improvement, such as the lack of initiatives, incentives, and competitions to promote sustainability, limited sustainability programs on university websites, inadequate resources for sustainable research and innovation, limited practical experiences and collaborations for students in sustainability research, partial commitment to enhancing sustainability skills, inadequate documentation and sharing of sustainability contributions, absence of waste sorting and recycling initiatives, and partial provision of specialized scientific courses on environmental protection for different segments of society. These findings highlight the need for enhancing sustainability practices in higher education institutions to create a more sustainable academic environment.

Recommendation and Future Direction

This study provides recommendations and Future Direction for Saudi universities to effectively implement sustainability. Long-term Strategic Planning: Saudi universities should focus on developing a comprehensive and well-defined strategic vision for sustainability. This involves setting specific goals, targets, and timelines to guide sustainability initiatives across all aspects of university operations. Mandatory Sustainability Measures: To ensure consistent progress, it is recommended that Saudi universities establish mandatory sustainability measures. These measures can include requirements for sustainable construction and design, energy and water conservation practices, waste management protocols, and sustainable transportation options. Optimal Resource Utilization: Universities should prioritize optimizing resource utilization by implementing efficient energy management systems, promoting sustainable procurement practices, and adopting recycling and waste reduction programs. This will minimize resource consumption, reduce environmental impact, and contribute to cost savings.

Foster Sustainable Research and Innovation: Encouraging and supporting research and innovation in sustainability-related fields is crucial. Saudi universities can establish dedicated research centers or institutes focused on sustainability, provide funding opportunities for sustainability research projects, and foster interdisciplinary collaborations to address sustainability challenges effectively. Organize Sustainability Competitions: Hosting sustainability competitions within the university community can promote awareness, engagement, and creative problem-solving. These competitions can encourage students, faculty, and staff to develop innovative solutions and initiatives that contribute to sustainability goals. Engage the Local Community: Saudi universities should actively engage with the local community to raise awareness about sustainability issues and involve community members in sustainability initiatives. Collaborative efforts can include joint projects, community outreach programs, and knowledge-sharing platforms to foster a sense of shared responsibility for sustainability. Continuous Review and Improvement: Regular evaluation and review of sustainability practices are essential. Saudi universities should establish mechanisms to monitor progress, measure performance against set targets, and identify areas for improvement. This iterative process will facilitate ongoing refinement and enhancement of sustainability efforts.

REFERENCES

Abunasser, F., AlAli, R., & Al-Qahtani, M. (2022). KSA Universities' Role in Promoting the Sustainability of Food Security: Faculty Opinions. *Sustainability*, *14*(16), 10257. https://doi.org/10.3390/su141610257

AlAli, R., Alsoud, K., & Athamneh, F. (2023). Towards a Sustainable Future: Evaluating the Ability of STEM-Based Teaching in Achieving Sustainable Development Goals in Learning. *Sustainability*, *15*(16), 12542. https://doi.org/10.3390/su151612542

AlAli, R., & Al-Barakat, A. (2022). Using Structural Equation Modeling to Assess a Model for Measuring Creative Teaching Perceptions and Practices in Higher Education. Education. *Sciences,* 12, 690. https://doi.org/10.3390/educsci12100690

AlAli, R., & Saleh, S. (2022). Towards Constructing and Developing a Self-Efficacy Scale for Distance Learning and Verifying the Psychometric Properties. *Sustainability*, 14, 13212. https://doi.org/10.3390/su142013212

Al-Khawalda, T. (2016). Obstacles to the sustainability of higher education from the perspective of faculty members in Jordanian universities. *Dirasat: Educational Sciences, 43*(1). https://doi.org/10.12816/0029988

Al-Kurd, Z. (2018). The expected role of Palestinian universities in promoting sustainable development. Conference on Sustainable Development in a Changing Environment, Faculty of Economics and Social Sciences - An-Najah National University. https://hdl.handle.net/20.500.11888/14208

Al-Omari, M. (2018). *The Role of the Administrations of the Saudi Government Universities in the Transition Towards Sustainability in the Light of some International Experiences: A Suggested Perspective.* Unpublished PhD thesis, Imam Muhammad bin Saud Islamic University, Saudi Arabia.

Badrakhan, S.S.E., Mbaydeen, M.A., & Ogilat, O. (2022). The role private universities play in achieving academic, research, political, and economic sustainability in light of national strategy "Jordan's vision 2025" from the perspective of academicians. *Sustainable Futures*, *4*, 100080. https://doi.org/10.1016/j.sftr.2022.100080

Bailey, J., Pena, M., & Tudor, T. (2015). Strategies for improving recycling at a higher education institution: A case study of the University of the West Indies, Cave Hill Campus, Barbados. *The Open Waste Management Journal*, *8*(1). https://doi.org/10. 2174/1876400201508010001

Bauer, M., Rieckmann, M., Niedlich, S., & Bormann, I. (2021). Sustainability governance at higher education institutions: equipped to transform? *Frontiers in Sustainability*, *2*, 640458.

Beringer, A., & Adombent, M. (2008). Sustainable university research and development: inspecting sustainability in higher education research. *Environmental Education Research*, *14*(6), 607-623. https://doi.org/10.1080/13504620802464866

Bosaha, L., & Bahous, N. (2019). The role of the university in the embodiment of sustainable development A field study of a sample of professors from the Tissemsilt university center. SHUAA Journal of Economic Studies, 3(1), 69-86.

Demele, U., Nölting, B., Crewett, W., & Georgiev, G. (2021). Sustainability transfer as a concept for universities in regional transformation—A case study. *Sustainability*, *13*(9), 4956. https://doi.org/10.3390/su13094956

Grano, C., & Prieto, V.C. (2020). Sustainable development goals in higher education. In *26th IJCIEOM–International Joint Conference on Industrial Engineering and Operations Management., Rio de Janeiro*. https://doi.org/10.14488/IJCIEOM2020_FULL_0010_37277

Griebeler, J.S., Brandli, L.L., Salvia, A.L., Leal Filho, W., & Reginatto, G. (2022). Sustainable development goals: a framework for deploying indicators for higher education institutions. *International Journal of Sustainability in Higher Education*, *23*(4), 887-914. https://doi.org/10.1108/IJSHE-03-2021-0088

Ismail, I. & Khidr, Z. (2019), The Sustainable University, the road map for promoting sustainable development: a analytical study of the opinions of a sample of scholars in the Iraqi environment. *Journal of the Baghdad University College of Economic Sciences*, special issue of the Eighth International Scientific Conference.

Khaldi, H., & Mekimah, S. (2022). Assessing the sustainability of higher education's institutions from the perspective of Algerian Universities' teaching staff. *Milev Journal of Research and Studies*, *8*(1), 87-105. https://doi.org/10.58205/mjrs.v8i1.497

Kioupi, V., & Voulvoulis, N. (2019). Education for sustainable development: A systemic framework for connecting the SDGs to educational outcomes. *Sustainability*, *11*(21), 6104. https://doi.org/10.3390/su11216104

Leal Filho, W., Simaens, A., Paço, A., Hernandez-Diaz, P.M., Vasconcelos, C.R., Fritzen, B., & Mac-Lean, C. (2023). Integrating the Sustainable Development Goals into the strategy of higher education institutions. *International Journal of Sustainable Development & World Ecology*, 1-12. https://doi.org/10.1080/13504509.2023.2167884

Leal Filho, W., Wall, T., Salvia, A.L., Frankenberger, F., Hindley, A., Mifsud, M., & Will, M. (2021). Trends in scientific publishing on sustainability in higher education. *Journal of Cleaner Production*, *296*, 126569. https://doi.org/10. 1016/j.jclepro.2021.126569

Leal Filho, W., Eustachio, J.H.P.P., Caldana, A.C.F., Will, M., Lange Salvia, A., Rampasso, I.S., & Kovaleva, M. (2020). Sustainability leadership in higher education institutions: An overview of challenges. *Sustainability*, *12*(9), 3761.

Leal Filho, W., Wu, Y.C.J., Brandli, L.L., Avila, L.V., Azeiteiro, U.M., Caeiro, S., & Madruga, L.R.D.R.G. (2017). Identifying and overcoming obstacles to the implementation of sustainable development at universities. *Journal of Integrative Environmental Sciences*, *14*(1), 93-108. https://doi.org/10.1080/1943815X.2017.1362007

Lozano, R., Lukman, R., Lozano, F.J., Huisingh, D., & Lambrechts, W. (2013). Declarations for sustainability in higher education: becoming better leaders, through addressing the university system. *Journal of cleaner production*, *48*, 10-19.

McCowan, T., Leal Filho, W., & Brandli, L. (2021). Universities facing climate change and sustainability.

Mian, S. H., Salah, B., Ameen, W., Moiduddin, K., & Alkhalefah, H. (2020). Adapting universities for sustainability education in industry 4.0: Channel of challenges and opportunities. *Sustainability*, *12*(15), 6100. https://doi.org/10.3390/su12156100

Mohammadi, Y., Monavvarifard, F., Salehi, L., Movahedi, R., Karimi, S., & Liobikienė, G. (2023). Explaining the Sustainability of Universities through the Contribution of Students' Pro-Environmental Behavior and the Management System. *Sustainability*, *15*(2), 1562. https://doi.org/10.3390/su15021562

Nicolò, G., Aversano, N., Sannino, G., & Tartaglia Polcini, P. (2021). Investigating web-based sustainability reporting in Italian public universities in the era of Covid-19. *Sustainability*, *13*(6), 3468. https://doi.org/10.3390/su13063468

Sebire, R.H., & Isabeles-Flores, S. (2023). Sustainable Development in Higher Education Practices. *Revista Lengua y Cultura*, *5*(9), 89-96.

Tangwanichagapong, S., Nitivattananon, V., Mohanty, B., & Visvanathan, C. (2017). Greening of a campus through waste management initiatives: Experience from a higher education institution in Thailand. *International Journal of Sustainability in Higher Education*, *18*(2), 203-217. https://doi.org/10.1108/IJSHE-10-2015-0175

Tilbury, D. (2011). Higher education for sustainability: a global overview of commitment and progress. *Higher education in the world, 4*(1), 18-28.

Ting, L., Hakim Bin Mohammed, A., & Wai Choong, W. (2012). Proposed implementation strategies for energy sustainability on a Malaysian university campus. *Business Strategy Series*, *13*(5), 208-214.

Too, L., & Bajracharya, B. (2015). Sustainable campus: engaging the community in sustainability. *International Journal of Sustainability in Higher Education*, *16*(1), 57-71.

Wooltorton, S., Palmer, M., & Steele, F. (2011). A process for transition to sustainability: Application. *Australian Journal of Environmental Education*, *27*(1), 160-174. https://doi.org/10.1017/S081406260000015X

Urbanski, M., & Filho, W.L. (2015). Measuring sustainability at universities by means of the Sustainability Tracking, Assessment and Rating System (STARS): early findings from STARS data. *Environment, Development and Sustainability*, *17*, 209-220.

Živojinović, I., Ludvig, A., & Hogl, K. (2019). Social innovation to sustain rural communities: Overcoming institutional challenges in Serbia. *Sustainability*, *11*(24), 7248. https://doi.org/10.3390/su11247248

HOW TO INCREASE SUSTAINABLE RURAL TOURISM PERFORMANCE? AN EMPIRICAL STUDY IN INDONESIA

Unang Toto HANDIMAN[*]
Universitas Mercubuana, Doctoral Program in Management Studies, Jakarta, Indonesia, e-mail: 67120010009@student.mercubuana.ac.id

Didik J. RACHBINI
Universitas Mercubuana, Doctoral Program in Management Studies, Jakarta, Indonesia, e-mail: didik.rachbini@mercubuana.ac.id

Syafrizal CHAN
Universitas Mercubuana, Doctoral Program in Management Studies, Jakarta, Indonesia, e-mail: syafrizal.chan@mercubuana.ac.id

Setyo RIYANTO
Universitas Mercubuana, Doctoral Program in Management Studies, Jakarta, Indonesia, e-mail: setyo.riyanto@mercubuana.ac.id

Abstract: The primary objective of this study is to examine the influence of social capital, government support, and entrepreneurial orientation on the improvement of sustainable rural tourism performance. Additionally, the study aims to identify a suitable model for enhancing the overall performance of sustainable rural tourism. Using a quantitative model, this study utilized the responses of 400 rural tourism administrators. SmartPLS 3.2 is used as a tool to analyze the collected data. Smart Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to assess the interrelationships among social capital, government support, entrepreneurial orientation, and sustainable rural tourism performance. The findings show a positive impact of social capital and entrepreneurial orientation on sustainable rural tourism performance, but government support does not impact on sustainable rural tourism performance. Furthermore, social capital and government support have a positive impact on entrepreneurial orientation. This study suggests the role of entrepreneurial orientation to increase the influence of social capital and government support on sustainable rural tourism performance. Finally, This research offers a conceptual contribution to authors investigating the sustainable performance of rural tourism. Additionally, it provides practical insights for stakeholders in rural tourism, aiding them in enhancing the sustainable performance of this sector.

Key words: Social capital, Government support, Entrepreneurial orientation, Sustainable, Performance, Rural tourism

* * * * * *

INTRODUCTION

Nowadays sustainable tourism has become an important focus in tourism development, with an emphasis on the concept of sustainability to reduce negative impacts during the tourism development process (Lee and Jan, 2019). A sustainability-based tourism development model that is responsive to local demand and tourist needs can create positive and negative impacts that affect environmental, social, cultural and economic sustainability through tourist participation (Sumarmi, 2020). Rural tourism development can have a positive impact on improving quality of life, creating jobs, preserving cultural heritage, and improving community welfare and the image of the region (Alim et al., 2021; Wardana et al., 2020). While there are other positive opportunities such as increasing the value of the natural environment and improving infrastructure, negative impacts such as overcrowding, disruption to local communities, and environmental damage can also occur (Goliath-Ludic and Yekela, 2020). Rural tourism is a driving force for sustainable development in the tourism industry (Kelfaoui et al., 2021), in line with the rural revitalization strategy launched by the Indonesian government through Law No. 6/2014 on rural. It gives rural the right to manage local interests, and in the context of rural tourism development, can have a positive impact on rural development. The concept of rural tourism development has the main objective of improving rural life, local culture, local wisdom, and providing economic benefits for local communities. With a clear mandate in this law, rural have the authority to manage natural resources and local potential independently, thus enabling the development and utilization of tourism potential such as culture, nature, and preservation of cultural heritage as a tourist attraction. In the context of sustainable rural tourism, the Indonesian government has issued the Minister of Tourism and Creative Economy Regulation Number 9/2021 concerning guidelines for sustainable tourism destinations. It is emphasized that tourism destinations must refer to the sustainable tourism destination guidelines which include: social and economic sustainability, cultural sustainability, environmental sustainability, and governance sustainability.

The rapid development of rural tourism and the role of rural communities in development have attracted the attention of authors to explore the relationship between the two. Alim et al. (2021), Wardana et al. (2020), and Simard et al.

---

[*] Corresponding author

(2018) views that the support, interactive and participation of rural communities in rural tourism development is their primary responsibility and obligation. The active participation of rural communities is considered conducive to the development of sustainable rural tourism and the increase of farmers' income. Jaafar et al. (2020) added that rural tourism development requires the broad participation of rural communities, and the government should provide adequate support and guidance. In the context of rural development in Indonesia, Manaf et al. (2018) found that sustainable rural tourism development has a stronger impact on the development of rural communities in Nglanggeran, Gunung Kidul Regency, Yogyakarta Special Region (DIY) Province. Despite receiving special attention from tourism authors and tourism practitioners in recent years, the literature on tourism concepts and theories often fails to link rural tourism development with the concept of sustainable development as a unified paradigm, so that the implementation of sustainable development can be carried out properly, the context of rural tourism is still much in doubt.

For example, study results show that the contribution of rice rural tourism income to the household income of rural tourism actors in DIY Province is still very low, which is below 50 percent (Jamhari et al., 2019).

The final report of the study on the classification of rural tourism in Sleman regency in 2022, published by the Tourism office of the Sleman regency government, DIY Province, reveals the findings of a number of issues related to the sustainability of rural tourism development. Economically, there is still an income gap between the lowest and highest income earners. Environmentally, some rural tourism administrators and communities are not active in environmental conservation and waste management. Socially, community participation is mainly from the low and lower-middle-income groups, while the involvement of high-income people tends to be minimal. This is due to a lack of interest in rural tourism. Culturally, there are no regular cultural preservation efforts, and cultural activities are only carried out based on tourist request. In terms of governance, some rural tourisms do not have long-term planning, monitoring systems, transaction recording, and digital reporting. These problems are believed to also arise in other rural tourism in DIY Province.

By comparing rural tourism development practices in Yogyakarta province with the concept of sustainable rural tourism development from existing literature, a discernible gap emerges, warranting a comprehensive investigation. Preliminary findings from a pre-survey highlight government support, entrepreneurial orientation, and social capital as crucial factors for enhancing sustainable rural tourism performance. Consequently, the primary objective of this study is to examine the influence of social capital, government support, and entrepreneurial orientation on the improvement of sustainable rural tourism performance. Additionally, the study aims to identify a suitable model for enhancing the overall performance of sustainable rural tourism. To answer how to increasing performance of sustainable rural tourism, this study will ask the following research questions (RQ):

RQ1: Is sustainable rural tourism performance positively impacted by social capital?
RQ2: Is sustainable rural tourism performance positively impacted by government support?
RQ3: Is sustainable rural tourism performance positively impacted by entrepreneurial orientation?
RQ4: Is entrepreneurial orientation positively impacted by social capital?
RQ5: Is entrepreneurial orientation positively impacted by government support?
RQ6: Is sustainable rural tourism performance positively impacted by social capital through entrepreneurial orientation as a mediator?
RQ7: Is sustainable rural tourism performance positively impacted by government support through entrepreneurial orientation as a mediator?

Study on the relationship between social capital and rural tourism development has attracted the attention of a number of authors. This study found that social networks quality impact on resident participation in rural tourism development (Hwang and Stewart, 2017), social capital impact on community resilience in rural tourism, and maintaining sustainable tourism development (Guo et al., 2018), guanxi as a form of social capital have important role on rural tourism development (Dai et al., 2021), and involvement of local residents in tourism planning and strong tourism leadership have important role on rural tourism development. As well as, Liu et al., (2020) and Hardjosoekarto and Lawang, (2021) found that the central and local of government have driving the rapid development of rural tourism. However, study related to the relationship between entrepreneurial orientation and rural tourism still receives small study attention, most authors focus on the relationship between entrepreneurial orientation and the tourism industry (Fadda, 2018; Tajeddini et al., 2020)

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

This study integrates several theories to investigate the relationship between social capital, government support, entrepreneurial orientation, and the performance of sustainability rural tourism. Sustainability theory emphasizes meeting the needs of the present without compromising the capabilities of future generations (Weisser, 2017; Idahosa, 2019). The Triple Bottom Line (TBL) concept proposed by Elkington to explore the relationship of sustainability and organizational performance, integrating economic, environmental and social aspects (Karim and Islam, 2020; Muresherwa et al., 2023; Hourneaux et al., 2018). Elkington proposed that the concept of TBL can guide organizations to achieve economic prosperity, environmental quality, and social justice simultaneously. TBL recognizes that businesses do not only aim for financial gain, but also consider their impact on the environment and society (Dalibozhko and Krakovetskaya, 2018). In the context of TBL, a sustainable culture is considered important to enhance the achievement of TBL (Oakley and Ward, 2018), while organizational governance is an important element in achieving organizational sustainability (Billi et al., 2021; Budsaratragoon and Jitmaneeroj, 2019).

Entrepreneurial orientation theory was defined by Covin and Wales (2019) as entrepreneurial firms engaging in product market innovation, undertaking somewhat risky ventures, and being the first to introduce innovations, surpassing 'proactive'

competitors (Covin and Wales, 2019). Furthermore, two prominent dimensions was added in entrepreneurial orientation (Lumpkin and Pidduck, 2021). Based on definition and previous studies emphasized competitive aggressiveness and autonomy or independence as important components of the entrepreneurial orientation construct (Dele-Ijagbulu et al., 2020). Thus, entrepreneurial orientation is conceptualized as the process of formulating organizational-level strategies to achieve organizational goals, uphold its vision, and build competitive advantage (Wales et al., 2020).

Social capital theory focuses on resources owned by individuals and groups in the form of values, norms and networks. According to Putnam, social capital is defined as resources owned by individuals and groups, represented by networks that provide added value to individuals and enhance cooperation between individuals (Kim and Shim, 2018). Furthermore, Putnam introduced the concept of bonding and bridging social capital. Bonding social capital facilitates relationships among like-minded individuals, fostering reciprocity and solidarity. Bridging social capital relationships are diverse, facilitating relationships with external interests and ensuring the flow of information (Kopren and Westlund, 2021). Dense social networks contribute to increased knowledge exchange, information transfer and support continuous innovation collaboration (Kim and Shim, 2018). Nguyen et al. (2020) state that knowledge acquisition is further utilized to build competitive advantage through innovation (Nguyen et al., 2020).

Social exchange theory provides a framework for understanding the dynamics of government support in the context of rural tourism. Social exchange theory was first introduced by Malinowski in 1920. Futhermore, Homans defines social exchange as the exchange of activities, tangible or intangible, that have a useful or costly value between at least two people (Muldoon et al., 2018). Costs in this context are seen as alternative activities or opportunities lost by the actors involved. These resources can be tangible, such as money or goods, or intangible, such as social support or information (Ohemeng et al., 2020). It also suggests that government support can be seen as a form of social exchange, where individuals or organizations receive benefits in exchange for compliance, cooperation, or other desired behavior. Jia et al. (2023) suggest that community engagement has a direct effect on their life satisfaction mediated by perceived benefits and trust in government.

1. Sustainable rural tourism performance is impacted by social capital

Based on sustainability theory and social capital theory, this conceptual framework suggests that social interactions and network relationships can be accumulated into social capital. This social capital can be utilized to enhance the ability of rural tourism administrators to improve performance of sustainable rural tourism, which includes economic, social, environmental, cultural, and governance sustainability. This perspective is in line with the research of Yli-Renko et al. where social interaction is seen as a bonding agent that empowers organizations to strengthen connections and enrich mutual understanding. Network relationships are considered as bridging agents capable of improving the overall quality of relationships. Quality relationships, especially through mutually supportive network relationship, can contribute to superior performance. Increased interaction leads to more intensive and relevant information exchange to improve firm performance (Nguyen et al., 2020). Several authors have examined the relationship between social capital and sustainable rural tourism performance. Social capital can increase community involvement and overall rural development (Naderi et al., 2019). Social interactions, network relationships, and relationship quality cultivate a sense of trust and norms, fostering responsible behavior and hope (Lu et al., 2022), loyalty, satisfaction, and long-term partnerships among stakeholders (Alves et al., 2019), knowledge exchange, resource sharing, and collaboration for the sustainable development of rural tourism (Pilving et al., 2021). Dai et al. (2021) and Zhang et al. (2021) found that social capital plays a crucial role in sustainability rural tourism development. Hence, this study proposed hypothesis is:

H1: Sustainable rural tourism performance is positively impacted by social capital.

2. Sustainable rural tourism performance is impacted by government support

Reference to sustainability theory and social exchange theory, this conceptual framework states that both government financial support and government non-financial support can enhance the ability of rural tourism administrators to improve sustainable rural tourism performance. This includes economic, social, environmental, cultural, and governance sustainability. Consistent with the findings of Yavana Rani et al. (2017) and Jia et al. (2023), government support shows a positive correlation with rural tourism development. This is seen through the active involvement of resident in the decision-making process and their participation in rural tourism activities. Such engagement is fostered by resident feeling valued for their contributions, which underscores the important role of government support in achieving sustainable rural tourism.

In the context of sustainable rural tourism, government support encompasses financial aid, infrastructure development, capacity-building programs, and regulatory measures (Jeong et al., 2021; Xiao et al., 2023). Financial support from the government, such as funding for infrastructure development, destination marketing, training, and the promotion of sustainable practices, plays a pivotal role in enhancing sustainable rural tourism performance (Hardjosoekarto and Lawang, 2021). Non-financial government support, including regulations, and policies also plays a crucial role in increasing sustainable rural tourism performance (Badal, 2018). Hence, this study proposed hypothesis is:

H2: Sustainable rural tourism performance is positively impacted by government support.

3. Sustainable rural tourism performance is impacted by entrepreneurial orientation

Referring to sustainability theory and entrepreneurial orientation theory, this conceptual framework states that engaging in innovation will lead to the development of new tourism products and services. Being proactive in identifying opportunities, taking risks to create new tourism offerings, applying a firm approach to competition, and maintaining self-reliance rather than relying on others to achieve goals can enhance the capacity of rural tourism administrators to improve the overall sustainability of rural tourism. This includes economic, social, environmental, cultural, and governance

sustainability. In line with the findings of Solikahan and Mohammad (2019), Dadzie et al. (2020), and Wales et al. (2020), rural tourism characterized by a strong entrepreneurial orientation shows a propensity towards innovation. These entities consistently explore new opportunities, demonstrate a willingness to navigate uncertainty by taking risks, and implement aggressive and competitive strategies to gain competitive advantage. In addition, there is a degree of employee independence and decision-making freedom in this context (Lumpkin and Pidduck, 2021). In the term of sustainable rural tourism, entrepreneurial orientation (EO) plays a crucial role in enhancing the sustainable rural tourism performance. Economically, EO can facilitate economic development, diversification, job creation, and an increase in local income (Villanueva-Álvaro et al., 2017). Socially, EO contributes to community welfare (Idziak et al., 2018). Environmentally, EO can alleviate the negative impact of tourism activities and endorse conservation efforts (Shevchenko et al., 2021). Culturally, EO can promote the preservation of cultural within the context of tourism development (Gica et al., 2021). On the governance, EO has the capacity to enhance effective management and decision-making processes by prioritizing sustainable principles and practices (Dos Anjos and Kennell, 2019). Hence, this study proposed hypothesis is:

H3: Sustainable rural tourism performance is positively impacted by entrepreneurial orientation.

4. Entrepreneurial orientation is impacted by social capital

Drawing on entrepreneurial orientation theory and social capital theory, this conceptual framework explains that social interactions, network relationships, and relationship quality can facilitate the exchange of knowledge and the acquisition of resources necessary to innovate new tourism products and services, proactively seize business opportunities, take risks, be aggressive in increasing competition, and exercise autonomy in decision-making. It aligns with study by Nguyen et al. (2020), which indicates that increased interaction leads to a more intensive exchange of relevant information. The knowledge acquired is then utilized to establish a competitive advantage through innovation and the creation of new products (Nguyen et al., 2020). Febrian et al. (2018) found that social capital can significantly impact entrepreneurial behavior and the development of entrepreneurial orientation in rural tourism. Furthermore, according to Corrêa et al. (2021), social capital has an impact on individual entrepreneurial orientation, underscoring the importance of dense social capital networks in stimulating individual entrepreneurial orientation. Nguyen et al. (2020) discovered that social capital influences entrepreneurial orientation. Hence, this study proposed hypothesis is:

H4: Entrepreneurial orientation is positively impacted by social capital.

5. Entrepreneurial orientation is impacted by government support

Referring to entrepreneurial orientation theory and social exchange theory, this conceptual framework posits that both financial government support and non-financial government support can enable rural tourism administrators to innovate new tourism products and services, proactively seize business opportunities, take risks, be aggressive in increasing competition, and exercise autonomy in decision-making. This is consistent with Homans social exchange theory, which elucidates the relationships and interactions among the government, local residents, and stakeholders in rural tourism. Additionally, Hoque (2018), Dai and Si (2018), and Xiao et al. (2023) revealed that government support has an impact on innovation and risk-taking behavior, with government financial support influencing competitive aggressiveness and autonomy. Chew et al. (2022) reveals that government regulations impact on the entrepreneurial orientation of the firm. In the context of rural tourism, Lucky et al. (2021) demonstrated that government support for the development of sustainable rural tourism has heightened awareness among the population, encouraging their participation in tourism activities as they recognize the value and benefits that these initiatives bring to the community. Hence, this study proposed hypothesis is:

H5: Entrepreneurial orientation is positively impacted by government support.

6. Sustainable rural tourism performance is impacted by social capital through entrepreneurial orientation as mediator

Drawing on entrepreneurial orientation theory, and social capital theory, this conceptual framework elucidates how social interactions, network relationships, and relationship quality can facilitate the exchange of knowledge and the acquisition of resources necessary to innovate new tourism products and services. It involves proactively pursuing business opportunities, taking risks, being aggressive in increasing competition, and implementing autonomy in decision-making. This perspective aligns with study by Nguyen et al. (2020) who demonstrate that increasing interaction leads to a more intensive exchange of relevant information. The knowledge gained is then utilized to build competitive advantages through innovation and the creation of new products (Nguyen et al., 2020). Drawing on sustainability theory and entrepreneurial orientation theory, this conceptual framework posits that entrepreneurial orientation capabilities can enhance the capacity of rural tourism administrators to improve sustainable rural tourism performance. It encompasses economic, social, environmental, cultural, and governance sustainability. This conceptual framework posits that entrepreneurial orientation (EO) plays a crucial role in increasing sustainable rural tourism performance. Economically, EO can foster economic development, diversification, job creation, and an increase in local income (Villanueva-Álvaro et al., 2017). Socially, EO contributes to community welfare (Idziak et al., 2018). Environmentally, EO can mitigate the negative impacts of tourism activities and support conservation efforts (Shevchenko et al., 2021). Culturally, EO can promote cultural preservation within the context of tourism development (Gica et al., 2021). Governance-wise, EO has the capacity to enhance the effectiveness of management and decision-making processes by prioritizing sustainable principles and practices (Dos Anjos and Kennell, 2019). That is, the social capital possessed by rural tourism administrators can influence the entrepreneurial orientation ability of rural tourism administrators to improve the sustainable performance of rural tourism. This perspective aligns with study by Yudha (2018), Aidoo et al. (2020), Nguyen et al. (2020), and Ince et al. (2023) who determined that

social capital can influence the entrepreneurial orientation abilities of rural tourism administrators. Furthermore, entrepreneurial orientation can improve the sustainable rural tourism performance. Hence, this study proposed hypothesis is:

H6: Sustainable rural tourism performance is positively impacted by social capital through entrepreneurial orientation as mediator.

7. Sustainable rural tourism performance is impacted by government support through entrepreneurial orientation as mediator

Referring to entrepreneurial orientation theory and social exchange theory, this conceptual framework asserts that both government financial support and non-financial government support can empower rural tourism administrators to innovate new tourism products and services, proactively seize business opportunities, take risks, and be aggressive in increasing competition while exercising autonomy in decision-making. This perspective is supported by study from Hoque (2018), Dai and Si (2018), and Xiao et al. (2022), revealing a positive relationship between government financial and non-financial support and the entrepreneurial orientation of the tourism sector and private companies. In the context of sustainability theory and entrepreneurial orientation theory, this conceptual framework posits that entrepreneurial orientation (EO) plays a crucial role in increasing sustainable rural tourism performance. Economically, EO can foster economic development, diversification, job creation, and an increase in local income (Villanueva-Álvaro et al., 2017). Socially, EO contributes to community welfare (Idziak et al., 2018). Environmentally, EO can mitigate the negative impacts of tourism activities and support conservation efforts (Shevchenko et al., 2021). Culturally, EO can promote cultural preservation within the context of tourism development (Gica et al., 2021). Governance, EO has the capacity to enhance the effectiveness of management and decision-making processes by prioritizing sustainable principles and practices (Dos Anjos and Kennell, 2019). Therefore, government support can stimulate the entrepreneurial orientation abilities of rural tourism administrators, subsequently improving the sustainable rural tourism performance. It aligns with study of Pulka et al. (2021) and Ismail and Zakaria (2018) reveals that SME's performance influenced by government support. Moreover, Nakku et al. (2020) reveals that government support have the potential to amplify the influence of entrepreneurial orientation dimensions on performance. Furthermore, Thongsri and Chang (2019) reveal that government support can increase innovation behavior, thereby innovative behavior are mediators that can increase company performance. Hence, this study proposed hypothesis is:

H7: Sustainable rural tourism performance is positively impacted by government support through entrepreneurial orientation as mediator. Next, we describe the study methodology that addresses testing the model hypothesized in the previous section and illustrated in Figure 1.

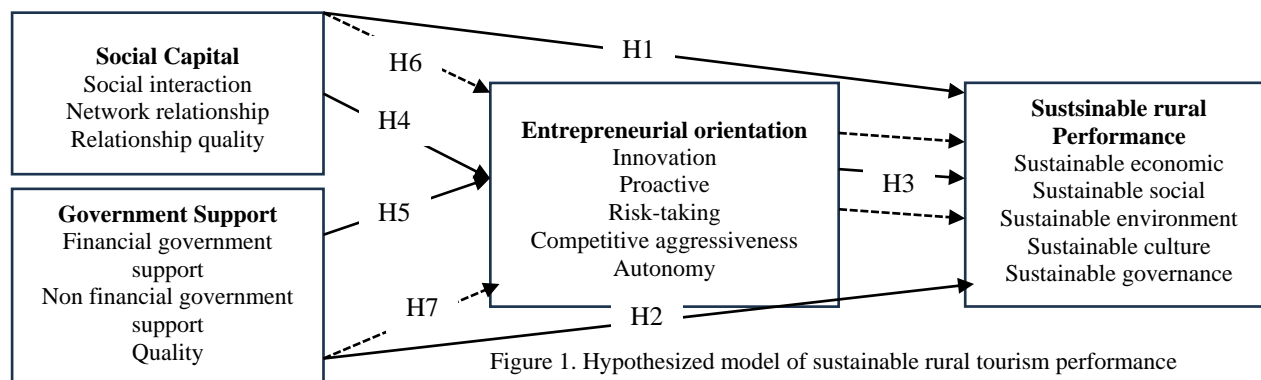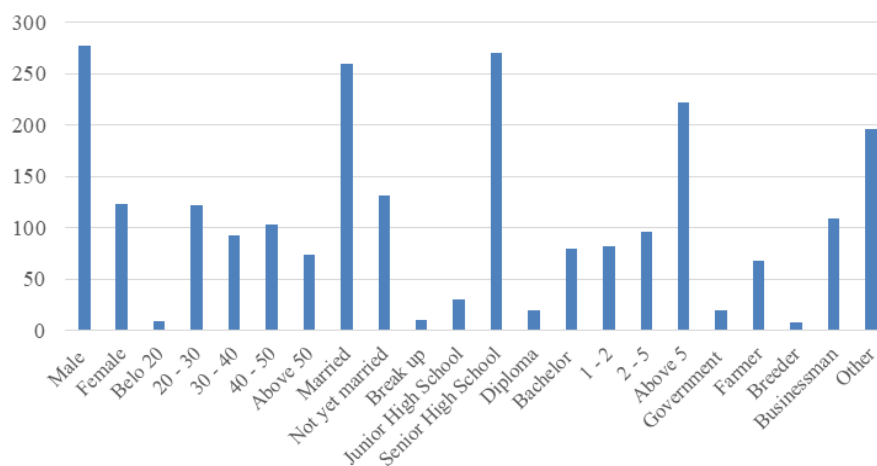Figure 1. Hypothesized model of sustainable rural tourism performance

Figure 2. Demographic profile of respondents

METHODOLOGY

1. Sample selection

The study was conducted in DIY Province by collecting data from four districts and one city through an independent survey of rural tourism managers. Total of forty rural tourism organizations participated, each represented by ten people,

including advisors, leaders, deputy, secretaries, treasurers, and support sections of rural tourism activities. Respondents were selected using a purposive sampling method, with a focus on individuals who have the ability to understand the concept of sustainability. The survey was distributed in both electronic and face-to-face formats, in line with Dillman (2020) recommendation to be sent via email and face-to-face. Reminders and survey completion instructions were included. With the support of tourism office officials in each district and city, the response rate was close to 100%. The demographic profile of respondents is summarized in Figure 2 and Table 1.

Table 1. The demographic profile of respondents (n=400)

Item/Category	Frequency	Percentage
Gender		
Male	277	69.2
Female	123	30.8
Age, years		
Below 20 (< 20)	9	2.2
20 – 30	122	30.5
30 – 40	92	23.0
40 – 50	103	25.8
Above 50 (> 50)	74	18.5
Marital status		
Married	259	64.9
Not yet	131	32.8
Break up	10	2.3
Education Level		
Junior High school	30	7.4
Senior High school	270	67.6
Diploma	20	5.0
Bachelor's degree or higher	80	20.0
Period of work, years		
1 – 2	82	20.4
2 – 5	96	24.1
Above 5	222	55.5
Job profession		
Government employees	19	4.7
Farmer	68	17.0
Breeder	8	2.0
Businessman	109	27.4
Others (excluding the above job)	196	48.9

2. Item scale development

To conduct this analysis, seventy-five assessment items were drawn from existing literature. Each item was measured on a five-point Likert-type scale. In addition, a pilot study was also conducted by distributing questionnaires to sixty rural tourism administrators in DIY Province. We sought their feedback on the clarity, wording, and overall comprehension of the statements. As recommended by Babbie and Mouton, each item was also discussed with academics, practitioners in tourism, and stakeholders from the tourism office (Buthelezi, 2018). Their insights were invaluable in evaluating the relevance and clarity of each statement. In light of their valuable feedback, the items underwent additional modifications, revisions, and refinements to improve their clarity and validity. Subsequently, a questionnaire consisting of seventy-five items was distributed for further evaluation and data collection. Sustainable rural tourism performance is measured based on administrators' perceptions of sustainability items such as economic, social, environmental, cultural and governance. It is adapted from previous research (Marzo-Navarro et al., 2020) Final Report of the study on rural tourism classification in Sleman regency 2022). The scale consists of twenty-seven items on a five-point Likert scale. Social capital was adapted from previous research (Nguyen et al., 2020), consisting of seventeen items on a five-point Likert scale. Government support was adapted from previous research (Nakku et al., 2020) consisting of ten five-point Likert scale items. Entrepreneurial orientation was adapted from previous research (Lumpkin et al., 2009), consisting of twenty-one five-point Likert scale items.

3. Data Analysis

Smart Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to assess the interrelationships among social capital, government support, entrepreneurial orientation, and sustainable rural tourism performance, considering both latent and observable variables (Sarstedt et al., 2021). It explores the intricate relationship between social capital and government support as independent variables, entrepreneurial orientation as an intervening or mediator variable, and sustainable rural tourism performance as the dependent variable (Hair et al., 2021; Henseler, 2018). Given these considerations, the selection of PLS-SEM was deliberate due to its ability to handle the complexity of our research framework. PLS-SEM testing is applied with seven stages systematically. The systematic procedure was adapted from Hair et al. (2021), and the stages are described as follows:

Stage 1: Determine the structural model
Stage 2: Determine the measurement model

Stage 3: Collect and exam data
Stage 4: Estimate PLS Path model
Stage 5: Assess the results of the measurement model
Stage 6: Assess the results of the structural model
Stage 7: Interpret PLS-SEM results and draw conclusions

The procedure commences with the identification of the structural model. In this stage, social capital and government support are designated as independent variables, entrepreneurial orientation as an intervening variable, and sustainable rural tourism performance as dependent variable. Subsequently, the measurement model is determined, involving the establishment of the reflective measurement model, followed by the examination of the data. Next stage, the PLS-SEM algorithm test is conducted, and the results offer a comprehensive overview of crucial considerations during the analysis. In this stage, we scrutinize the PLS path model estimates, analyzing the '+' or positive signs indicative of a positive relationship between variables social capital, government support, entrepreneurial orientation, and sustainable performance of rural tourism. Conversely, the '-' sign denotes a negative relationship between these variables.

Based on the calculation results, the next step involves evaluating the measurement model. The data for examination is considered reliable if the Cronbach's alpha (CA) and composite reliability (CR) values of each construct variable above 0.6. It is considered valid if the loading factor value of each item is above 0.6, the average variance extracted (AVE) from each construct variable is above 0.5, and the values for Fornell-Larcker and cross loading meet the criteria.

Once these criteria are met, the evaluation proceeds to the structural model. At this stage, we assess the relationship between variables, and the significance of the influence between variables. The significance of the relationship between variables is indicated by t-value is above 1.96 ($\alpha = 5\%$), and the ρ-value is below 0.05. When the R^2 value approaches one, it signifies that all dependent variables are significantly influenced by the independent variables. Conversely, if the R^2 value approaches zero, it indicates that the dependent variable is not influenced by the independent variable, although it might be affected by other variables. In the final stage, we interpret the findings and draw conclusions.

RESULTS AND DISCUSSION

1. Demographic Data

The demographics of the forty rural tourism administrators in DIY Province are outlined in Table 1, which represents a total sample size of 400 administrators, equivalent to 100 percent of the questionnaires distributed in the survey. The demographic aspects presented in Table 1 include gender, age, marital status, education level, years of service, and professional occupation. To summarize, 69.2 percent of the participants were male, 44.3 percent were over forty years old, 64.9 percent were married, 67.6 percent had a high school education, 55.5 percent had more than five years of service, and 48.9 percent worked in a professional occupation other than government work, agriculture, animal husbandry, or business. This data shows that participants in this study were mostly married men, with a high school education level, more than five years of professional work experience outside of government work, agriculture, animal husbandry, etc. and entrepreneurship. These consisted of private company employees, art activities, culinary arts, or freelance work, etc.

2. Assess the results of the measurement model

The measurement scale in this study adopts the CFA criteria used in SmartPLS version 3.2. The results of testing the PLS-SEM algorithm on the measurement model will offer a comprehensive understanding of important considerations during the analysis. Based on the measurement results, it shows the suitability or disparity between the test data and the predetermined measurement model boundaries. If deficiencies are found, then structural model testing does not need to continue (Hair et al., 2021). This finding allows adjustments or corrections to be made to the test if the items used in data collection cannot effectively measure the construct (Hair et al., 2021). As a result, CFA in Table 2 serves as an effective method to build a reliable and valid measurement model before proceeding to structural model testing (Hair et al., 2021).

Hair et al. (2021), identified three measurement tools in the measurement model to assess data reliability and validity: convergent validity, discriminant validity, and reliability. First, an examination of the parameter estimates and reliability of the construct measures is used to establish the internal structure (Hair et al., 2021). The parameters are expected to be significant and aligned with the hypotheses. The main method for assessing the measurement model involves measuring the variance extracted and the composite reliability (CR) for each construct. In particular, composite reliability values of 0.60 to 0.70 are acceptable (Hair et al., 2021). In this context, Cronbach alpha (CA) values ranged from 0.915 to 0.965 and Composite reliability (CR) ranged from 0.925 to 0.965.

The convergent validity of items was evaluated through the loading and average variance extracted (AVE) values. Items that showed high residual variance with other items, or items with loadings below the recommended threshold value (0.5), were excluded to refine the model (Hair et al., 2021). In this context, a total of seventy-five measurement items were retained as they showed loading values exceeding the recommended threshold (0.5). In social science studies, particularly when using newly developed scales, researchers often obtain weaker external loadings (<0.70) (Hulland et al., 2018). Nevertheless, items with very low external loadings (below 0.40) should be excluded from the construct (Hair et al., 2021). In this context, the AVE values ranging from 0.573 to 0.617 all exceeded the recommended minimum level of 0.50, as suggested by (Hair et al., 2021), thus strengthening convergent validity for all constructs.

The measurement model presented in Table 2 can be considered a validated measurement for the social capital of rural tourism administrators, government support, entrepreneurial orientation ability of rural tourism administrators, and sustainable performance model of rural tourism in this study.

Table 2. Confirmatory factor analysis results

Construct and items	Loadings	CA	CR	AVE
Social Capital (SC)		0.961	0.965	0.617
Social Interaction		0.891	0.920	0.697
Our rural tourism …	-			
… keep close relationships with internal and external colleagues	0.758			
… hold formal meetings with internal and external colleagues	0.880			
… make internal and external colleagues as key partners	0.830			
… ask internal and external colleagues to be discussion partners	0.872			
… ask internal and external colleagues as advisor when needed	0.828			
Relationship quality		0.940	0.951	0.736
Willing to help colleagues when asked	0.870			
Willing to work together when the opportunity arises	0.874			
Avoid making mistakes that can fail relationships	0.869			
No one takes unilateral advantage even if there is a chance	0.859			
Have a commitment to keep the promises of agreement	0.875			
Do the best to achieve common goals	0.848			
Easy to get help from colleagues when facing difficulties	0.808			
Networking relationship		0.911	0.933	0.737
Willing to be part of the rural tourism organization forum	0.812			
Through organizations, our rural tourism be acquainted:	-			
…… someone who is skilled in sustainable rural tourism	0.870			
…… someone who is skilled in tourist demand	0.884			
…… someone who is skilled in how to market rural tourism	0.852			
…… someone who is skilled in how to develop capacity	0.874			
Government support (GS)		0.918	0.931	0.576
Financial government support		0.907	0.931	0.728
By trusting the government programs, our rural tourism:	-			
… receive indirect financial support	0.841			
… receive facilities support	0.868			
… receive infrastructure support	0.877			
… receive marketing support	0.859			
… receive required training support	0.821			
Non-financial government support		0.886	0.917	0.689
By trusting the government programs, our rural tourism:	-			
… get mentoring support in implementing of new policy	0.840			
… get mentoring support in implementing sustainable tourism	0.873			
… get mentoring support in build vision, mission and goals	0.783			
… get mentoring support to improve governance of rural tourism	0.872			
… get mentoring support in building institution that deals with cultural and environmental protection	0.778			
Entrepreneurial orientation (EO)		0.915	0.925	0.607
Innovation		0.853	0.895	0.630
Our rural tourism …	-			
… focus on develop new tourism products and services	0.807			
… succeeded in launch new tourism product and services	0.832			
… create a new tourism package	0.776			
… follow trends in tourism products and services	0.791			
… apply technology such as wifie network and social media	0.761			
Proactive		0.853	0.895	0.630
Our rural tourism …	-			
… reactive to get opportunities than competitors	0.841			
… become the first to market new tourism products and services	0.831			
… behave as a pioneer rather than an imitator	0.778			
… have a future orientation by continuing to pay attention to trends	0.745			
Taking risk		0.889	0.924	0.752
Our rural tourism …	-			
… think seriously to reduce uncertainty before acting	0.824			
… limit the low-risk ones that can be returned quickly	0.904			
… make low-risk investments with fast returns	0.892			
… study investment risk well so you can get profits immediately	0.846			
Competitive aggressiveness		0.688	0.828	0.616
Our rural tourism...	-			
… may maintain a competitive position	0.798			
… may outperform neighboring rural tourism	0.809			
… may provide quick financial benefits	0.745			
Autonomy		0.864	0.903	0.652
Our rural tourism...	-			
… giving freedom to create ideas for successful rural tourism	0.838			

… promote bottom-up ideas and is open in making decisions	0.877			
… maintain freedom to act autonomy	0.866			
… encourage opportunities for ideas that arise from autonomy efforts	0.737			
… supports individual and team efforts to work independently	0.706			
Sustainable rural tourism performance (SPRT)		0.958	0.961	0.616
Sustainable economic		0.867	0.900	0.601
Our rural tourism can reduce urbanization rates	0.730			
Our rural tourism can ask resident to provide homestays	0.793			
Our rural tourism can encourage resident to sell culinary delights	0.804			
Our rural tourism has succeeded in increasing residents' income	0.848			
Our rural tourism has succeeded in creating diversity	0.699			
Our rural tourism can reduce unemployment rates	0.767			
Sustainable Social		0.918	0.938	0.752
Our rural tourism involves many residents	0.869			
Our rural tourism encourages residents to work together	0.846			
Our rural tourism involves residents selling tourists' needs	0.903			
Our rural tourism involves residents interacting with tourists	0.878			
Our rural tourism provides equal opportunities for all residents	0.848			
Sustainable Culture		0.889	0.919	0.693
Our rural tourism involves residents to preserve regional culture	0.840			
Our rural tourism has team that deals with cultural preservation	0.849			
Our rural tourism practices cultural attractions regularly	0.836			
Our rural tourism shows cultural attractions regularly	0.823			
Our rural tourism involves tourists as participants in cultural atractions	0.813			
Sustainable environment		0.861	0.900	0.643
Our rural tourism engages residents to preserve the environment	0.790			
Our rural tourism has a team that deal with environmental conservation	0.844			
Our rural tourism receives training on environmental conservation	0.807			
Our rural tourism creates environmental conservation tour packages	0.822			
Our rural tourism provides rubbish boxes at tourist locations	0.744			
Sustainable governance		0.893	0.919	0.657
Our rural tourism has formal legal status	0.800			
Our rural tourism has an organizational structure	0.832			
Our rural tourism has both short and long-term planning	0.899			
Our rural tourism implements a planning and monitoring system	0.878			
Our rural tourism implements a recording and reporting system	0.799			
Our rural tourism holds regular meetings to carry out evaluations	0.627			

Discriminant validity is assessed using the Fornell and Larcker criteria (Radomir and Moisescu, 2020). The assessment is a comparison of the square root of the average variance extracted value with the correlation between latent variables, the square root value of each AVE construct must be greater than its correlation value with other constructs. As a result, as illustrated in Table 3, the merged set of indicators is not unidimensional and shows sufficient differentiation between construct variables. The diagonal entries in italicized numbers represent the square root AVE values for each construct, and these values differ from the others. Confirming the presence of discriminant validity, it is observed that, for each pair of latent variables, the square root of the AVE exceeds the correlation between latent variables.

Table 3. Discriminant validity results

Variables	Social capital	Government support	Entrepreneurial orientation	Sustainable rural tourism performance
Social capital	0.785			
Government Support	0.533	0.759		
Entrepreneurial orientation	0.532	0.459	0.779	
Sustainable rural tourism performance	0.610	0.474	0.574	0.782

3. Assess the results of the structural model

Referring to the recommendations of Hair et al. (2021), this study assessed the predictive ability of the model and tested the relationship between social capital and government support as predictor variables, with entrepreneurial orientation as the intervening variable, and performance of sustainable rural tourism as the dependent variable. This evaluation was conducted through bootstrapping. The study examined the path coefficients (β) by considering the positive or negative signs connecting the constructs, along with the magnitude of the values. To determine the significance of the path, this study considers the t-value of the path to be equal to or greater than 1.96 (t-value > 1.96 at α = 5%), and a ρ-value less than or equal to 0.05 (ρ < 0.05) to be acceptable. Table 4 displays the results of the Structural Equation Modeling (SEM) test of the hypothesized paths. The significance level of the coefficients is in line with the theory presented in the model. Parameter estimates (for ρ and t-values) are not only significant but also within the expected scale, as described by (Hair et al., 2021), thus strengthening the predictive validity of the model. Table 4 shows that four of the five path coefficients (direct effects) show statistical significance, the relationships between social capital and sustainable rural tourism

performance (t-value 4.39, ρ-value 0.000), Consequently, the acceptance of H1 aligns with prior research indicating that social capital plays a crucial role in promoting the sustainable development of rural tourism, consistent with the findings of earlier scholars (Rahmawati et al., 2023; Prayitno et al., 2023; Kim and Shim, 2018).

Furthermore, the relationships between entrepreneurial orientation and sustainable rural tourism performance (t-value 12.13, ρ-value 0.000) are statistically significant. Hence, the acceptance of H3 is in accordance with the results of earlier studies that asserted the positive influence of entrepreneurial orientation on the sustainable development of rural tourism (Tang et al., 2020; Ribeiro et al., 2021; Tajeddini et al., 2020). In addition, the relationships between social capital and entrepreneurial orientation (t-value 5.42, ρ-value 0.000) showed statistical significance. Thus, the validation of H4 aligns with previous research findings that have affirmed the positive impact of social capital on entrepreneurial orientation, as indicated by studies such as Aidoo et al. (2020), Rodrigo-Alarcón et al. (2018), and Khattak (2022).

Moreover, the relationship between government support and entrepreneurial orientation (t-value 3.34, ρ-value 0.000) showed statistical significance. Therefore, the confirmation of H5 aligns with findings from prior research that have asserted the favorable impact of government support on entrepreneurial orientation, as indicated by studies such as Ismail and Zakaria (2018), Yusoff et al. (2021), and Zaato et al. (2021). However, the results in Table 4 failed to provide support for H2 due to the lack of influence of government support on rural tourism sustainable performance (t-value 1.21, ρ-value 0.114). Thus, the non-acceptance of H2 is warranted as it contradicts the findings of earlier studies that asserted a positive influence of government support on the sustainable performance of rural tourism, as documented by Hardjosoekarto and Lawang (2021), Jia et al. (2023), and Liu et al. (2020). However, the study by Apostolopoulos et al. (2020) indicates that government support does not exert any influence on the development of rural tourism. This is attributed to the inhibitory effects of government regulations, policies, and programs, which impede financial assistance for the development of rural tourism. Next, Figure 3 displays the path coefficient, t-value, and p value for each hypothetical path.

Table 4. Structural model results

Direct effect	β	*t*-value	ρ-value
H1. Sustainable rural tourism performance is positively impacted by social capital	0.253	4.39	0.000
H2. Sustainable rural tourism performance is positively impacted by government support.	0.058	1.21	0.114
H3. Sustainable rural tourism performance is positively impacted by entrepreneurial orientation.	0.613	12.13	0.000
H4. Entrepreneurial orientation is positively impacted by social capital	0.402	5.42	0.000
H5. Entrepreneurial orientation is positively impacted by government support	0.245	3.34	0.000

Table 5. Mediation test results

Direct effect	Direct effect/ t-value	Indirect effect	Total effect	Indirect effect (t-value)	ρ-value
H6. Sustainable rural tourism performance is positively impacted by social capital through entrepreneurial orientation as mediator.	0.253/4.39	0.246	0.499	5.88	0.000
H7. Sustainable rural tourism performance is positively impacted by government support through entrepreneurial orientation as mediator.	0.058/1.21	0.150	0.208	3.11	0.001
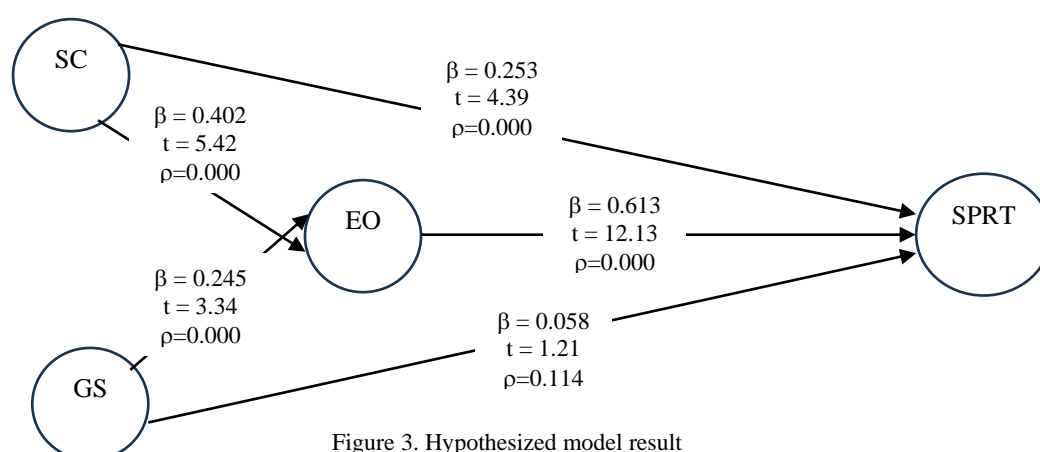
Figure 3. Hypothesized model result

4. Assess the mediation effects

Two mediations were conducted to assess the influence and magnitude of the ability of entrepreneurial orientation in mediating the relationship between social capital and sustainable performance in rural tourism, as well as the relationship between government support and sustainable performance in rural tourism. One of the main advantages of using path models is the ability to explore direct, indirect, and total effects between latent variables (Hair et al., 2019). Indirect effects are determined by understanding the impact of a particular variable on a second variable through its effect on a third intervening or mediating variable (Hair et al., 2021).

Tabel 5 presents the results of examine the mediating effect of entrepreneurial orientation ability on the relationship between social capital and sustainable of performance rural tourism, a statistically significant indirect effect (t-value 5.88, p-value 0.000) was observed from the bootstrap mediation test. Therefore, H6 is supported by the research data.

Consequently, the validation of H6 aligns with findings from earlier studies asserting a positive influence of government social capital on the sustainable performance of rural tourism, facilitated through entrepreneurial orientation, as evidenced by research such as Aidoo et al. (2020), Nguyen et al. (2020), and Yudha (2018). Furthermore, the mediating effect of entrepreneurial orientation ability in mediating the relationship between government support and sustainable of performance rural tourism showed a statistically significant indirect effect (t-value 3.11, p -value 0.001) observed from the bootstrap mediation test. Therefore, H7 is also supported by the research data. Hence, the confirmation of H7 is consistent with previous research that affirms a positive impact of government support on the sustainable performance of rural tourism, facilitated by entrepreneurial orientation. This alignment is supported by studies such as Nakku et al. (2020), Ismail and Zakaria (2018), and Pertiwi (2022). Consequently, this study confirms that entrepreneurial orientation ability acts as a full mediator in each of the aforementioned simple mediation relationships (H6 and H7).

DISCUSSION

This study proposes the hypothesis that social capital, as a resource for tourism administrators, has a positive impact on the sustainable rural tourism performance. From the results of the structural model, the hypothesized path shows a statistically positive impact. This finding indicates that the sustainable performance of rural tourism in Yogyakarta province can be influenced significantly by social interaction, network relationships, and relationship quality administrators of rural tourism organization. Positive social interactions within the local community enhance the overall tourism experience (Lin et al., 2019). Involving local residents in tourism activities fosters a sense of belonging and pride, contributing to the sustainability of rural tourism (Rodrigues et al., 2021). Furthermore, interactions between tourists and local communities facilitate cultural exchange (Seyfi et al., 2020). This exchange leads to increased understanding, respect, and appreciation, fostering sustainable tourism practices. Building strong networks and partnerships among various stakeholders, including local businesses, government agencies, and non-profit organizations, create a supportive environment for rural tourism (Manaf et al., 2018). Collaborative efforts lead to shared resources, knowledge, and marketing efforts, promoting sustainability (Zhou et al., 2020). Establishing and maintaining quality relationships with local stakeholders, such as residents, businesses, and authorities, is crucial. Effective communication and collaboration address concerns, promote responsible tourism practices, and enhance the overall sustainability of rural tourism.

Government support plays an important role in the sustainable development of rural tourism. This study puts forward the hypothesis that government support, as a resource for rural tourism, contributes to improving the sustainable performance of tourism. However, from the results of the structural model, the hypothesized path does not show a statistically positive impact. While government support is essential for the success of rural tourism, various challenges, including implementation gaps, inadequate funding, and policy inconsistencies, can limit its impact on promoting sustainable practices. Despite supportive policies, there are gaps in the implementation process. Lack of effective enforcement, monitoring, and evaluation mechanisms can hinder the intended impact of government support (Yanes et al., 2019). Lengthy and bureaucratic processes can delay the disbursement of funds or implementation of support programs (Alashwal and Alashwal, 2023). This delay may affect the timely development of infrastructure, services, and other initiatives crucial for sustainable rural tourism. Limited financial resources allocated to rural tourism initiatives can restrict the scope and effectiveness of government support (Liu et al., 2020). Changes in government policies or inconsistency in support measures over time can create uncertainty among stakeholders. This uncertainty may discourage long-term investments and commitment to sustainable practices (Suckall et al., 2020).

The discrepancies in the results of these studies have been debated by many authors. It is different from empirical evidence from other studies which states that government support has a positive impact on sustainable rural tourism development (Songling et al., 2018; Liu et al., 2023; Xue et al., 2023). As a consequence, the findings of this study do not support the previous contribution by Gica et al. (2021), Apostolopoulos et al. (2020), and Picas et al. (2021). On the contrary, the findings of this study are in line with research by Han et al. (2018) and Yu (2022). Perhaps the low level of government support in improving the capabilities of rural tourism administrators through participation in training programs may cause the impact of government support on the sustainable performance of rural tourism to not show a positive relationship.

This study puts forward the hypothesis that the entrepreneurial orientation capabilities of rural tourism administrators contribute to the sustainable performance of tourism in the region. From the results of the structural model, the hypothesized path shows a statistically positive impact. This demonstrates that the innovative, proactive, risk-taking, competitively aggressive, and independent approaches adopted by rural tourism administrators in the Yogyakarta province have effectively elevated the sustainable performance of rural tourism. Aggressiveness, innovation, and pro-activeness ability drive performance of SMEs in rural (Kapaya et al., 2018). Futhermore, innovation ability drive the development of new and unique tourism products and experiences in rural areas. Introducing innovative offerings attracts tourists and can contribute to the economic sustainability of the destination (Custódio Santos et al., 2020). Proactive ability engagement with local communities allows tourism stakeholders to address concerns, involve residents in decision-making, and ensure that tourism activities align with community values and needs, fostering long-term sustainability (Weaver et al., 2020). A willingness to take risks open up opportunities for growth and economic sustainability in rural tourism (Zhu and Deng, 2020). Encouraging entrepreneurial initiatives and supporting risk-taking endeavors by local businesses can stimulate innovation and create a more dynamic and competitive tourism environment. By maintaining a commitment to high-quality services and experiences can position a rural destination competitively, leading to positive word-of-mouth promotion and repeat visits (Alves et al., 2019). Allowing local communities and businesses autonomy in decision-making empowers them to tailor tourism strategies to their unique contexts. This autonomy ensures that initiatives align with local values, contributing to social sustainability.

CONCLUSION

This study concludes that the ability of rural tourism administrators to increase the sustainable rural tourism performance from the positive impact of social capital and government support depends on how effectively their entrepreneurial orientation skills are utilized. This study has shown that possession of social capital resources and government support alone will not result in sustainable rural tourism performance (the hypothesized path value H2 gives negative results). Therefore, to realize the required results, social capital originating from social interactions, network relationships and relationship quality must be utilized through a series of entrepreneurial orientation capabilities, as well as government support in the form of financial and non-financial forms must be utilized through a series of entrepreneurial orientations.

In addition, this study has shown that to increase sustainable rural tourism performance, rural tourism administrators must have entrepreneurial orientation capabilities in order to convert social capital resources and government support into a positive impact on the sustainable rural tourism performance. This entrepreneurial orientation capability seems very relevant for rural tourism in Indonesia. The implication is that, contrary to the view that small firms do not need an entrepreneurial orientation to succeed, this study provides sufficient justification for rural tourism to pay more attention to their entrepreneurial orientation activities. The findings of this study are largely in line with theoretical expectations. However, as with any scientific research, there are several limitations that need to be noted. Even though key respondents are considered experts in the field studied, the strength of the data will be better if each statement is worded appropriately and simply according to the respondent's abilities. Again, in the realm of respondents, the methods applied to obtain responses cannot easily introduce informant bias, especially with regard to the assessment of various scale measurement items.

Although this study empirically strengthens social capital theory, social exchange theory, entrepreneurial orientation theory, and sustainability theory in exploring the relationship between the four theories. However, this raises the need to reassess social exchange theory in the context of government support in rural tourism development. This is because research results show that government support cannot have a direct influence. This study statistically shows that government support has succeeded in influencing the sustainability of rural tourism performance through the role of entrepreneurial orientation. Therefore, future research may consider testing each element in the entrepreneurial orientation capability construct to determine the differential impact of each element on the sustainable performance of rural tourism. For example, they can explore creativity and innovation as a capability. In addition, there is a need for further research regarding the benefits of this hypothetical model in tourist villages in developing countries.

From a theoretical point of view, future research can adopt institutional and competitive learning theories to enrich research. This can help in identifying other institutional resource factors, apart from social capital resources, government support, and entrepreneurial orientation that have a positive influence on the sustainable performance of rural tourism.

REFERENCES

Aidoo, S.O., Agyapong, A., & Mensah, H.K. (2020). Social capital and performance of SMEs: The role of entrepreneurial orientation and managerial capability. *Africa Journal of Management*, 6(4), 377–406. https://doi.org/10.1080/23322373.2020.1830698

Alim, M.A., Jee, T.W., Voon, M.L., Ngui, K.S., & Kasuma, J. (2021). TOURISM DEVELOPMENT THROUGH COMMUNITIES' SUPPORT: RURAL COMMUNITIES' PERSPECTIVE. *Geo Journal of Tourism and Geosites*, 39, 1473–1482. https://doi.org/10.30892/gtg.394spl18-791

Alves, H., Campón-Cerro, A.M., & Hernández-Mogollón, J.M. (2019). Enhancing rural destinations' loyalty through relationship quality. *Spanish Journal of Marketing-ESIC*, 23(2), 185–204. https://doi.org/10.1108/SJME-09-2018-0041

Apostolopoulos, N., Liargovas, P., Stavroyiannis, S., Makris, I., Apostolopoulos, S., Petropoulos, D., & Anastasopoulou, E. (2020). Sustaining rural areas, rural tourism enterprises and EU development policies: A multi-layer conceptualisation of the obstacles in Greece. *Sustainability*, 12(18), 7687. https://doi.org/10.3390/su12187687

Alashwal, N., & Alashwal, A. (2023). Rural access programs in Yemen: Delay of international funded road projects. *Engineering, Construction and Architectural Management*, 30(4), 1746-1767. https://doi.org/10.1108/ECAM-09-2021-0818

Badal, B.P. (2018). Rural Community Tourism: An Approach toward Sustainable Development Goals. *Nepalese Journal of Development and Rural Studies*, 15, 1-10. https://doi.org/10.3126/njdrs.v15i0.31583

Billi, M., Mascareño, A., & Edwards, J. (2021). Governing sustainability or sustainable governance? Semantic constellations on the sustainability-governance intersection in academic literature. *Journal of Cleaner Production*, 279, 123523. https://doi.org/10.1016/j.jclepro.2020.123523

Budsaratragoon, P., & Jitmaneeroj, B. (2019). Measuring causal relations and identifying critical drivers for corporate sustainability: The quadruple bottom line approach. *Measuring Business Excellence*, 23(3), 292–316. https://doi.org/10.1108/MBE-10-2017-0080

Buthelezi, Z. (2018). Lecturer experiences of TVET College challenges in the post-apartheid era: a case of unintended consequences of educational reform in South Africa. *Journal of Vocational Education & Training*, *70*(3), 364–383. https://doi.org/10.1080/13636820.2018.1437062

Chew, T.C., Tang, Y.K., & Buck, T. (2022). The interactive effect of cultural values and government regulations on firms' entrepreneurial orientation. *Journal of Small Business and Enterprise Development*, *29*(2), 221–240. https://doi.org/10.1108/JSBED-06-2021-0228

Corrêa, V.S., Queiroz, M.M., & Shigaki, H.B. (2021). Social capital and individual entrepreneurial orientation: innovativeness, proactivity, and risk-taking in an emerging economy. *Benchmarking: An International Journal*, *28*(7), 2280–2298. https://doi.org/10.1108/BIJ-11-2020-0602

Covin, J.G., & Wales, W.J. (2019). Crafting high-impact entrepreneurial orientation research: Some suggested guidelines. In *Entrepreneurship theory and practice* 43(1), 3–18. SAGE Publications Sage CA: Los Angeles, CA. https://doi.org/10.1177/1042258718773181

Custódio Santos, M., Ferreira, A., Costa, C., & Santos, J.A.C. (2020). A model for the development of innovative tourism products: From service to transformation. *Sustainability*, 12(11), 4362. https://doi.org/10.3390/su12114362

Dadzie, Z., Agyapong, A., & Suglo, A. (2020). The role of internationalization in entrepreneurial orientation-performance link: Empirical study of SMEs in a developing nation perspective. *Review of International Business and Strategy*, *31*(2), 257–280. https://doi.org/10.1108/RIBS-09-2019-0126

Dai, M., Fan, D.X.F., Wang, R., Ou, Y., & Ma, X. (2021). Residents' social capital in rural tourism development: Guanxi in housing demolition. *Journal of Destination Marketing & Management*, 22, 100663. https://doi.org/10.1016/j.jdmm.2021.100663

Dai, W., & Si, S. (2018). Government policies and firms' entrepreneurial orientation: Strategic choice and institutional perspectives. *Journal of Business Research*, 93, 23–36. https://doi.org/10.1016/j.jbusres.2018.08.026

Dalibozhko, A., & Krakovetskaya, I. (2018). Youth entrepreneurial projects for the sustainable development of global community: evidence from Enactus program. *SHS Web of Conferences*, 57, 1009. https://doi.org/10.1051/shsconf/20185701009

Dele-Ijagbulu, O., Moos, M., & Eresia-Eke, C. (2020). The relationship between environmental hostility and entrepreneurial orientation of small businesses. *Journal of Entrepreneurship and Innovation in Emerging Economies*, *6*(2), 347–362. https://doi.org/10.1177/2393957520931332

Dillman, D.A. (2020). *Three Decades of Advancing Survey Methodology*. In A Meeting Place and More…: A History of the American Association for Public Opinion Research (pp. 95-117). Washington, DC: AAPOR.

Dos Anjos, F.A., & Kennell, J. (2019). Tourism, governance and sustainable development. In *Sustainability*, 11(16), 4257). MDPI. https://doi.org/10.3390/su11164257

Fadda, N. (2018). The effects of entrepreneurial orientation dimensions on performance in the tourism sector. *New England Journal of Entrepreneurship*, *21*(1), 22–44. https://doi.org/10.1108/NEJE-03-2018-0004

Febrian, A.F., Maulina, E., & Purnomo, M. (2018). The influence of social capital and financial capability on sustainable competitive advantage through entrepreneurial orientation: Empirical evidence from Small and Medium Industries in Indonesia using PLS-SEM. *Advances in Social Sciences Research Journal*, *5*(12). https://doi.org/10.14378/assrj.512.5720

Gica, O.A., Coros, M.M., Moisescu, O.I., & Yallop, A.C. (2021). Transformative rural tourism strategies as tools for sustainable development in Transylvania, Romania: a case study of Sâncraiu. *Worldwide Hospitality and Tourism Themes*, *13*(1), 124–138. https://doi.org/10.1108/WHATT-08-2020-0088

Goliath-Ludic, K., & Yekela, S. (2020). Resident's perception of the environmental impact of tourism: A case study of the bawa community in Butterworth, South Africa. *Geo Journal of Tourism and Geosites*, *33*, 1527–1531. https://doi.org/10.30892/gtg.334spl12-603

Guo, Y., Zhang, J., Zhang, Y., & Zheng, C. (2018). Examining the relationship between social capital and community residents' perceived resilience in tourism destinations. *Journal of Sustainable Tourism*, *26*(6), 973–986. https://doi.org/10.1080/09669582.2018.1428335

Han, X., Liu, X., Xia, T., & Gao, L. (2018). Home-country government support, interstate relations and the subsidiary performance of emerging market multinational enterprises. *Journal of Business Research*, 93, 160-172. https://doi.org/10.1016/j.jbusres.2018.04.021

Hair, J.F., Ringle, C.M., Gudergan, S.P., Fischer, A., Nitzl, C., & Menictas, C. (2019). Partial least squares structural equation modeling-based discrete choice modeling: an illustration in modeling retailer choice. *Business Research*, 12, 115-142. https://doi.org/10.1007/s40685-018-0072-4

Hair, Jr.J., Hair, Jr.J.F., Hult, G.T.M., Ringle, C.M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*, 26 - 299. Sage publications. http://dx.doi.org/10.1007/978-3-030-80519-7

Hardjosoekarto, S., & Lawang, R.M.Z. (2021). The Role of Local Government on Rural Tourism Development: Case Study of Desa Wisata Pujonkidul, Indonesia. *International Journal of Sustainable Development & Planning*, *16*(7), 1299-1307. https://doi.org/10.18280/ijsdp.160710

Henseler, J. (2018). Partial least squares path modeling: Quo vadis? *Quality & Quantity*, *52*(1), 1–8. https://doi.org/10.1007/s11135-018-0689-6

Hoque, A. (2018). Does government support policy moderate the relationship between entrepreneurial orientation and Bangladeshi SME performance? A SEM approach. *International Journal of Business Economics and Management Studies*, *6*(3), 37–59.

Hourneaux Jr, F., Gabriel, M.L. da S., & Gallardo-Vázquez, D.A. (2018). Triple bottom line and sustainable performance measurement in industrial companies. *Revista de Gestão*, *25*(4), 413–429. https://doi.org/10.1108/REGE-04-2018-0065

Hulland, J., Baumgartner, H., & Smith, K.M. (2018). Marketing survey research best practices: evidence and recommendations from a review of JAMS articles. *Journal of the Academy of Marketing Science*, *46*, 92–108. https://doi.org/10.1007/s11747-017-0532-y

Hwang, D., & Stewart, W.P. (2017). Social capital and collective action in rural tourism. *Journal of Travel Research*, *56*(1), 81–93. https://doi.org/10.1177/0047287515625128

Idahosa, L.O. (2019). Understanding sustainability, Corporate Social Responsibility and responsible tourism in literature vs practice. *Geo Journal of Tourism and Geosites*, *26*(3), 956–973. https://doi.org/10.30892/gtg.26322-410

Idziak, W., Majewski, J., & Zmyślony, P. (2018). Community participation in sustainable rural tourism experience creation: A long-term appraisal and lessons from a thematic villages project in Poland. *Rural Tourism,* 09–230, Routledge. http://dx.doi.org/10.1080/09669582.2015.1019513

Ince, H., Imamoglu, S.Z., & Karakose, M.A. (2023). Entrepreneurial orientation, social capital, and firm performance: The mediating role of innovation performance. *The International Journal of Entrepreneurship and Innovation*, *24*(1), 32–43. https://doi.org/10.1177/14657503211055297

Ismail, M.R., & Zakaria, Z. (2018). The effects of entrepreneurship orientation, government support and internationalization on Malaysian SMEs performance. *International Journal of Academic Research in Business and Social Sciences*, *8*(7), 453–468. https://doi.org/10.6007/IJARBSS/v8-i7/4387

Jaafar, M., Md Noor, S., Mohamad, D., Jalali, A., & Hashim, J.B. (2020). Motivational factors impacting rural community participation in community-based tourism enterprise in Lenggong Valley, Malaysia. *Asia Pacific Journal of Tourism Research*, *25*(7), 799–812. https://doi.org/10.1080/10941665.2020.1769696

Jamhari, J., Waluyati, L.R., & Mulyo, J.H. (2019). Kontribusi Pendapatan Agrowisata Padi Sawah terhadap Pendapatan Rumah Tangga pada Berbagai Kategori Desa Wisata [Contribution of Rice Agrotourism Income to Household Income in Various Tourism Village Categories]. *AGRARIS: Journal of Agribusiness and Rural Development Research*, *5*(1), 32–42. https://doi.org/http://dx.doi.org/10.18196/agr.5173

Jeong, H., Shin, K., Kim, S., & Kim, E. (2021). What types of government support on food SMEs improve innovation performance? *Sustainability*, *13*(16), 9461. https://doi.org/10.3390/su13169461

Jia, Y., Liu, R., Li, A., Sun, F., & Yeh, R. (2023). Rural tourism development between community involvement and residents' life

satisfaction: tourism agenda 2030. *Tourism Review*, *78*(2), 561–579. https://doi.org/10.1108/TR-02-2022-0097

Kapaya, S.M., Shayo, F.A., Jaensson, J.E., & Stanslaus, V. (2018). The role of entrepreneurial orientation on business performance: Empirical evidence from selected Tanzanian SME's. *The Pan-African Journal of Business Management*, *2*(1), 15–34. https://doi.org/10.61538/pajbm.v2i1.386

Karim, R.Al, & Islam, M.W. (2020). Assessing customer demand and customer satisfaction through social and environmental practices in the hotel sector of Bangladesh. *GeoJournal of Tourism and Geosites*, *30*(2), 843–851. https://doi.org/10.30892/gtg.302spl09-513

Kelfaoui, A., REZZAZ, M.A., & Kherrour, L. (2021). Revitalization of mountain rural tourism as a tool for sustainable local development in Kabylie (Algeria). The case of Yakouren municipality. *Geo Journal of Tourism and Geosites*, *34*(1), 112–125. https://doi.org/10.30892/gtg.34115-626

Khattak, M.S. (2022). The Impact of Social Capital on SME's Performance with Mediating Role of Entrepreneurial Orientation. *Journal of Innovative Research in Management Sciences*, 42–53.

Kim, N., & Shim, C. (2018). Social capital, knowledge sharing and innovation of small-and medium-sized enterprises in a tourism cluster. *International Journal of Contemporary Hospitality Management*, *30*(6), 2417–2437. https://doi.org/10.1108/IJCHM-07-2016-0392

Kopren, A., & Westlund, H. (2021). Bridging versus bonding social capital in entrepreneurs' networks: The case of post-conflict Western Balkans. *Sustainability*, *13*(6), 3371. https://doi.org/10.3390/su13063371

Lee, T.H., & Jan, F.H. (2019). Can community-based tourism contribute to sustainable development? Evidence from residents' perceptions of the sustainability. *Tourism Management*, *70*, 368–380. https://doi.org/10.1016/j.tourman.2018.09.003

Lin, H., Zhang, M., Gursoy, D., & Fu, X. (2019). Impact of tourist-to-tourist interaction on tourism experience: The mediating role of cohesion and intimacy. *Annals of Tourism Research*, 76, 153-167. https://doi.org/10.1016/j.annals.2019.03.009

Liu, C., Dou, X., Li, J., & Cai, L.A. (2020). Analyzing government role in rural tourism development: An empirical investigation from China. *Journal of Rural Studies*, *79*, 177–188. https://doi.org/10.1016/j.jrurstud.2020.08.046

Liu, Y.L., Chiang, J.T., & Ko, P.F. (2023). The benefits of tourism for rural community development. *Humanities and Social Sciences Communications*, 10(1), 1–12. https://doi.org/10.1057/s41599-023-01610-4

Lu, M., Pang, F., Wang, R., Liu, Y., & Peng, T. (2022). The association between autistic traits and excessive smartphone use in Chinese college students: The chain mediating roles of social interaction anxiety and loneliness. *Research in Developmental Disabilities*, *131*, 104369. https://doi.org/10.1016/j.ridd.2022.104369

Lucky, U.A., De Guzman, L.I., & Fadare, S.A. (2021). Diffusing Entrepreneurial Innovation And Tourism: An Empirical Evidence of Permaculture. *International Journal of Business Studies*, *5*(2), 118–137. http://dx.doi.org/10.32924/ijbs.v5i2.197

Lumpkin, G.T., Cogliser, C.C., & Schneider, D.R. (2009). Understanding and measuring autonomy: An entrepreneurial orientation perspective. *Entrepreneurship Theory and Practice*, *33*(1), 47–69. https://doi.org/10.1111/j.1540-6520.2008.00280.x

Lumpkin, G.T., & Pidduck, R.J. (2021). Global entrepreneurial orientation (GEO): An updated, multidimensional view of EO. In *Entrepreneurial orientation: Epistemological, theoretical, and empirical perspectives,* 22, 17-68, Emerald Publishing Limited. https://doi.org/10.1108/S1074-754020210000022002

Manaf, A., Purbasari, N., Damayanti, M., Aprilia, N., & Astuti, W. (2018). Community-based rural tourism in inter-organizational collaboration: How does it work sustainably? Lessons learned from Nglanggeran Tourism Village, Gunungkidul Regency, Yogyakarta, Indonesia. *Sustainability*, *10*(7), 2142. https://doi.org/10.3390/su10072142

Marzo-Navarro, M., Pedraja-Iglesias, M., & Vinzón, L. (2020). Sustainability indicators of rural tourism from the perspective of the residents. In *Tourism and Sustainable Development Goals*, 148–164, Routledge. http://dx.doi.org/10.1080/14616688.2015.1062909.

Muldoon, J., Liguori, E.W., Bendickson, J., & Bauman, A. (2018). Revisiting perspectives on George Homans: correcting misconceptions. *Journal of Management History*, *24*(1), 57–75. https://doi.org/10.1108/JMH-06-2017-0027

Muresherwa, G., Swart, K., & Tichaawa, T.M. (2023). Event attendees' perceptions of the impacts of a cultural event in Victoria Falls, Zimbabwe. *GeoJournal of Tourism and Geosites*, *48*(2 supplement), 820–831. https://doi.org/10.30892/gtg.482spl16-1082

Naderi, A., Nasrolahi Vosta, L., Ebrahimi, A., & Jalilvand, M.R. (2019). The contributions of social entrepreneurship and transformational leadership to performance: Insights from rural tourism in Iran. *International Journal of Sociology and Social Policy*, *39*(9/10), 719–737. https://doi.org/10.1108/IJSSP-06-2019-0124

Nakku, V.B., Agbola, F.W., Miles, M.P., & Mahmood, A. (2020). The interrelationship between SME government support programs, entrepreneurial orientation, and performance: A developing economy perspective. *Journal of Small Business Management*, *58*(1), 2–31. https://doi.org/10.1080/00472778.2019.1659671

Nguyen, L.T., An, J., & Ngo, L.V. (2020). Transforming social capital into performance via entrepreneurial orientation. *Australasian Marketing Journal (AMJ)*, *28*(4), 209–217. https://doi.org/10.1016/j.ausmj.2020.03.001

Oakley, K., & Ward, J. (2018). The art of the good life: Culture and sustainable prosperity. *Cultural Trends*, *27*(1), 4–17. https://doi.org/10.1080/09548963.2018.1415408

Ohemeng, F.L.K., Obuobisa Darko, T., & Amoako-Asiedu, E. (2020). Bureaucratic leadership, trust building, and employee engagement in the public sector in Ghana: The perspective of social exchange theory. *International Journal of Public Leadership*, *16*(1), 17–40. https://doi.org/10.1108/IJPL-05-2019-0018

Pertiwi, N.L.G.A. (2022). The Influence Of Tri Hita Karana And The Role Of The Government On Social Entrepreneurship Orientation And Business Performance Of Waste Bank In Denpasar. *Central European Management Journal*, 30(4), 1568-1583. https://doi.org/10.57030/23364890.cemj.30.4.158

Picas, S., Reis, P., Pinto, A., & Abrantes, J.L. (2021). Does Tax, Financial, and Government Incentives Impact Long-Term Portuguese SMEs' Sustainable Company Performance?. *Sustainability*, 13(21), 11866. https://doi.org/10.3390/su132111866

Pilving, T., Kull, T., Suškevics, M., & Viira, A.H. (2021). Creating shared collaborative tourism identity in a post-communist environment. *Scandinavian Journal of Hospitality and Tourism*, *21*(3), 313–340. https://doi.org/10.1080/15022250.2021.1893214

Prayitno, G., Dinanti, D., Adrianto, D.W., Rahmawati, R., Auliah, A., & Wardhani, L.E. (2023). The influence of social capital in improving the quality of life of the community in sidomulyo tourism village, Indonesia. *GeoJournal of Tourism and Geosites*, *46*(1), 208–217. https://doi.org/10.30892/gtg.46123-1017

Pulka, B.M., Ramli, A., & Mohamad, A. (2021). Entrepreneurial competencies, entrepreneurial orientation, entrepreneurial network, government business support and SMEs performance. The moderating role of the external environment. *Journal of Small Business and Enterprise Development*, 28(4), 586-618. https://doi.org/10.1108/JSBED-12-2018-0390

Radomir, L., & Moisescu, O.I. (2020). Discriminant validity of the customer-based corporate reputation scale: Some causes for concern. *Journal of Product & Brand Management*, *29*(4), 457–469. https://doi.org/10.1108/JPBM-11-2018-2115

Rahmawati, R., Prayitno, G., Firdausiyah, N., Dinanti, D., Hayat, A., Efendi, A., & Roskruge, M. (2023). Harnessing social capital for fostering non-tourism actor involvement in sustainable tourism: A case study of an Indonesian village. *J. Urban Dev. Manag*, 2(2), 69–83. https://doi.org/10.56578/judm020202

Ribeiro, M.A., Adam, I., Kimbu, A.N., Afenyo-Agbe, E., Adeola, O., Figueroa-Domecq, C., & de Jong, A. (2021). Women entrepreneurship orientation, networks and firm performance in the tourism industry in resource-scarce contexts. *Tourism Management*, *86*, 104343. https://doi.org/10.1016/j.tourman.2021.104343

Rodrigo-Alarcón, J., García-Villaverde, P.M., Ruiz-Ortega, M.J., & Parra-Requena, G. (2018). From social capital to entrepreneurial orientation: The mediating role of dynamic capabilities. *European Management Journal*, *36*(2), 195–209. https://doi.org/10.1016/j.emj.2017.02.006

Rodrigues, C., Liberato, D., & Melo, C. (2021). Tourism sustainable practices in rural territories: The case of Caretos de Podence. *Revista Turismo & Desenvolvimento*, 36(1), 205-220. https://doi.org/10.34624/rtd.v1i36.23736

Sarstedt, M., Ringle, C.M., & Hair, J.F. (2021). Partial least squares structural equation modeling. In *Handbook of market research,*58, (Lin et al., 2019)7–632). Springer. https://doi.org/10.1007/978-3-030-80519-7

Shevchenko, H., Petrushenko, M., Burkynskyi, B., Khumarova, N., & Kodzhebash, A. (2021). Input-output analysis of recreational assets within the inclusive sustainable development in Ukraine. *Entrepreneurship and Sustainability Issues*, *8*(3), 90. http://doi.org/10.9770/jesi.2021.8.3(5)

Simard, M., Guimond, L., & Vézina, J. (2018). Neo-rural populations and their relations with local decision makers in rural Québec: collaboration or conflict? *GeoJournal*, *83*, 613–629. https://doi.org/10.1007/s10708-017-9789-4

Solikahan, E.Z., & Mohammad, A. (2019). Development of entrepreneurial orientation. *International Journal of Applied Business and International Management (IJABIM)*, *4*(1), 31–37.

Songling, Y., Ishtiaq, M., Anwar, M., & Ahmed, H. (2018). The role of government support in sustainable competitive position and firm performance. *Sustainability*, 10(10), 3495. https://doi.org/10.3390/su10103495

Suckall, N., Tompkins, E.L., Nicholls, R.J., Kebede, A.S., Lázár, A.N., Hutton, C., ... & Mensah, A. (2018). A framework for identifying and selecting long term adaptation policy directions for deltas. *Science of the total environment,* 633, 946-957. https://doi.org/10.1016/j.scitotenv.2018.03.234

Sumarmi, K. (2020). E., & Aliman, M.(2020). Community based tourism (cbt) to establish blue economy and improve public welfare for fishing tourism development in klatak beach, tulungagung, indonesia. *GeoJournal of Tourism and Geosites*, *31*(3), 979–986. https://doi.org/10.30892/gtg.31307-530

Seyfi, S., Hall, C.M., & Rasoolimanesh, S.M. (2020). Exploring memorable cultural tourism experiences. *Journal of Heritage Tourism*, 15(3), 341-357. https://doi.org/10.1080/1743873X.2019.1639717

Tajeddini, K., Martin, E., & Ali, A. (2020). Enhancing hospitality business performance: The role of entrepreneurial orientation and networking ties in a dynamic environment. *International Journal of Hospitality Management*, *90*, 102605. https://doi.org/10.1016/j.ijhm.2020.102605

Tang, T.W., Zhang, P., Lu, Y., Wang, T.C., & Tsai, C.L. (2020). The effect of tourism core competence on entrepreneurial orientation and service innovation performance in tourism small and medium enterprises. *Asia Pacific Journal of Tourism Research*, 25(2), 89-100. https://doi.org/10.1080/10941665.2019.1674346

Thongsri, N., & Chang, A.K.H. (2019). Interactions among factors influencing product innovation and innovation behaviour: Market orientation, managerial ties, and government support. *Sustainability*, 11(10), 2793. https://doi.org/10.3390/su11102793

Villanueva-Álvaro, J.J., Mondéjar-Jiménez, J., & Sáez-Martínez, F.J. (2017). Rural tourism: Development, management and sustainability in rural establishments. *Sustainability*, *9*(5), 818. https://doi.org/10.3390/su9050818

Wales, W.J., Covin, J.G., & Monsen, E. (2020). Entrepreneurial orientation: The necessity of a multilevel conceptualization. *Strategic Entrepreneurship Journal*, *14*(4), 639–660. https://doi.org/10.1002/sej.1344

Wardana, I.M., Sukaatmadja, I.P.G., Yasa, N.N.K., & Setini, M. (2020). Comparative and competitives advantages: perspective of rural tourism (study on tourism in the province of Bali Indonesia). *GeoJournal of Tourism and Geosites*, *33*, 1493–1500. https://doi.org/10.30892/gtg.334spl07-598

Weaver, D.B., Moyle, B., & McLennan, C.L.J. (2022). The citizen within: Positioning local residents for sustainable tourism. *Journal of Sustainable Tourism*, 30(4), 897-914. https://doi.org/10.1080/09669582.2021.1903017

Weisser, C.R. (2017). Defining sustainability in higher education: a rhetorical analysis. *International Journal of Sustainability in Higher Education*, *18*(7), 1076–1089. https://doi.org/10.1108/IJSHE-12-2015-0215

Xiao, L., Ke, T., Yu, F., & Guo, P. (2023). Impact of government support on users' participation in emerging green crowdsourcing logistics model: evidence from digital freight platform in China. *Journal of Enterprise Information Management*, *36*(2), 583–604. https://doi.org/10.1108/JEIM-07-2021-0322

Xiao, Z., Chen, X., Dong, M.C., & Gao, S. (2022). Institutional support and firms' entrepreneurial orientation in emerging economies. *Long Range Planning*, *55*(1), 102106. https://doi.org/10.1016/j.lrp.2021.102106

Xue, C., Tu, Y.T., Ananzeh, M., Aljumah, A.I., Trung, L.M., & Ngo, T.Q. (2023). The role of economic conditions and sustainable rural development on the sustainability of tourism development: evidence from China. *Environmental Science and Pollution Research,* 30(11), 30588–30602. https://doi.org/10.1007/s11356-022-24062-w

Yanes, A., Zielinski, S., Diaz Cano, M., & Kim, S.I. (2019). Community-based tourism in developing countries: A framework for policy evaluation. *Sustainability*, 11(9), 2506. https://doi.org/10.3390/su11092506

Yavana Rani, S., Geetha, V., & Muthukumar, N. (2017). An empirical study on the impact of tourism development and community participation on rural tourism support strategies. *Int. J. Econ. Res*, *14*, 13–22.

Yu, X. (2022). Farmers' trust in government and participation intention toward rural tourism through TAM: The moderation effect of perceived risk. *Frontiers in Psychology*, 13, 1023280. https://doi.org/10.3389/fpsyg.2022.1023280

Yudha, P. (2018). Exploring the impact of social capital on entrepreneurial orientation and business performance (Study on members of MSMEs communities in Malang). *Profit: Jurnal Administrasi BISNIS*, *12*(1), 20–31. https://doi.org/10.21776/ub.profit.2018.012.01.3

Yusoff, M.N.H. Bin, Zainol, F.A., Ismail, M., Kasuma, J., & Darma, D.C. (2021). Usage of public financial support services, entrepreneurial orientation and SME performance: The case of Malaysia. *Financial Internet Quarterly*, *17*(4), 12–26. https://doi.org/10.2478/fiqf-2021-0024

Zaato, S.G., Ismail, M., Uthamaputhran, S., & Dakwa, W.A.K. (2021). Government Support Policies Enhancing the Entrepreneurial Orientation of SMEs and Performance in Ghana. *Nasrul Aiman Bin Abd Aziz Web Designer*, 447. https://doi.org/10.9744/jmk.22.2.99-114

Zhang, Y., Xiong, Y., Lee, T.J., Ye, M., & Nunkoo, R. (2021). Sociocultural sustainability and the formation of social capital from community-based tourism. *Journal of Travel Research*, *60*(3), 656–669. https://doi.org/10.1177/0047287520933673

Zhou, M., Govindan, K., & Xie, X. (2020). How fairness perceptions, embeddedness, and knowledge sharing drive green innovation in sustainable supply chains: An equity theory and network perspective to achieve sustainable development goals. *Journal of Cleaner Production*, 260, 120950. https://doi.org/10.1016/j.jclepro.2020.120950

Zhu, H., & Deng, F. (2020). How to influence rural tourism intention by risk knowledge during COVID-19 containment in China: Mediating role of risk perception and attitude. *International journal of environmental research and public health*, 17(10), 3514. https://doi.org/10.3390/ijerph17103514

A GEOGRAPHICAL PERSPECTIVE ON THE IMPACT
OF COVID-19 ON TOURISM DEMAND IN ROMANIA

Alexandra CEHAN[*]
"Alexandru Ioan Cuza" University of Iași, Department of Social Sciences and Humanities, Institute of Interdisciplinary Research,
Iași, Romania, e-mail: alexandra.cehan@uaic.ro

Corneliu IAȚU
"Alexandru Ioan Cuza" University of Iași, Department of Geography, Faculty of Geography and Geology, Iași, Romania, e-mail: ciatu@uaic.ro

Abstract: Although the tourism sector has witnessed a gradual recovery during the last years from the devastating impact of the COVID-19 pandemic, it is still too soon to discuss about a full recovery, as territories have responded and adapted in diverse manners to the shock. As such, it is important to investigate the impact of the pandemic in different moments and at different geographical scales, in order to identify and understand the contrasts between territories of same countries. In light of these facts, the purpose of the current paper is to assess the evolution and the spatial patterns of tourism demand in Romania under the impact of the COVID-19 pandemic for the period of time 2020-2023. The focus is on identifying the differences between regions and destinations in terms of initial impact of the pandemic and of their path to recovery to pre-pandemic levels of tourist arrivals.

Key words: COVID-19 pandemic, tourism demand, domestic tourism, regional disparities

* * * * * *

INTRODUCTION

The outbreak of COVID-19 pandemic in 2020 has been perceived as an unprecedented event (Gössling et al., 2021; Gretzel et al., 2020) with huge negative impacts on a global scale (Duarte Alonso et al., 2020; Ntounis et al., 2022; Sigala, 2020). The tourism sector proved to be one of the most vulnerable economic sectors during this pandemic (Alvarez et al., 2022; Gössling et al., 2021), unsurprisingly since it is generally considered to be extremely prone to being negatively impacted by diverse types of shocks and crises (Rosselló et al., 2020; Williams and Baláž, 2015). However, while the beginning of the pandemic came along with a widespread devastating impact, which even meant that tourism activities were completely on pause in many areas (Baum and Hai, 2020), the negative effects of the pandemic were not homogenous across regions, as the resilience of the tourism sector varies across countries, as well as across areas of the same country (Duro et al., 2022).

Contrasts across territories became even more visible as they gradually entered the path of recovery. The adopted travel restrictions and other safety measures (Gössling and Schweiggart, 2022), the availability of vaccines (Okafor and Yan, 2022) or the policies and strategies implemented by governments regarding specifically the tourism activities (Cehan and Iațu, 2023; Wong and Lai, 2022) are all considered to have a role in influencing the efficiency of the recovery process of the tourism sector. Naturally, these factors varied from one country to another which implied diverse trajectories of tourist destinations during and after the pandemic. Therefore, although during the last years the numbers of tourists gradually started to grow when compared to 2020 and although there is an overall recovery of the tourism sector at 87% of the pre-pandemic levels for the period January-September 2023 (World Tourism Organization, 2023b), it is inaccurate to assume that such levels of recovery are specific all around the world. The financial resources and governments' interest and predilection to direct these resources towards tourism, as well as smart strategies and efficient policies are all responsible for the positive trends where these have happened, but as previously emphasised, such resources, strategies and policies are not specific to all countries.

Starting right from the first year of the pandemic, a large number of studies on COVID-19 pandemic's impact on the tourism sector has been conducted for various territorial contexts and from diverse perspectives (Aburumman, 2020; Allan et al., 2022; Alshiqi and Sahiti, 2022; Cardenete et al., 2022; Foo et al., 2020; Gorina et al., 2022; Imeri and Gil-Alana, 2022; Škare et al., 2021). However, despite the literature in the field of tourism being rather abundant in studies on this topic, at present more insights into how tourist destinations evolved and recovered during the last years are necessary. Such new insights could be useful for understanding the current state of the tourism sector and for identifying the different evolution patterns of destinations as a result of the pandemic. In light of these facts, the purpose of the current paper is to assess the evolution and the spatial patterns of tourism demand in Romania under the impact of the COVID-19 pandemic for the period of time 2020-2023. In order to achieve this purpose, three objectives have been formulated: (1) to analyse the state of tourism demand in Romania as a result of the COVID-19 pandemic at different geographic levels; (2) to identify and analyse the regional disparities in Romania in terms of tourism demand in different stages of the pandemic and (3) to initiate a discussion regarding the characteristics of the destinations which might have influenced their evolution during the pandemic.

_____
* Corresponding author

LITERATURE REVIEW
The tourism sector during the COVID-19 pandemic

The dramatic changes that the COVID-19 pandemic brought to the tourism and hospitality sector determined a growing interest for matters related to tourism vulnerability and resilience (Boto-García and Mayor, 2022; Duro et al., 2022; Duro et al., 2021), to the economic effects that such an event can cause on tourist destinations (Allan et al., 2022; Cardenete et al., 2022) or to the most efficient and sustainable policies and strategies for recovering after the pandemic (Aldao et al., 2021; Khalid et al., 2021; Salari and Murphy, 2023; Wu et al., 2021). However, before investigating and discussing complex matters concerning the recovery of the sector and the implemented policies and strategies, a natural first step has been to assess the impact that the pandemic had on the tourism sector and, in particular, on the tourism demand. Evaluating the degree to which tourism flows have been affected at different geographical scales has been essential in order to provide a clear image of the intensity and nature of the pandemic's impact on tourism activities for different territories and at different moments.

Consequently, acknowledging the necessity of an in-depth understanding of the pandemic's impact determined during the last four years an abundance of studies that investigated the effects that COVID-19 pandemic had on tourism, which led to a significant development of the literature on crises and tourism. This development of the literature involved empirical research conducted both at a global or larger scale (Gorina et al., 2022; Gössling et al., 2021; Khalid et al., 2021; Plzáková and Smeral, 2022; Škare et al., 2021) and, even more frequent, at a national or local level (Alshiqi and Sahiti, 2022; Cardenete et al., 2022; Duro et al., 2022; Foo et al., 2020; Hyasat, 2022; Imeri and Gil-Alana, 2022; Kinczel and Müller, 2022; King et al., 2021; Payne et al., 2021; Wang et al., 2022). The perspectives and approaches regarding the impact of the pandemic are very diverse among these studies, and while inevitably most studies emphasize the severe negative impact that the pandemic had on tourism flows, on tourists' behaviours and their travel choices or on businesses and employees, their attention was also oriented towards understanding how the tourism sector started to recover after the initial shock of the COVID-19 pandemic.

Perspectives on the effects of COVID-19 pandemic on tourism activities in Romania

Matters related to the effects that COVID-19 pandemic had on tourism sector have naturally been of interest for the Romanian territory as well. While some studies aimed at an analysis of the entire country (Aivaz and Micu, 2021; Cehan and Iațu, 2023; Iftimoaei et al., 2023; Mazilu et al., 2023; Nancu et al., 2023; Popescu, 2021; Popescu et al., 2022), others focused on particular territories, through case studies on diverse issues related to the changes induced by the pandemic (Boiciuc, 2022; Coroș et al., 2021; Crismariu et al., 2022; Dragomir et al., 2021; Matei et al., 2021; Mitrică et al., 2022; Munteanu et al., 2022; Volkmann et al., 2021).

The research conducted at a larger scale, for the entire country, is diverse, varying from the more frequent approach of general assessments of the pandemic's impact on tourism demand or/and supply to concerns regarding tourism stakeholders' actions and perceptions related to the impact of the pandemic. A first direction is the one which provides a rather general overview on the impact of the pandemic on the tourism sector in Romania, concluding on the diverse negative impacts on tourist flows (Popescu, 2021) and underlining the important differences between Romanian and foreign tourists in hotels during the pandemic (Popescu et al., 2022). Another direction of research offers a more detailed perspective on the effects of the pandemic, especially from a geographical perspective.

These studies analyse the evolution of tourism indicators at NUTS2 administrative level (Aivaz and Micu, 2021) or for different types of territories, and respectively destinations, such as coastal areas, mountain areas, spa resorts (Nancu et al., 2023), both studies emphasizing how the impact of the pandemic has varied considerably across Romania's territories. Iftimoaei et al. (2023) go even further into detail, analysing various tourism indicators (tourist arrivals, overnights, accommodation capacity etc.) at LAU2 administrative level, pointing out the notable differences between destinations concerning their evolution during the crisis. A different perspective on the pandemic's effect in Romania is provided by a study of tourism stakeholders' perceptions regarding the government's policies aimed at supporting the sector through the crisis, emphasising the opposite attitudes of those stakeholders completely satisfied by the government's support and those claiming that there was a complete absence of actions and strategies for their support (Cehan and Iațu, 2023).

The case studies are also divided between assessments of the pandemic's impact on tourism demand or offer (Boiciuc, 2022; Crismariu et al., 2022; Munteanu et al., 2022) and analyses of perceptions and actions of various stakeholders (Coroș et al., 2021; Matei et al., 2021; Mitrică et al., 2022; Volkmann et al., 2021), but this time for certain areas (regions or destinations) or types of tourism. Particular attention has been offered to the region of Bukovina, both through statistical analyses of tourism offer and demand (Boiciuc, 2022) and through investigations regarding the role of public administration in the recovery of the tourism sector in the area (Matei et al., 2021). A more complex approach is based on assessing the challenges that cultural tourism has faced in rural areas in Buzău County (Mitrică et al., 2022), implying data gathered from tourists, businesses and residents.

Despite the topic of COVID-19 impact on the tourism sector in Romania having been approached from various perspectives, there are still gaps in the literature and questions to be answered. First of all, very few of the studies conducted for the entire territory of Romania present the topic from a geographical approach (Aivaz and Micu, 2021; Iftimoaei et al., 2023; Nancu et al., 2023), which can underline regional disparities and differences in terms of pandemic's impact between types of territories and destinations. Secondly, more recent assessments of destinations' evolution following the COVID-19 pandemic are needed, considering the fact that the recovery of the tourism sector is still incomplete, and little is known about which (types of) destinations have been successful in their recovery and which are still struggling. Consequently, the current study aims to add to the current stream of research regarding COVID-19 pandemic's impact on the tourism sector, with an analysis conducted at different geographical scales for the territory of Romania, for the period 2020-2023.

METHODOLOGY
Study area

The tourism sector in Romania has undergone significant changes during the last decades, its current state being a result of many important events and influences, such as the communist period which ended in 1989, the accession to the European Union in 2007, the 2008/2009 Global Economic Crisis and, more recently, the COVID-19 pandemic. Also, tourism' evolution in Romania has been characterised by the rather recent emergence of two forms of tourism which were unknown here before 2000, respectively rural tourism and business tourism (Ilieș et al., 2017), which in time got to represent an important share of the country's tourism offer. All these events and tendencies, along with other international or national trends, led to the evolution of tourist arrivals in Romania from 4.920.129 in 2000 to 13.374.943 in 2019. While the growth is considerable, Romania is far from being among the important European tourist destinations, but the almost continuous growth of tourism demand until the pandemic does reflect an obvious increase of the importance of this sector for the economy of the country, as well as a growing interest of tourists for visiting Romania.

However, despite this positive evolution, which also translated into an obvious spatial diffusion of tourism activities reflected in the growing number of administrative units which register some levels of tourism activity, it has been concluded that in many cases these new tourism areas have a reduced importance, while the already well-developed tourist destinations continue to grow significantly, which determines a rather concentrated spatial pattern of tourism in Romania (Cehan et al., 2019). Therefore, as it can also be noticed from Figure 1, Romania has a high number of tourist destinations, if all administrative units that register tourist arrivals are taken into consideration regardless of the number of arrivals, but some particular areas stand out due to much higher values. Among these areas are the seaside destinations, located at the Black Sea, which have been long known to represent one of the hot spots of tourism activities in Romania (Dumbrăveanu, 2001), Valea Prahovei area, which encompasses several tourist resorts very diverse in terms of resources, or important urban centres (Bucharest, Brașov, Oradea, Timișoara, Cluj Napoca, Iași), mostly attractive for their cultural heritage, but also capable to attract high numbers of arrivals for business tourism. Besides these representative tourist destinations, Romania also stands out through a considerable range of spa resorts, as the country is known to host some of the oldest geothermal springs in Europe and is considered to have a significant potential for spa tourism (Crismariu et al., 2022).
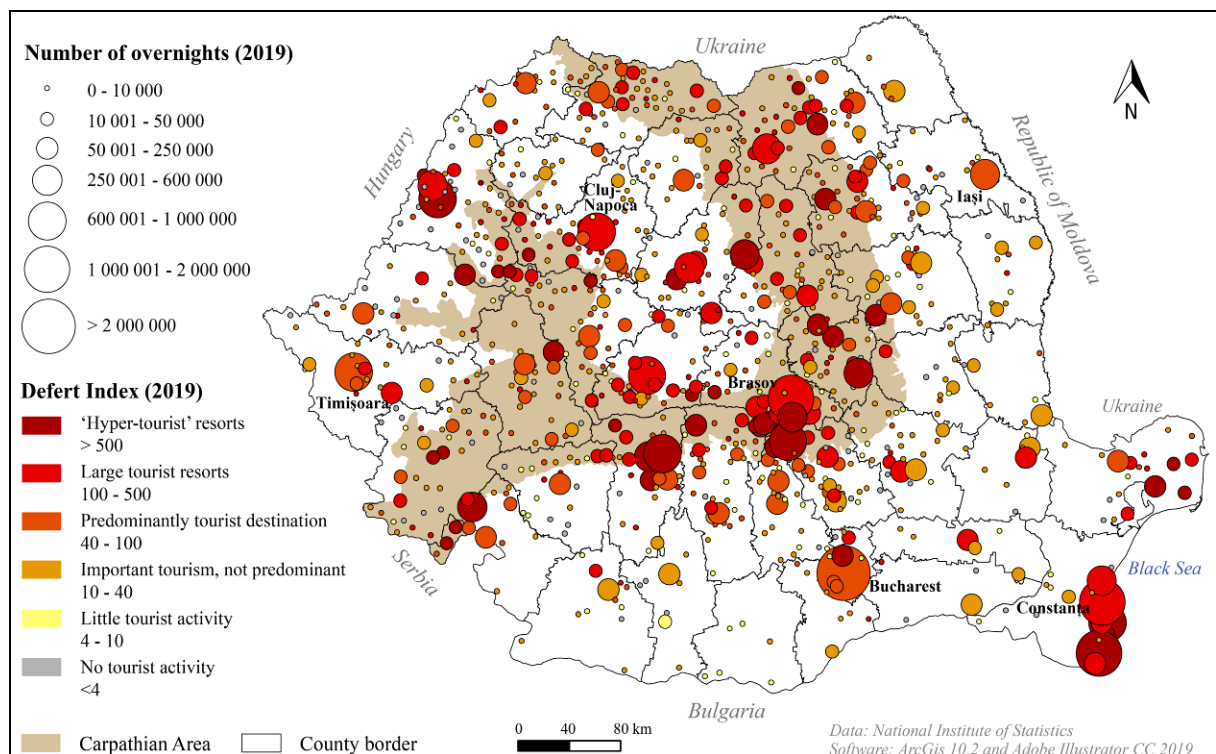
Figure 1. Tourist destinations in Romania (Source: the authors based on data from the National Institute of Statistics)

Data and methods

This study has been based on data provided by the National Institute of Statistics. As such, in order to analyse the evolution of tourism demand during the pandemic, the main indicator was the number of tourist arrivals at national, regional (NUTS 2 and NUTS3) and local (LAU2) levels. Depending on the aim that was pursued, the analysis was conducted either on monthly or annual basis. Also, for the analysis at NUTS2 regional level, data for both Romanian and foreign tourists was employed. The period of analysis was 2019-2023, since the purpose was to analyse both the evolution of tourism demand during the pandemic, as well as the recovery tendencies to pre-pandemic levels, respectively to the levels from 2019. Besides tourist arrivals, the number of overnights in 2019 was employed for the description of the study area at its state before the pandemic. Moreover, population data was employed for the calculation of Defert Index (here calculated as the ratio between the number of tourist arrivals and the number of

inhabitants at LAU2 level). This index has been considered relevant for illustrating the intensity of tourism activities across Romania prior to the pandemic, but also for analysing how destinations with different levels of intensity of tourist activity (as defined by the Defert Index) evolved during the pandemic. A number of 900 destinations has been included in the analysis. As such, local administrative units (LAU2) which registered tourist arrivals in the year before the pandemic (2019) or in any year during the pandemic have been included, regardless of the number of tourist arrivals.

While it can be argued that some of these local administrative units cannot really qualify as tourist destinations, because of extremely low numbers of arrivals, this research aims to identify all changes induced by the pandemic on different types of territories, respectively both on the highly developed tourist destinations and on the less known destinations or even completely underdeveloped areas from a tourism point of view. Descriptive statistics and cartography (through ArcMap 10.6.1) were the methods employed in order to achieve the research purpose, respectively the assessment of the impact of the pandemic on tourism demand in Romania at different geographical scales.

RESULTS AND DISCUSSIONS
From widespread decline of tourism demand to regional disparities

All around the world, as well as all around Romanian destinations, during the first year of the COVID-19 pandemic a severe decrease in the number of tourist arrivals was the norm, especially during the first months. However, not all areas were impacted in the same way and at the same levels, and most importantly, the road to recovery varied significantly among destinations, since naturally the vulnerability in contexts of shocks and crises varies from one territory to another (Duro et al., 2022; Škare et al., 2021). Regional and local factors related to the environment, society, economy, culture or governments are determinants of the differentiated impact felt across destinations (Mitrică et al., 2022).

These differences between territories are illustrated and discussed as it follows for the case of tourism demand in Romania, starting from an overview of the tourism demand evolution before and during the pandemic and continuing with a detailed analysis of the differences between the Romanian regions in terms of COVID-19 impact on tourism demand and in terms of these regions' tendencies to recover.

In 2019, Romania reached its highest value of tourist arrivals, respectively 13.374.943, after an almost continuous growth during the last two decades, disrupted only by the 2009 economic crisis. Therefore, the start of the pandemic in 2020 interrupted the positive trend and caused a decline of 52.2% of the tourist arrivals when compared to 2019, bringing Romania to the values from ten years ago, with a total of 6.398.642 tourist arrivals in 2020. Analysing the monthly values of tourist arrivals for the period 2019-2023, it is easily noticed that what the pandemic did not change is the overall monthly distribution of tourists (Figure 2). As such, August has been the peak season each year, although with different values from one year to the other, followed closely by the months of July and September.
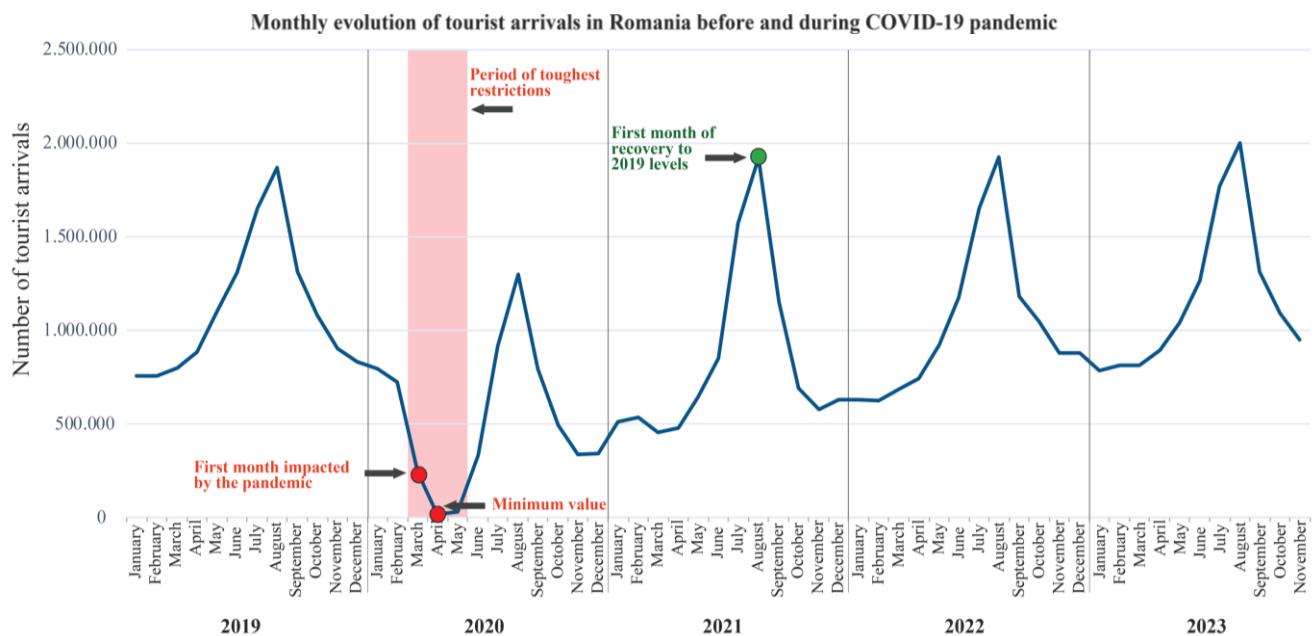
Figure 2. Evolution of tourism demand in Romania (2019-2023)
(Source: the authors based on data from the National Institute of Statistics)

It is notable that while the peak season, respectively the summer months, already turned back to normal starting with 2021 in terms of tourist arrivals, the following years do not appear to have registered significant growth compared to 2021, indicating that the effects of the pandemic were still felt. Also, an explanation can reside in the Romanian tourists' eager to travel abroad again after a period when this was impossible, which inevitably might have determined a decrease of the domestic tourism. Moreover, for the case of other moments in the year, the tourism demand reached the pre-pandemic levels only in 2023, such as it is the case with the spring season, but here including only the months of March and April, as May is in 2023 still below the 2019 levels. For the case of this month, it has to be mentioned that generally May

represents for many people the beginning of the summer season and along with the 1st of May "mini-holiday" this month usually registers rather high numbers of tourist arrivals. Therefore, the fact that in May 2023 Romania did not yet manage to reach the levels of tourism demand specific before the pandemic is surely to raise important issues to tourism stakeholders, especially since again these low values might be explained through a growing attractiveness of external destinations for Romanians during the last years, such as Turkey, Greece or the neighbouring Bulgaria.

As previously stated, the impact induced by the COVID-19 pandemic, as well as the recovery trends are clearly different from one region to another. When considering the NUTS2 regional level, the decline of tourist arrivals in 2020 (compared to 2019) varies across the 8 regions from -33% (South-East) to -72.44% (Bucharest-Ilfov) (Figure 3). However, these two extremes are quite distinct from all other 6 regions, with South-East region registering the least severe decline due to its seaside tourism, which has always been one of Romania's most developed tourism sectors (Cehan et al., 2019; Popescu et al., 2020) and which appears to remain so even in the context of a pandemic, and with Bucharest-Ilfov facing the strongest negative impact because of its demographic size (over 2.3 million inhabitants in 2020) and because of the administrative role of Bucharest (as capital city of Romania), which make this region the typical area to have been avoided by tourists during the pandemic. For the case of the other 6 NUTS2 regions, the decrease of tourist arrivals in 2020 varied between – 40.1% and -55.3%, indicating similarities between the regions in terms of tourism offer and preparedness of tourism stakeholders for such contexts of crisis.
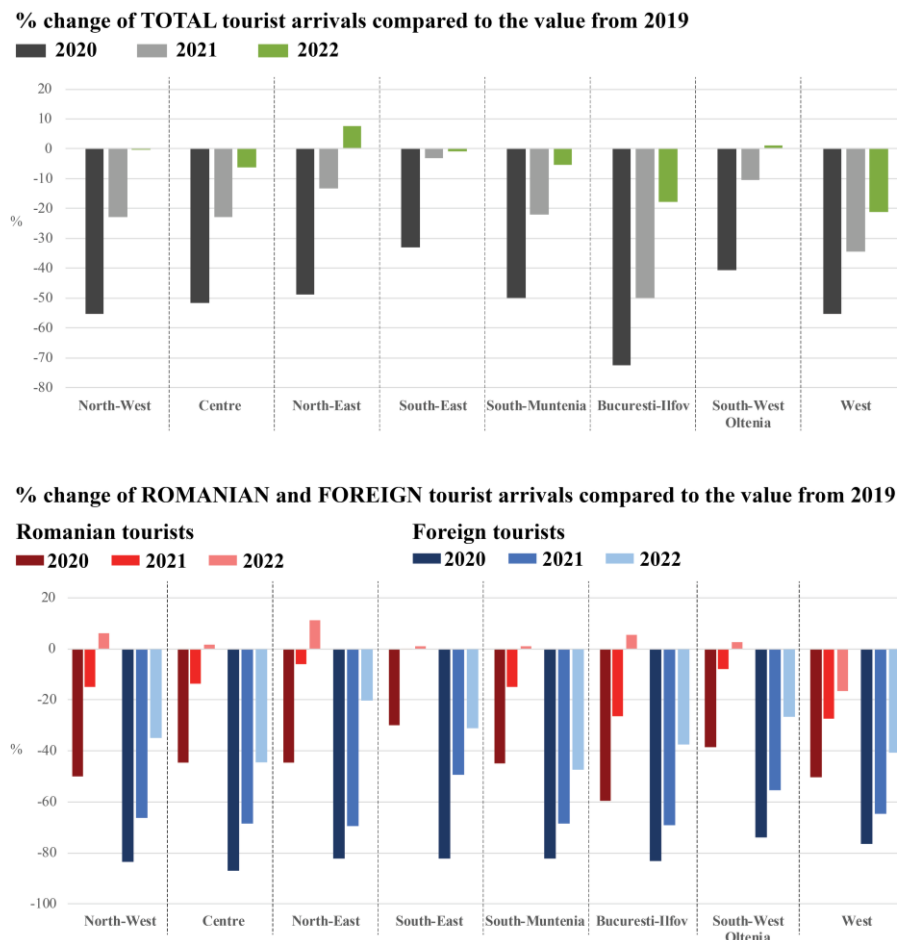

Figure 3. Evolution of tourist arrivals during COVID-19 pandemic at NUTS2 level
(Source: the authors based on data from the National Institute of Statistics)

Although 2021 has not been the year of full recovery for any of the 8 regions, the discrepancies between them have considerably increased. While Bucharest-Ilfov continues to struggle, with a decrease of 50%, the South-East region almost reached the pre-pandemic level, with a slight decline of 3.24% compared to 2019. This rather rapid recovery of South-East region can also be explained by high geographical accessibility for inhabitants of the capital city, Bucharest. As for the other regions, their trajectories during 2021 are diverse, with South-West and North-East regions closer to recovery, while the other regions still register a decline of over -20% of the tourist arrivals. In 2022 all regions are closer to the pre-pandemic levels, but two of them stand out due to the fact that they even register a growth compared to 2019. These are the North-East and South-West regions and explanation for their faster recovery can probably be found, at least partly, in the presence of important nature-based destinations in both these regions, destinations which have clearly been among the preferences of tourists during the pandemic. An extremely important aspect to consider is the significant difference in the evolution of Romanian and foreign tourist arrivals. For all regions, the impact of the pandemic has been considerably more severe at the level of foreign tourists than it has been for the case of the Romanian ones. In the context of 2020,

this fact is a consequence of national border closures around the world and strict travel restrictions, which contributed to a global decline of international tourist arrivals by 73% in 2020 (World Tourism Organization, 2021), and for a certain period of time and for many destinations it even meant that the international tourists flows dropped to zero (Baum and Hai, 2020). Also, domestic tourism appeared as a solution for keeping the tourism sector afloat during the first year of the pandemic, determining the governments to develop specific strategies with the aim of promoting domestic tourism (World Tourism Organization, 2020). As such, these trends during the pandemic in Romania are no surprise, being a reflection of the global tendencies during this crisis context in terms of domestic and international tourism.

What could be a concern when discussing the particularities of international tourism in Romania is the fact that although in 2022 Europe reached nearly 80% of pre-pandemic levels of international tourism (World Tourism Organization, 2023a), for the Romanian case there was still specific a decrease of more than 30% in the case of 6 regions, and even more than 40% in one of these six (South-Muntenia). These results place emphasis on the important differences between domestic and international tourism during the COVID-19 pandemic, pointing out that international tourism has not only been extremely negatively impacted at the start of the pandemic, but it has also faced greater difficulties in recovering. Moreover, these negative tendencies should also be regarded with reference to the fact that the numbers of international tourists in Romania were not at high levels even before the pandemic, with a share of only 20.1% out of all tourists in 2019. Such a low share of international tourists even before the pandemic might have diverse causes, from the circumspection of foreign tourists towards Romania as a tourist destination to the lack of national and regional strategies focused on attracting international tourists in Romania. Therefore, how Romania intends to position itself as a tourism destination on the international tourism market should be a central matter in future policies and strategies.

A better understanding of the previously discussed realities when comparing NUTS2 regions can be provided by looking at the intra-regional disparities, respectively by analysing the evolution of tourism demand in each county (NUTS3) during the COVID-19 pandemic. As such, it becomes obvious which areas are most responsible for a better resilience of some NUTS2 regions and at the same time, some important intra-regional differences stand out.

During the first year of the pandemic, the decline of tourism demand has been devastating in all counties in Romania, a natural consequence of strict restrictions, general fright and raised concerns for safety, which installed in all areas of the country and of the world. Therefore, the question for that specific time of the pandemic was not whether certain areas declined or not in terms of tourist arrivals, but which was the intensity of the decline, since absolutely no region managed to avoid the downfall of the tourism activities. More precisely, tourist arrivals faced a decline between 40% and 60% in most counties (Figure 4), but some areas, respectively 9 counties (Cluj, Sălaj, Vrancea, Buzău, Călărași, Hunedoara, Giurgiu, Ilfov, the Municipality of Bucharest), were in an even worse state, with a decline of over 60% when compared to the previous year. Four counties, Constanța, Tulcea, Gorj, Mehedinți, registered a rather less severe decline, with values between -20% and 40%, which although placed these areas in a slightly better position than most of the counties, it still represented a damaging context, from which the destinations had to recover with considerable efforts.
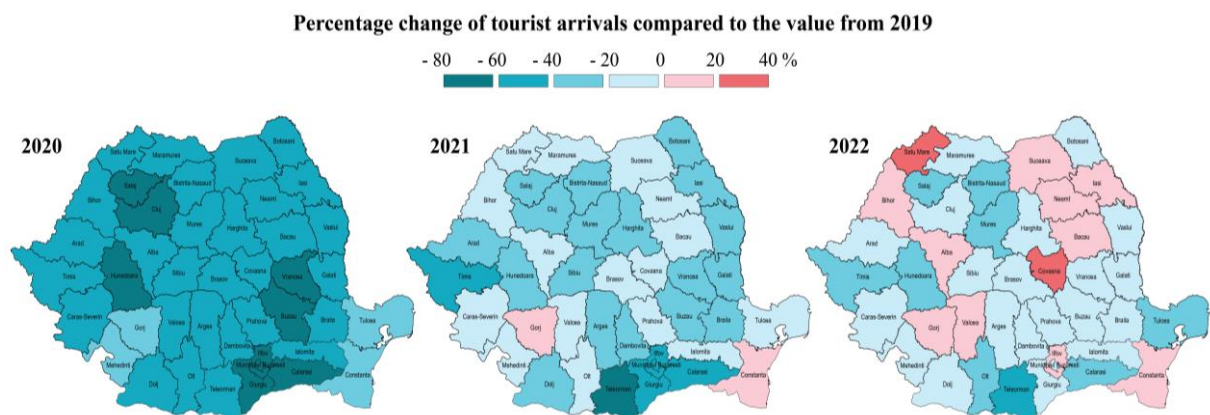

Figure 4. Evolution of tourist arrivals during the pandemic at NUTS3 level
(Source: the authors based on data from the National Institute of Statistics)

During 2021 the lower decline rates than in the previous year for most counties indicate that from this year these areas started their journey to recovery. While a reduced number of counties were still far from the pre-pandemic levels (Teleorman, Timiș, Giurgiu, Călărași, Ilfov, the Municipality of Bucharest), the general tendency was that of starting to attract tourists again. Two counties, Constanța and Gorj, demonstrate a better resilience capacity, as they reached and even surpassed their pre-pandemic levels already starting from this year and both counties appear to own their success on natural assets, such as the coastal area in Constanța and the diverse landscape of the mountainous area in Gorj. In 2022, these two counties continue their tendency of growth, and more counties are naturally following, some with even higher rates of growth (Covasna, Satu Mare). Among the counties facing a positive trend of tourist arrivals, the most geographically compact group is composed of those that are part of North-East region (Iași, Neamț, Suceava, Bacău), a region which previously stood out as one of the first to recover. It is notable for this case that unlike the case of the South-East region, where the constant popularity of seaside tourism concentrated in Constanța county is the main determinant of recovery, here a larger area (4 counties) and implicitly a higher diversity of destinations and resources can be assumed to be the root of the region's recovery.

When considering the relationship between the evolution of tourist arrivals during the pandemic and the attractiveness and popularity of each county prior to the COVID-19 pandemic, as reflected by the number of tourists in 2019, a series of important conclusions can be drawn (Table 1). First of all, top destinations present rather big differences concerning their evolution during each year of the crisis. The counties with over 1.000.000 tourists in 2019, respectively the Municipality of Bucharest, Brașov and Constanța, have been impacted very differently in the first year, with contrasting intensities of decline, among which Bucharest stands out with a decrease of over 70%. During the next year, these counties' trajectories are still rather diverse, only in 2022 presenting similarities, but still with a significant disadvantage for Bucharest. Therefore, the high levels of popularity among tourists before the pandemic does not explain the evolution of territories during the pandemic, as some of these are among the most affected (Bucharest), while other such counties appear to be the fastest to recover (Constanta). This significant difference is mainly explained by the opposite tourism profile of these two areas – Constanța relies on nature, which has been more attractive during the pandemic, while Bucharest's tourism potential is mainly cultural. Also, Bucharest attracted high numbers of foreign tourists before the pandemic, a category of tourists which has been previously emphasized to have been more severely impacted after the outbreak of the pandemic.

Table 1. Counties according to tourism demand in 2019 and its evolution during COVID-19 (Source: the authors)

% change compared to 2019		Number of tourist arrivals in 2019 at county level				
		Over 1.000.000	500.000-1.000.000	200.000-500.000	100.000-200.000	Less than 100.000
2020	-80 - -60	1	1		3	4
	-60 - -40	1	4	11	7	6
	-40 - -20	1			3	
2021	-80 - -60					1
	-60 - -40	1		1	1	2
	-40 - -20		3	4	6	5
	-20 - 0	1	2	6	5	2
	0 - 20	1			1	
2022	-60 - -40					1
	-40 - -20		1	1	3	3
	-20 - 0	2	3	5	5	6
	0 - 20	1	1	5	3	
	20 - 40				2	

Secondly, it is important to draw attention over the fact that some of the counties that generated a rather reduced interest for tourists prior to the pandemic, are less impacted and in some cases faster to recover. In 2020, 3 out of 4 counties with a slightly reduced decline are counties with lower numbers of tourists prior to the pandemic (Gorj, Tulcea, Mehedinți). Moreover, such counties are also predominant in the next 2 years among those less impacted or among those with higher levels of growth (Satu Mare, Covasna, Gorj). These examples present a totally opposed context to the one discussed through the case of Constanța. As such, this data reflects the already well-documented tendency of tourists of choosing less famous destinations during and immediately after the first year of the pandemic, as a result of their intention of avoiding crowded areas and situations that might present health risks (Kim and Lee, 2020; Rahman et al., 2021).

Figure 5 presents a more detailed image of tourism demand evolution, this time for each month of 2023 (except for December as data is not available), as compared to same months of 2019. It is easily noticed that the counties vary significantly among themselves and from one month to another. While a number of 7 counties registered growth, to various degrees, during all months (Iași, Covasna, Giurgiu, Alba, Gorj, Dolj, Satu Mare), counties facing decline in all or almost all months are more prevalent. A number of 10 counties registered lower numbers of tourist arrivals than in 2019 for 10 or even 11 months. Among these counties, first of all the Municipality of Bucharest stands out, because although it has naturally been most severely impacted in the first stages of the pandemic, its high popularity among tourists before 2020 was expected to help in its recovery at least starting with 2023, when the pandemic was already a topic of the past. Another notable example is Timiș, which due to the title of European Capital of Culture in 2023 that Timișoara received, could have been expected not only to recover from the pandemic, but to overpass considerably 2019 levels of tourism demand.

Some of the months appear to have been more favourable to tourism demand growth than others in terms of geographical dispersion of positive percentage change in comparison to 2019. In January, February, April, July, August and November more than 60% of the counties registered growth, being important to notice that this behaviour is present both in months known as the peak season in Romania (July-August) and in months with a reduced presence of tourists. May is by far the month that is still the most negatively impacted, with only 12 counties recovering and overpassing pre-pandemic levels.

Diverse trajectories of tourist destinations during the pandemic

Important contrasting trajectories can be found inside the same county, as it has been noticed it is the case inside regions. An analysis of tourism demand evolution during the pandemic at LAU2 level is quite revealing in this regard. A typology based on the evolution of tourist arrivals during two phases of the pandemic – 2019-2020, as the period of decline and 2020-2022, as the period of recovery – emphasises the overall trends for the tourist destinations during this time, as well as the differences between the struggling areas and the more resilient ones (Figure 6).

The typical behaviour of tourist destinations during COVID-19 pandemic is characterised by decline in the first year followed by growth right from the second year of the pandemic. It is important to clarify that this growth does not imply that all these areas reached pre-pandemic levels already from this phase, but they clearly entered the path to recovery.
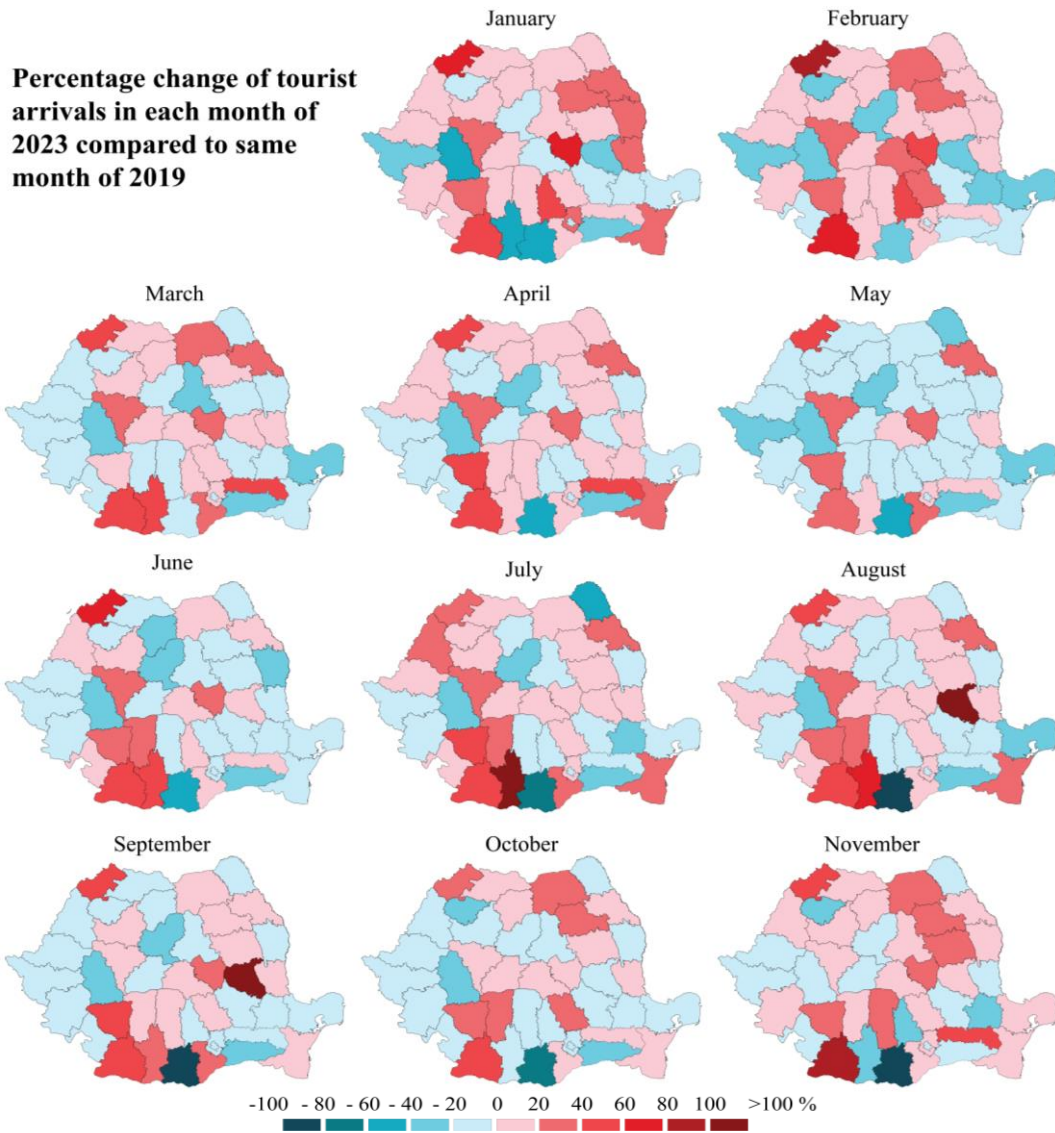
Figure 5. Monthly evolution of tourism demand 2019-2023 at NUTS3 level
(Source: the authors based on data from the National Institute of Statistics)
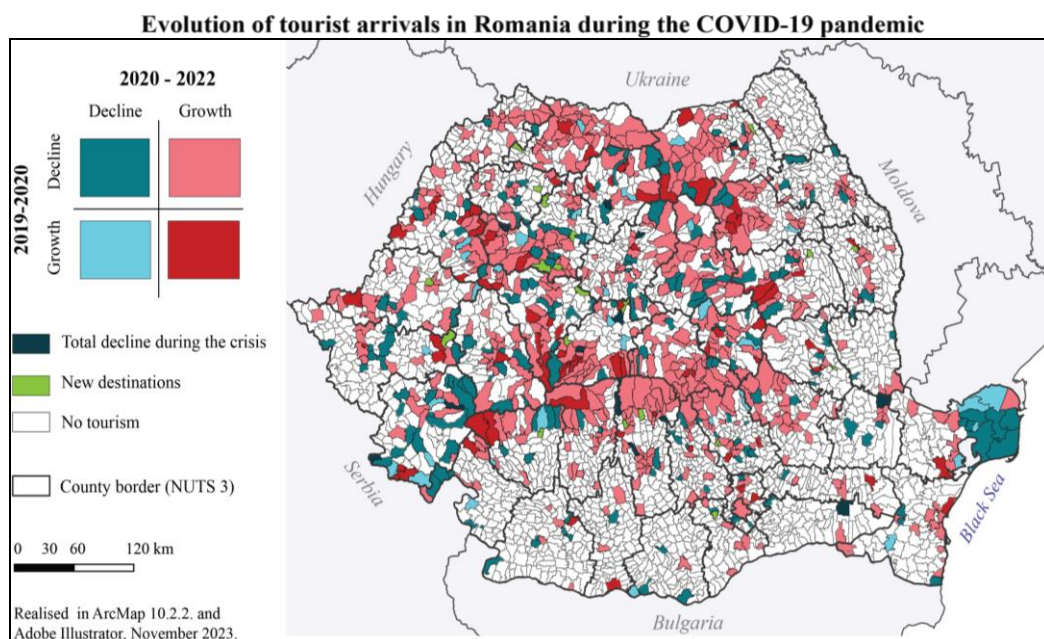

Figure 6. A typology of tourist destinations during COVID-19 pandemic
(Source: the authors based on data from the National Institute of Statistics)

This category of destinations, part of the group "Decline-Growth" represent 62.9% of all analysed destinations and they are dispersed across the country. Both rural (58% of all rural destinations) and urban (77% of all urban destinations) destinations are included in this category and in regard of the level of the intensity of tourism activity before the pandemic, all types of destinations, as defined through Defert Index, fall into this pattern, from "hyper destinations" to those with "little activity". Geographically, this pattern of evolution is specific to a high degree to the Carpathian area, but it is also encountered on the seaside, in large important cities (Bucharest, Iași, Cluj-Napoca, Timișoara) or in more isolated, less-known destinations. It is safe to say that other patterns of evolution of tourism demand should draw one's attention more. A first such case is represented by the 188 destinations (20.9% of total) which compose the "Decline-Decline" group. These are the most fragile destinations, which not only were severely impacted at the beginning of the pandemic, but they continued to decline even when most destinations managed to attract visitors and tourists again.

As the previous category, this one is diverse, specific to both urban and rural destinations, as well as to all types of destinations in terms of Defert Index. While these destinations are dispersed across the country, some hot spots for this category stand out in the Danube Delta area and in certain parts of the Carpathians (Banat Mountains, Retezat Mountains). An important characteristic of this category is the rather reduced demographic size, the destinations varying from very small rural areas, with little over 500 inhabitants to medium cities (Pașcani, with 44.034 inhabitants).

Secondly, a rather particular category is the one entitled "Growth-Growth", which consists of 78 destinations that not only did not decline at any stage of the pandemic, but they have been continuously growing, indicating them to be the most resilient ones and capable even to thrive in contexts of crisis. This group is predominantly composed of destinations with little or almost absent tourism activity prior to the pandemic (53%), mostly situated in rural areas (83%) and with small population size. While they present a high degree of geographical dispersion across the country, a common trait is the mountainous area, the location of 59% of them being in the Carpathians. The destinations from this group encompass all features that makes a place attractive during such a particular context as the COVID-19 pandemic, being in most cases small nature-based destinations, with less intense tourist activity, features that ensured a certain level of isolation and distance from the famous, more crowded areas, which were inevitably raising safety concerns (Kupi and Szemerédi, 2021; Park et al., 2021). The previous category is very similar regarding the constant growth of tourists numbers during the pandemic and general characteristics to the group of "New destinations", these ones being individualized by the fact that they registered zero tourist arrivals before the start of the pandemic. The "New destinations" category is considerably less frequent, with only 13 such cases, all rural destinations. Unlike the "Growth-Growth" group, in this case almost no destination is situated in the Carpathian Area, being associated with Subcarpathians or with the proximity of urban centres.

CONCLUSIONS

The COVID-19 pandemic brought significant challenges to the tourism sector worldwide and tourism sector in Romania has been naturally exposed to these challenges too. The current research reinforces, above all, the previously discussed idea that the impact of any crisis, and implicitly of the COVID-19 pandemic, has not been homogenous across regions, the nature and intensity of the impact depending on the resilience capacity of each territory (Duro et al., 2022; Škare et al., 2021). Results for the particular case of Romania, emphasise these differences at various geographical scales, differences which were also notable during different phases of the pandemic.

First of all, the overall evolution of tourism demand in Romania is aligned to global trends, as tourist arrivals show a severe decline in 2020 but gradually start to recover to pre-pandemic levels more and more each year. However, when comparing the regions, counties and destinations, diverse trajectories are revealed, as some areas still struggle to recover even in 2023, while others have been thriving right from the start of the pandemic, and some may argue, specifically because of the pandemic. It is naturally a matter of further research to investigate the determinants of success for these destinations which presented a positive evolution, and while efficient strategies and a smart management of the destination might be assumed as most probable factors, it should be also analysed whether at least in some cases it is not more of a matter of chance or of temporary alignment of those areas with the tourists' preferences. While this is undeniably still a positive perspective, if local stakeholders do not build on this chance that they have been offered, these cases will probably remain just temporary stories of success.

Secondly, while the current research did not attempt to identify the factors which influence the resilience capacity of destinations, and implicitly which could explain the observed diverse trajectories, some insights in this direction can be drawn from the obtained results. Nature-based destinations have a notable advantage in the context of the pandemic, confirming previous results on the topic, which indicated this type of destinations as being preferred by tourists, particularly in first stages of the pandemic (Kruczek et al., 2023; Mul et al., 2022), especially when nature was associated with a higher degree of geographical isolation. At the same time, a moderate or even reduced intensity of tourism activity prior to the pandemic appears to have influenced the positive evolution of particular destinations, both at regional level, and especially at local level, where in some cases destinations with a complete absence of tourists started to attract visitors during the pandemic. For these cases, this choice of the tourists is most probably a matter of avoiding the crowded areas of more famous destinations and implicitly avoiding the associated health risks (Kupi and Szemerédi, 2021; Park et al., 2021).

Further research on the topic should firstly focus on a complex analysis of the factors that determined the patterns of evolution of tourism demand identified through this research. Advanced statistical analysis could investigate those factors that influence the resilience capacity of tourist destinations in the particular context of a pandemic crisis. Secondly, this stream of research could benefit from case studies specific to each category of destinations as defined by their evolution during the pandemic. An in-depth qualitative approach on both the cases of the most fragile destinations and of the most resilient ones could reveal important lessons for future crisis management strategies.

Author Contributions: Conceptualization, A.C. and C.I.; methodology, A.C. and C.I.; software, A.C.; validation, A.C.; formal analysis, A.C.; investigation, A.C. and C.I.; data curation, A.C.; writing - original draft preparation, A.C. and C.I.; writing - review and editing, A.C. and C.I.; visualization, A.C.; supervision, C.I.; project administration, A.C. All authors have read and agreed to the published version of the manuscript.

Funding: Not applicable.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study may be obtained on request from the corresponding author.

Acknowledgments: The research undertaken was made possible by the equal scientific involvement of all the authors concerned.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCES
Aburumman, A.A. (2020). COVID-19 impact and survival strategy in business tourism market: The example of the UAE MICE industry. *Humanities and Social Sciences Communications*, 7(1), 141. https://doi.org/10.1057/s41599-020-00630-8

Aivaz, K.A., & Micu, A. (2021). An analysis of the impact of the COVID-19 pandemic on the number of tourists arriving in Romania using the correspondence factor analysis. *Technium Social Sciences Journal*, 24, 324–335. https://doi.org/10.47577/tssj.v24i1.4843

Aldao, C., Blasco, D., Poch Espallargas, M., & Palou Rubio, S. (2021). Modelling the crisis management and impacts of 21st century disruptive events in tourism: The case of the COVID-19 pandemic. *Tourism Review*, 76(4), 929–941. https://doi.org/10.1108/TR-07-2020-0297

Allan, G., Connolly, K., Figus, G., & Maurya, A. (2022). Economic impacts of COVID-19 on inbound and domestic tourism. *Annals of Tourism Research Empirical Insights*, 3(2), 100075. https://doi.org/10.1016/j.annale.2022.100075

Alshiqi, S., & Sahiti, A. (2022). The Impact of COVID–19 on Albanian Tourism. *Emerging Science Journal*, 6, 33–41. https://doi.org/10.28991/esj-2022-SPER-03

Alvarez, S., Bahja, F., & Fyall, A. (2022). A framework to identify destination vulnerability to hazards. *Tourism Management*, 90, 104469. https://doi.org/10.1016/j.tourman.2021.104469

Baum, T., & Hai, N.T.T. (2020). Hospitality, tourism, human rights and the impact of COVID-19. *International Journal of Contemporary Hospitality Management*, 32(7), 2397–2407. https://doi.org/10.1108/IJCHM-03-2020-0242

Boiciuc, C. (2022). Analysis of the tourism potential of Bukovina in the context of Covid-19 crisis. *GEOREVIEW*, 32(1), 113–125. https://doi.org/10.4316/GEOREVIEW.2022.01.10

Boto-García, D., & Mayor, M. (2022). Domestic tourism and the resilience of hotel demand. *Annals of Tourism Research*, 93, 103352. https://doi.org/10.1016/j.annals.2022.103352

Cardenete, M.A., Delgado, M., Del, C., & Villegas, P. (2022). Impact assessment of Covid-19 on the tourism sector in Andalusia: An economic approach. *Current Issues in Tourism*, 25(12), 2029–2035. https://doi.org/10.1080/13683500.2021.1937073

Cehan, A., & Iațu, C. (2023). Government policies for tourism in Romania during the COVID-19 pandemic: A stakeholders' perspective. *Eastern Journal of European Studies*, 14(1), 121–142. https://doi.org/10.47743/ejes-2023-0106

Cehan, A., Iatu, C., Eva, M., Ibanescu, B., & Bulai, M. (2019). Territorial dynamics of tourism in Romania: A long-term perspective (1990 – 2016). *Human Geographies – Journal of Studies and Research in Human Geography*, 13(1), 23–44. https://doi.org/10.5719/hgeo.2019.131.2

Coroș, M.M., Bode, O.R., Săvan, E.E., & Ciucioiu, T.A. (2021). Rural Tourism During the Covid-19 Pandemic: A Case Study from North-Western Transylvania. *Studia Universitatis Babeș-Bolyai Negotia*, 66(1), 7–22. https://doi.org/10.24193/subbnegotia.2021.1.01

Crismariu, O.D., Holostencu, L.F., Harba, J.N., & Tenie, I. (2022). Quantifying the Impact of the COVID-19 Pandemic on the Romanian Balneal Tourism. A Comparative Analysis of Baile Herculane and Baile Felix. *International Journal of Humanities, Social Sciences and Education*, 9(3), 104–116. https://doi.org/10.20431/2349-0381.0903009

Dragomir, L., Dobrescu, A., & Mazilu, M. (2021). Sustainable development of tourism in Țara Hațegului—Retezat in the COVID-19 pandemic crisis. *The Publishing House of the Romanian Academy*, 23(1), 147–152.

Duarte Alonso, A., Kok, S.K., Bressan, A., O'Shea, M., Sakellarios, N., Koresis, A., Buitrago Solis, M.A., & Santoni, L.J. (2020). COVID-19, aftermath, impacts, and hospitality firms: An international perspective. *International Journal of Hospitality Management*, 91, 102654. https://doi.org/10.1016/j.ijhm.2020.102654

Dumbrăveanu, D. (2001). The Challenge of Privatization: The Tourist Accommodation Industry in Transition. In *Post-Communist Romania. Coming to Terms with Transition*. Palgrave.

Duro, J.A., Perez-Laborda, A., Turrion-Prats, J., & Fernández-Fernández, M. (2021). Covid-19 and tourism vulnerability. *Tourism Management Perspectives*, 38, 100819. https://doi.org/10.1016/j.tmp.2021.100819

Duro, J., Perez-Laborda, A., & Fernandez, M. (2022). Territorial tourism resilience in the COVID-19 summer. *Annals of Tourism Research Empirical Insights*, 3(1), 100039. https://doi.org/10.1016/j.annale.2022.100039

Foo, L.P., Chin, M.Y., Tan, K.L., & Phuah, K.T. (2020). The impact of COVID-19 on tourism industry in Malaysia. *Current Issues in Tourism*, 1–5. https://doi.org/10.1080/13683500.2020.1777951

Gorina, G., Bocharova, Y., Kozhukhova, T., Ivanova, N., & Bohatyryova, G. (2022). The Impact of COVID-19 on International Trade in Tourism Services in Europe. *GeoJournal of Tourism and Geosites*, 43(3), 1091–1098. https://doi.org/10.30892/gtg.43330-924

Gössling, S., & Schweiggart, N. (2022). Two years of COVID-19 and tourism: What we learned, and what we should have learned. *Journal of Sustainable Tourism*, 30(4), 915–931. https://doi.org/10.1080/09669582.2022.2029872

Gössling, S., Scott, D., & Hall, C.M. (2021). Pandemics, tourism and global change: A rapid assessment of COVID-19. *Journal of Sustainable Tourism*, 29(1), 1–20. https://doi.org/10.1080/09669582.2020.1758708

Gretzel, U., Fuchs, M., Baggio, R., Hoepken, W., Law, R., Neidhardt, J., Pesonen, J., Zanker, M., & Xiang, Z. (2020). e-Tourism beyond COVID-19: A call for transformative research. *Information Technology & Tourism*, 22(2), 187–203. https://doi.org/10.1007/s40558-020-00181-3

Hyasat, A.S. (2022). The Impact of the COVID-19 Pandemic upon Tourism & Hospitality Employees in Jordan. *GeoJournal of Tourism and Geosites*, 43(3), 1099–1107. https://doi.org/10.30892/gtg.43331-925

Iftimoaei, C., Gabor, V.R., & Baciu, I.C. (2023). Romanian Tourism Before and After the COVID-19 Pandemic. A Geostatistical Analysis. *Romanian Statistical Review*, 3.

Ilieș, A., Ilieș, D.C., Tătar, C., & Ilieș, M. (2017). Geography of Tourism in Romania. In *The Geography of Tourism of Central and Eastern European Countries* (2nd ed.). Springer International Publishing.

Imeri, A., & Gil-Alana, L.A. (2022). The Impact of COVID-19 on the Tourism Sector in Bosnia and Herzegovina. *GeoJournal of Tourism and Geosites*, *44*(4), 1397–1402. https://doi.org/10.30892/gtg.44426-958

Khalid, U., Okafor, L.E., & Burzynska, K. (2021). Does the size of the tourism sector influence the economic policy response to the COVID-19 pandemic? *Current Issues in Tourism*, *24*(19), 2801–2820. https://doi.org/10.1080/13683500.2021.1874311

Kim, J., & Lee, J.C. (2020). Effects of COVID-19 on preferences for private dining facilities in restaurants. *Journal of Hospitality and Tourism Management*, *45*, 67–70. https://doi.org/10.1016/j.jhtm.2020.07.008

Kinczel, A., & Müller, A. (2022). Study on Travel Habits and Leisure Activities in the Light of COVID-19 Triggered Changes in Romania and Hungary. *GeoJournal of Tourism and Geosites*, *41*(2), 440–447. https://doi.org/10.30892/gtg.41214-848

King, C., Iba, W., & Clifton, J. (2021). Reimagining resilience: COVID-19 and marine tourism in Indonesia. *Current Issues in Tourism*, *24*(19), 2784–2800. https://doi.org/10.1080/13683500.2021.1873920

Kruczek, Z., Szromek, A.R., Jodłowski, M., Gmyrek, K., & Nowak, K. (2023). Visiting national parks during the COVID-19 pandemic—An example of social adaptation of tourists in the perspective of creating social innovations. *Journal of Open Innovation: Technology, Market, and Complexity*, *9*(2), 100062. https://doi.org/10.1016/j.joitmc.2023.100062

Kupi, M., & Szemerédi, E. (2021). Impact of the COVID-19 on the Destination Choices of Hungarian Tourists: A Comparative Analysis. *Sustainability*, *13*(13785), 17.

Matei, D., Chiriță, V., & Lupchian, M.M. (2021). Governance and Tourism Resilience during the COVID19 Crisis. Case Study Bukovina, Romania. *GeoJournal of Tourism and Geosites*, *34*(1), 256–262.

Mazilu, M., Niță, A., & Drăguleasa, I.A. (2023). Resilience of Romanian Tourism to Economic Crises and Covid-19 Pandemic. *WSEAS TRANSACTIONS ON BUSINESS AND ECONOMICS*, *20*, 328–341. https://doi.org/10.37394/23207.2023.20.31

Mitrică, B., Grigorescu, I., Mocanu, I., Șerban, P.R., Damian, N., Dumitrașcu, M., & Dumitrică, C. (2022). COVID-19 Pandemic and Local Cultural Tourism in the Buzău Carpathians and Subcarpathians (Romania). *Healthcare*, *10*(12), 2392. https://doi.org/10.3390/healthcare10122392

Mul, E., Ancin Murguzur, F.J., & Hausner, V.H. (2022). Impact of the COVID-19 pandemic on human-nature relations in a remote nature-based tourism destination. *PLOS ONE*, *17*(9), e0273354. https://doi.org/10.1371/journal.pone.0273354

Munteanu, G., Drăgan, M., & Cocean, P. (2022). The impact of COVID-19 on tourist activities in the North-West development region. *Romanian Journal of Geography*, *66*(2), 153–165.

Nancu, D., Mieila, M., Manole, A.M., & Isbasoiu, G.D. (2023). The Impact of COVID-19 on Tourist Destinations in Romania. *Proceedings of the International Conference on Business Excellence*, *17*(1), 549–560. https://doi.org/10.2478/picbe-2023-0052

Ntounis, N., Parker, C., Skinner, H., Steadman, C., & Warnaby, G. (2022). Tourism and Hospitality industry resilience during the Covid-19 pandemic: Evidence from England. *Current Issues in Tourism*, *25*(1), 46–59. https://doi.org/10.1080/13683500.2021.1883556

Okafor, L., & Yan, E. (2022). Covid-19 vaccines, rules, deaths, and tourism recovery. *Annals of Tourism Research*, *95*, 103424. https://doi.org/10.1016/j.annals.2022.103424

Park, I.J., Kim, J., Kim, S. (Sam), Lee, J.C., & Giroux, M. (2021). Impact of the COVID-19 pandemic on travelers' preference for crowded versus non-crowded options. *Tourism Management*, *87*, 104398. https://doi.org/10.1016/j.tourman.2021.104398

Payne, J.E., Gil-Alana, L.A., & Mervar, A. (2021). Persistence in Croatian tourism: The impact of COVID-19. *Tourism Economics*, 135481662199996. https://doi.org/10.1177/1354816621999969

Plzáková, L., & Smeral, E. (2022). Impact of the COVID-19 crisis on European tourism. *Tourism Economics*, *28*(1), 91–109. https://doi.org/10.1177/13548166211031113

Popescu, A. (2021). The Impact of COVID-19 Pandemic on Romania's Tourist Flows in the Year 2020. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, *21*(1).

Popescu, A., Hontus, A.C., & Stanciu, M. (2022). Tourist Arrivals and Overnight Stays in Hotels in Romania during the COVID-19 Pandemic versus 2019 and Future Trends in 2022. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, *22*(1).

Popescu, A., Marcuta, A., Marcuta, L., Tindeche, C., Hontus, A., & Plesoianu, D. (2020). Romania's Tourism Trends and Characteristics on the Seaside Resorts of the Black Sea in the Period 2010-2019. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, *20*(4).

Rahman, M.K., Gazi, M.A.I., Bhuiyan, M.A., & Rahaman, M.A. (2021). Effect of Covid-19 pandemic on tourist travel risk and management perceptions. *PLoS One*, *16*(9). https://doi.org/10.1371/journal.pone.0256486

Rosselló, J., Becken, S., & Santana-Gallego, M. (2020). The effects of natural disasters on international tourism: A global analysis. *Tourism Management*, *79*, 104080. https://doi.org/10.1016/j.tourman.2020.104080

Salari, T., & Murphy, W.H. (2023). Light at the end of a very dark tunnel: An examination of the survival and recovery strategies of Iranian tourist accommodation businesses during the Covid-19 pandemic. *Tourism and Hospitality Research*, *23*(2), 184–199. https://doi.org/10.1177/14673584221095176

Sigala, M. (2020). Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research. *Journal of Business Research*, *117*, 312–321. https://doi.org/10.1016/j.jbusres.2020.06.015

Škare, M., Soriano, D.R., & Porada-Rochoń, M. (2021). Impact of COVID-19 on the travel and tourism industry. *Technological Forecasting and Social Change*, *163*, 120469. https://doi.org/10.1016/j.techfore.2020.120469

Volkmann, C., Tokarski, K.O., Dincă, V.M., & Bogdan, A. (2021). The Impact of COVID-19 on Romanian Tourism. An Explorative Case Study on Prahova County, Romania. *Amfiteatru Economic*, *23*(56), 196–205. https://doi.org/10.24818/EA/2021/56/196

Wang, C., Meng, X., Siriwardana, M., & Pham, T. (2022). The impact of COVID-19 on the Chinese tourism industry. *Tourism Economics*, *28*(1), 131–152. https://doi.org/10.1177/13548166211041209

Williams, A.M., & Baláž, V. (2015). Tourism Risk and Uncertainty: Theoretical Reflections. *Journal of Travel Research*, *54*(3), 271–287. https://doi.org/10.1177/0047287514523334

Wong, J.W.C., & Lai, I.K.W. (2022). The mechanism influencing the residents' support of the government policy for accelerating tourism recovery under COVID-19. *Journal of Hospitality and Tourism Management*, *52*, 219–227. https://doi.org/10.1016/j.jhtm.2022.06.018

World Tourism Organization. (2020). *How are countries supporting tourism recovery? UNWTO Briefing Note—Tourism and COVID-19, ISSUE 1.*

World Tourism Organization. (2021). *The Economic Contribution of Tourism and the Impact of COVID-19, preliminary version*. https://doi.org/10.18111/9789284423200

World Tourism Organization. (2023a). *Impact Assessment of the COVID-19 Outbreak on International Tourism*. https://www.unwto.org/impact-assessment-of-the-covid-19-outbreak-on-international-tourism

World Tourism Organization. (2023b). *International Tourism to End 2023 Close to 90% of Pre-Pandemic Levels*. https://www.unwto.org/news/international-tourism-to-end-2023-close-to-90-of-pre-pandemic-levels

Wu, L.F., Achyldurdyyeva, J., Jou, W.P., Foung, W.T., & Jaw, B.S. (2021). Relief, Recovery, and Revitalization Measures for Tourism and Hospitality Industry During Covid-19 Pandemic: Case Study From Taiwan, *SAGE Open*.

NAVIGATING TURBULENT WATERS: EVALUATING THE CRISIS MANAGEMENT STRATEGIES OF TRAVEL AGENCIES IN MPUMALANGA

Sbusiso MBUYANE
Department of Tourism Management, Tshwane University of Technology, Faculty of Management Sciences,
Pretoria, South Africa, e-mail: mbuyanesbusiso@gmail.com

Portia Pearl Siyanda SIFOLO[*]
Department of Tourism Management, Tshwane University of Technology, Faculty of Management Sciences,
Pretoria, South Africa, e-mail: SifoloPS@tut.ac.za

Rosa Anne NAUDE POTGIETER
Department of Tourism Management, Tshwane University of Technology, Faculty of Management Sciences,
Pretoria, South Africa, e-mail: Naude-PotgieterRA@tut.ac.za

Abstract: The COVID-19 pandemic decreased tourism-related business by 49.2%, hence, travel agencies needed to develop crisis management strategies to remain operational post-crisis events. The aim of this study is to evaluate crisis management strategies adopted by travel agencies during the COVID-19 pandemic in the Mpumalanga province, South Africa. A quantitative study was conducted by using Survey Monkey, which was distributed to 121 respondents who are working for travel agencies. The results revealed that 41% of travel agencies constantly monitor any signs and problems that may provide insights into any crisis, and 31% indicated that sharing of crisis management information with workers is essential. About 53% prioritise tourists and staff members, by allowing staff to work remotely and tourists to postpone their bookings without penalties. Only 51% of travel agencies indicated the importance of effective coordination with government institutions in the province of Mpumalanga. The travel and tourism sector should consider the significance of "evaluation" to increase effectiveness of the crisis management process. Future studies need to incorporate the 5IR on human interaction for business during the crisis management process.

Key words: Crisis Management, Crises Management Strategy, Travel agencies, Mpumalanga

* * * * * *

INTRODUCTION

Sharing of information related to crisis handling and responding to risks caused by crisis events in the tourism sector is minimally shared, due to the sector's businesses operating in isolation from one another (Rogerson and Rogerson, 2020). The travel agency sector is prone to internal and external impacts that need to be addressed through crisis management tasks that involve the sectors stakeholders and workers (Jia et al., 2012). In South Africa and elsewhere in the world, the travel agency sector in 2020 was devastated by the COVID-19 pandemic, therefore minimising the damage by protecting staff and tourists to avoid a complete collapse became paramount (Rogerson and Rogerson, 2020).

Paraskevas and Altinay (2013) mentioned that a crisis sends off repeated and persistent trails of early signals which could be picked up when there is still an opportunity to prevent it from occurring or employ measures that will minimize its impact. Early detection of crisis signals, and timely response might have saved a good part of the 49.2% tourism decrease in Africa (Matiza, 2021). Controlling the public image helps the travel agency sector to boost its revenue post the crisis, as it restores the confidence of tourists and workers (Santana, 2004). Crisis management and risk assessment have become and will remain a vital component of the travel agency sector in the province of Mpumalanga, therefore assessment of crisis management strategies helps travel agencies to draw conclusions and improve their shortfalls (Jia et al., 2012). The aim of this paper is to evaluate crisis management strategies that travel agencies adopted in one of South Africa's most tourism-dependent provinces, Mpumalanga, in reaction to the COVID-19 crisis.

LITERATURE REVIEW
Background on crisis management in the travel and tourism sector

Crisis management is a technique used for both avoiding emergencies and planning for the unforeseen ones, as well as a method of dealing with them as they occur, and to mitigate their disastrous consequences (Jia et al., 2012). Crisis management is an ongoing integrated and comprehensive effort that tourism businesses effectively put in place to understand and prevent crisis, and to effectively manage those that occur, considering in every step of their planning and training activities, the interest of their stakeholders (Santana, 2004). Crisis management comprise of various stages namely: the pre-crisis stage, crisis

* Corresponding author

stage and the post-crisis stage as suggested by Jia et al. (2012) and Baubion (2013). Mikusova and Horvathova (2019) are of the view that a crisis management process is a transformative system that is adopted by businesses for unforeseen circumstance. Figure 1 displays the three stages of the strategic management process as proposed by Ritchie (2004).

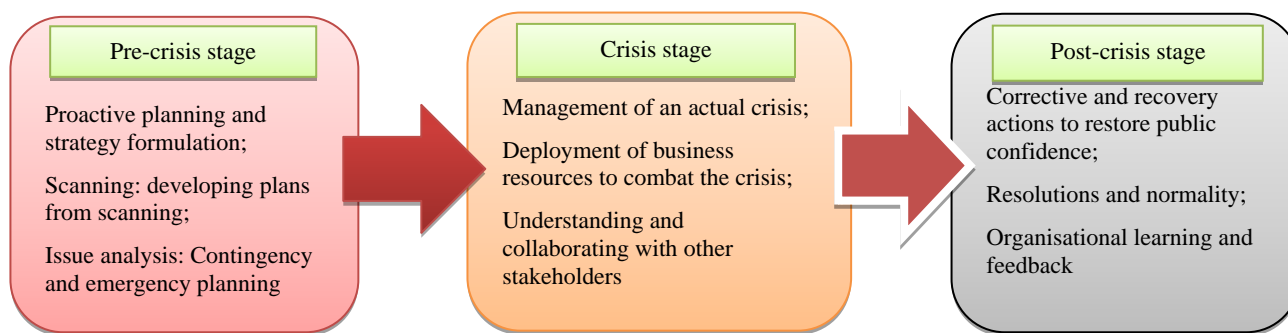| Pre-crisis stage	Crisis stage	Post-crisis stage
Proactive planning and strategy formulation;	Management of an actual crisis;	Corrective and recovery actions to restore public confidence;
Scanning: developing plans from scanning;	Deployment of business resources to combat the crisis;	Resolutions and normality;
Issue analysis: Contingency and emergency planning	Understanding and collaborating with other stakeholders	Organisational learning and feedback

Figure 1. Strategic Crisis Management Process

The crisis management process provides a sequence that could be adopted in the travel and tourism sector when unpredictable events occur and threaten the sector and its stakeholders (Jia et al., 2012). The process defines how the travel and tourism sector are managing their resources and restructure their businesses to adapt to the crisis at hand (Baubion, 2013). Santana (2004) warns against the difficulty for the travel and tourism sector to have one single best crisis management strategy to restore the sector, because crisis events are often unique and difficult to predict. Çoban and Özel (2022) concur that crises are irregular occurrences affecting the travel and tourism sector and its stakeholders in different ways in each period. Therefore, in all the crisis management stages there needs to be flexibility, evaluation and potential modification to strategy development and implementation, depending on the nature of the crisis in magnitude, scale and time pressure, and stakeholder response strategies (Ritchie, 2004; Baubion, 2013; Giddy and Rogerson, 2021).

If the travel and tourism sector survives the stages of pre-crisis, crisis, and post-crisis, it will once again find itself in the stage of pre-crisis (planning for another crisis), only to be better ready, equipped and prepared for another crisis (Hamid, 2011). In this way, the travel and tourism sector and its stakeholders can react, recover, and reset the travel and tourism sector, and be ready to face upcoming crises and bearing in mind the past disruptive events (Aldo et al., 2021). The stages of crisis management are fundamental to ensuring the continuous existence of the travel and tourism sector (Mikusova and Horvathova, 2019). The stages mentioned in figure 1 assist the travel and tourism sector to navigate turbulent waters through proper planning and preparedness activities before a crisis, to respond or manage the pressure of the crisis as it occurs and taking resolutions to a new and improved state of the travel and tourism sector after the crisis (Mair et al., 2016). Table 1 presents different types of crises impacting the travel agency sector, at different points in time.

Types of crises impacting the travel and tourism sector

The common characteristics of crises in the travel and tourism sector is "disruption", and that they are either internal or externally induced (Mair et al., 2016). The travel and tourism sector is vulnerable in nature, the vulnerability is reflected in its susceptibility to different types of crises, such as infectious diseases, natural disasters, economic crisis, terrorist attacks, wars and conflicts, industrial, political, social and cultural revolutions, and key technological advances (Zhong et al., 2021; Rogerson and Rogerson, 2022). Ural (2016) gives a brief overview of what major crises events affected the travel and tourism sector from the year 2000 to date worldwide, the crises events are labelled in Table 1.

Table 1. Crisis and their place of origin (Source: Authors)

Name of crisis	Place of origin	Time frame
Terrorist attack	USA	9 September 2001
SARS virus outbreak	China	26 February 2003
Sichuan Earthquake	China	12 May 2008
Haiti Earthquake	Haiti	11 March 2011
Typhoon Haiyan	Philippines	8 November 2013
COVID-19	China	13 January 2020

In addition, the travel and tourism sector experiences external shocks such as wars, extreme weather conditions (like cyclones, tornadoes, mudslides, hurricanes, droughts), political events (strikes and elections), adverse publicity, transport accidents, pollution, earthquakes, volcanic eruptions, electricity shortages, recessions, and fluctuations in economic conditions (Chau et al., 2023). Crises are either natural or human-induced, a natural crisis can disrupt the supply and distribution for even the best prepared travel and tourism business, human induced crisis can equally impact the travel and tourism sector dramatically for example the September 9, 2001, crisis (Ritchie, 2004). Therefore, the travel and tourism sector is susceptible to both natural and human-induced crisis (Ritchie, 2004; Jia et al., 2012).

Travel agencies operation during times of crises

Travel agencies are defined as a network of tourism organisations engaged in different activities ranging from the supply of different components of tourism products and services (Jia et al., 2012). Those products and services range from

flights and accommodation to the distribution and marketing of products and destinations to the packaging of the final tourism product (Rogerson, 2021). Travel agencies represent the primary intermediary of travel-related products (Hamid, 2011). Travel agencies involve a wide range of participants and stakeholders in both the private and public sectors (Viljoen and Lombard, 2016). Travel agencies are seen as value chains that connect all services within the travel and tourism sector (Musavengane et al., 2022). Traditionally travel agencies have acted as intermediaries between airline companies and wholesale travel companies and the consumer (Khuja and Bohari, 2012). Today, the basic intermediation functions of travel agencies include information provision, logistics and risk mitigation (Viljoen and Lombard, 2016). As value chains and network systems of travel and tourism services, travel agencies are exposed to varied crisis impacts, that they might face at different points in time. Operational crises include travellers' mistakes or unforeseen misfortunes when making their own travel arrangements at the airline and hotel reservations on the internet (Hamid, 2011). The internet continues to present an ongoing threat for travel agencies as it eliminates the need for using travel agencies which decreases market share and profit level (Hamid, 2011; Rogerson, 2021). E-marketing and e-reservations have served to decrease the commission from bookings that travel agencies may earn (Hamid, 2011). The advent of the internet presents both opportunities and challenges for the travel agency sector. The opportunities and challenges presented by the internet are listed in Table 2.

Table 2. Opportunities and challenges presented by the internet in the travel agency sector (Source: Authors)

Opportunities	Challenges
Increase in service delivery	Reduced travel agency business operations
Larger market audience	Limited interaction with travellers
Flexibility	Cyber security threats
Virtual job opportunities	Reduced travel commission
Wider range of holiday options to choose from	False news can be shared easier

The loss of income due to the COVID-19 pandemic was high due to the cross-provincial and cross-border ban in South Africa (Rogerson and Rogerson, 2020). By March 2020, 58% of the travel and tourism sector businesses in South Africa were unable to service their debts and 54% were struggling to cover fixed costs (Musavengane et al., 2022). The travel and tourism sector was forced to ask staff to take annual leave, and contracts of part-time employees were terminated, which affected the well-being of workers, quality of life, and livelihoods (Rogerson, 2021).

Professional's perspective in crisis management

In the event of managing a crisis, the carrying out of the crisis management process mandate lies with the professionals working in the travel and tourism sector. The professionals working in the travel and tourism sector understand what and how to carry out different activities at a certain point, they also have the experience, values, and beliefs of the travel and tourism sector (Racherla and Hu, 2009; Hamid, 2011). The crisis management process demands experience of individuals in the form of specific experience, expertise, knowledge, and intuition, which are closely related to professionals (Mikusova and Horvathova, 2019). Racherla and Hu (2009) proposed a management framework that individual "professionals" can use to combat a crisis; the process is as follows:

• Acquisition of strategy – crisis management strategy is identified, and the information is assigned to different personnel,

• Retrieval, dissemination, and use – relevant knowledge is distributed to employees and subunits of the business where and when is required,

• Evaluation and feedback – the framework is used and evaluated for its effectiveness, with feedback guiding further acquisition. When the crisis hits, and the travel and tourism sector identify a crisis management process (Figure 1), professionals should be at the forefront fighting the crisis, with the usage and application of the crisis management process (Baubion, 2013). The travel and tourism sector requires experienced people who can make sense out of the crisis management process and strategy and act accordingly (Racherla and Hu, 2009).

• Professionals are people with prior experience in managing such situations, and they are a human resource that cannot be replaced by any technological appliance (Çoban and Özel, 2022). Professionalism is specialised knowledge linked with experience to an individual who possesses it (Racherla and Hu, 2009).

• A clear crisis management strategy empowers the professionals to make decisions and handle crises with a clear approach (Ural, 2016; Nkwanyana, 2017). Consistent staff training programs is needed to ensure that employees are able to handle crisis situations smoothly (Racherla and Hu, 2009). It is, therefore, the responsibility of the travel and tourism sector to make sure that staff performance on crisis handling procedures is evaluated to ensure that they are trained and equipped to apply what they have learned to a real crisis (Baubion, 2013). With a well-oriented crisis management process being understood by professionals, the travel and tourism sector can change a crisis into an opportunity in the long term (Dube, 2021). However, crisis situations are unpredictable, unavoidable, and ambiguous, therefore, the COVID-19 pandemic crisis in the travel and tourism sector is explored in the following section.

Impacts of the COVID-19 pandemic on the tourism sector

The COVID-19 pandemic, which emerged suddenly, did not give any warning signals before it hit the travel and tourism sector (Çoban and Özel, 2022). The COVID-19 pandemic underlines the critical importance of an enhanced understanding of change in the travel and tourism sector (Rogerson and Rogerson, 2022). To save costs many travel agencies adopted cost-cutting practices including offering voluntary no-paid leave and terminating probation and contract staff (Rogerson, 2021). The economic impacts are because of expenditures in the absence of business revenue operations,

the expenditures include and are not limited to refunding the cancelled bookings and refunding clients for paid travel packages, the economic impacts are to pay fixed and variable costs such as wages, pay taxes, rental payments, loan payments, and payment of suppliers. With the rapid spread of the COVID-19 pandemic, the travel and tourism sector experienced a steep increase in cancellations of trip bookings, flight, and holiday reservations, due to loss of customer flow and health concerns (Çoban and Özel, 2022). The outbreak of COVID-19 exerted massive impacts on the travel and tourism sector with the African continent suffering a decrease of 49.2% in normal business operation (Matiza, 2021).

When compared to the rest of the world the travel and tourism sector in South Africa experienced a radical decrease of 83% loss in revenue in 2020 (Rogerson and Rogerson, 2020). By March 2020, 58% of travel and tourism businesses were unable to service their debts and 54% were struggling to cover fixed costs (Musavengane et al., 2022).

The travel and tourism sector, after crises events including historical outbreaks in the past, usually recovers, which displays that the travel and tourism sector's resilience in alleviating the collapse of demand and supply (Nduna and Van Zyl, 2020). Management of a crisis through effective strategies is vital to reduce the impacts manifested by the crisis (Mair et al., 2016). Various types of crises require different crisis management strategies to recover (Mikusova and Horvathova, 2019). A discussion of generic crisis management strategies that assist the sector in coming back to normality follows.

Generic practices on crisis management strategies by businesses

Crisis management strategy refers to prevention, planning, testing evaluation and maintenance to mitigate and minimize the crisis consequences (Jia et al., 2012). Chau et al., (2023) identified one of the generic functions of a crisis management strategy which is to acquire objective information. For example, during and after the Ebola epidemic in 2014 in some parts of Africa, South Africa's travel and tourism sector discovered that they had fewer African tourists, therefore, the South African travel agencies sent all the latest news about Ebola to tour operators in the country, and assured customers from Kenya that South Africa was Ebola-free. This strategy determined how organised the travel agencies are in planning, decision-making, problem solving, administrative management and reaction in a crisis (Jia et al., 2012). Rogerson (2021) found the generic practices that most businesses in the travel and tourism sector adopted to remain afloat during the COVID-19 period, the practices are as follows:

- Modified cancellation policies;
- Product diversification;
- Forming new partnerships;
- Modifying target markets and markets changes;
- Applying for government relief packages.

Rogerson (2021) further claimed that the travel and tourism businesses applied a self-reliant approach which involved changes in revenue-generation, reduction in employment hours and staff rotation and mothballing certain operations. Çoban and Özel (2022) stated that providing transparency to employees and providing adequate information, as well as decentralised power to department levels was critical to deal with crisis impacts. The South African and New Zealand Governments introduced several initiatives to assist the travel and tourism sector, such as staff wage subsidies and providing stimulus packages to ensure the sector survives the COVID-19 induced impacts (Dube, 2021). Crisis management should be a core competency for the travel and tourism sector (Ritchie, 2004).

Figure 2. A detailed map of Mpumalanga (Rogerson, 2021)

MATERIALS AND METHODS

The study adopted a positivist research paradigm. A quantitative methodological approach was employed through a survey research design. The study adopted the quantitative research (survey), with descriptive statistics (means, frequencies, and standard deviations) that could be extracted from the results.

Population

The population of the study was the travel agency community of the province of Mpumalanga, South Africa which covers the Ehlanzeni, Nkangala, and Gert Sibande Regions. The areas that are covered in the study are displayed in Figure 2. The Mpumalanga Tourism and Parks Agency (MPTA) assisted by offering the travel agencies database (with emails and phone numbers), where e-mails of the questionnaire were forwarded to different travel agency professionals through Survey Monkey. For respondents to form part of the target population, they were expected to be above the age of 18 years, employed either part-time, full time or casual basis by any travel agency that is registered with the MTPA. The study population was the travel agency employees, employed either as: front desk managers, supervisors, key accounts, administrators or booking agents.

The research instrument

The research instrument used was a self-completion questionnaire, which was adapted from an existing instrument by Al Khalifa (2021) in a study that is titled "Crisis Management and Flexibility: The Moderating Role of E-Readiness the

Case of Government Authorities in The Kingdom of Bahrain". The overall questionnaire had 6 categories (pre-crisis stage, preparation for the crisis, emergency stage, intermediate stage, long-term recovery, and the evaluation stage). Five-point Likert scale questions were utilised, ranging from 1 = strongly disagree to 5 = strongly agree was used.

The questionnaire was circulated to the travel agencies in Mpumalanga province through Survey Monkey to the target population. The response rate of 65.76% is considered a positive response rate, given that the minimum standard threshold of 35% is satisfactory for most quantitative research surveys. Cronbach alpha values for each of the constructs were found to be meeting the required 70% threshold indicating internal consistency of the constructs.

Procedure
Census sampling, which is considered probability sampling was adopted in this study with the intention to include all the travel agencies registered under the MTPA. These travel agencies are on a mission to grow tourism, manage biodiversity and to stimulate sustainable economic growth that is inclusive and creates decent employment in Mpumalanga Province (MTPA), South Africa. The researcher sent the Survey Monkey link through e-mails to the travel agencies and sent follow-up e-mails to accelerate progress. In the first week, Survey Monkey reported 15 responses, the second week, the response rate improved by at least 50 responses, the third week Survey Monkey reported 36 responses and in the final week Survey Monkey reported 20 responses. The population size was 350, RoaSoft software generated a proposed sample size of 184 on a confident rate of 95% and 5% wrong margin. The study obtained 121 fully completed questionnaires, which is a 65% response rate.

DATA ANALYSIS
The data was exported from Survey Monkey to Excel and Statistical Package for Social Sciences (SPSS) version 27 was used to analyse the coded data. The SPSS software assisted with the inferential statistics to make it easier to study and interpret the data obtained from data collection. The researcher carried out the analysis of means, analysis of variance (ANOVA) and analysis of relationships.

Ethical consideration
Ethical clearance to conduct this study was obtained from the Tshwane University of Technology Faculty of Management Sciences Research Ethics Committee (FCRE2023/FR/03/003-MS (2). The questionnaire had an informed consent letter indicating that it was voluntary for respondents to participate in the study, and their rights to withdraw were respected. Anonymity was maintained and the data obtained was securely stored.

RESULTS AND DISCUSSION
The findings are divided into two sections which is the demographics of the respondents and the descriptive statistics. The demographic data is important as it affects the credibility of the data in various aspects and the descriptive statistics focus on the summary of the picture of the population depending on the variables of interest.

Table 3. Demographics of respondents

Demographics	
Attributes	**Percentages**
Qualification	
Matric	23%
N6 Certificate	7%
National Diploma	17%
Bachelor's degree	32%
Honours degree	16%
Master's degree	5%
Job title	
Manger	10%
Front desk manager	4%
Supervisor	4%
Key accounts	4%
Administration	23%
Booking agent	3%
Other	54%
Duration of service	
<a year	46%
1 – 5 years	46%
6 – 10 years	6%
>10 years	1%

Demographics of 121 respondents
Table 3 displays the demographic data obtained through Survey Monkey from travel agencies in the province of Mpumalanga from the 1st of May 2023 to the 31st of May 2023. The results reveal that the travel and tourism sector in the province of Mpumalanga is run by qualified professionals with at least 32% of the employees holding a Bachelor's degree, followed by employees with a National diploma (17%), and Honours (16%). Mbatha et al (2021) argue that the travel and tourism sector is a service industry and therefore need qualified people who can translate the service into the real experience to the people. Based on the result, one may argue that the level of education that the respondents had, can assist the travel agencies to navigate turbulent waters during times of crisis.

There were few respondents from top management positions: Manager (10%), Front desk manager (4%), and Supervisor (4%), which indicates that most of the travel agencies in the province of Mpumalanga has fewer managerial positions as it is a norm in small businesses (Nhamo et al., 2020). Majority of the travel agencies staff are occupying functional positions such as Key Accounts (4%), Administration (23%), and Booking agent (3%); this indicates that travel agencies focus is on their daily administration and function of the business.

Although most of the travel agencies are SMMEs in Mpumalanga, the results indicate that (46%) of their staff members have been involved with the same company for at least a period of 12 months in their occupation. This has a positive impact when dealing with any crisis since the staff members are active for a reasonable time in the organisation. The results are in line with Bhaduri (2019), who mentioned that a well-educated workforce and a good management team of travel agencies tend to a great effect on combating and controlling crisis.

Descriptive data and discussion
The following section presents the descriptive data obtained from travel agencies in Mpumalanga in relation to crisis management strategies during the times of crisis. Crisis management strategies for travel agencies in Mpumalanga were identified by the respondents in variables that were tested in a five-point Likert scale. The Likert scale was divided into six categories: namely, pre-crisis, preparation, emergency, intermediate, long-term recovery, and evaluation stages. Table 4

depicts that 41% of travel agencies effectively monitor the potential impact of the crisis on business operations (PS1). The results obtained are not novel in managing crisis in the travel and tourism sector, particularly, the travel agencies, because they entered the online market in the late 1990s. Travel agencies understood the advantages of the cyber highway facilitated by the world wide web, and they were quick to adopt and move their business online (Çoban and Özel, 2022). One may argue that this could be one of the reasons why travel agencies regularly monitor the potential crises in business operations. The role of crisis management in the travel and tourism sector is to ensure that regulatory processes and plans to develop strategies and procedures in response to a crisis are all in place (Alhadi et al., 2018:2), it involves intense planning to prepare the travel and tourism sector to provide the most accurate response needed to deal with a crisis (Nhamo et al., 2020).

Table 4 shows that respondents rated the crisis management strategies to be moderately important, with all scoring means ranging from moderately important (3) to least important (0). Respondents ranked the following strategies as important strategies in the crisis management process:

• Constantly monitoring of any signs and problems – there is a thorough risk assessment and anticipation, which seeks to reduce crisis occurrence in the travel agency sector;

• Sharing of crisis management information with workers – the travel agency sector use relevant information to perform tasks such as rescue operations with involved stakeholders and workers;

• Prioritising both tourists and staff – minimising damage by protecting staff and tourists to avoid a complete collapse;

• Resolve reputational threats – controlling public impressions, recovering from the crisis, and re-establishing confidence and credibility;

• Precautionary measures – crisis management strategies assessment to derive conclusions and lessons from the crisis.

Table 4. Crisis Management Strategies for Travel Agencies in Mpumalanga

Crisis Management strategies	Strongly agree %	Agree %	Neither agree nor disagree %	Disagree %	Strongly disagree %	Mean %	Std. Deviation %
Pre-crisis stage							
(PS1) There is constantly monitoring of any signs and problems that may be an indication of a crisis.	3.81	12.38	24.76	44.76	14.29	3.53	1.010
(PS4) There is effective coordination between the travel agency and government institutions.	9.52	14.29	27.62	34.29	14.29	3.29	1.167
(PS6) The business has a plan to resolve reputational threats presented by a crisis.	23.81	54.29	14.29	5.71	1.90	3.69	1.008
(PS7) The services provided by the business prioritized both tourists and staff during the crisis period.	19.00	53.00	16.00	9.00	3.00	3.76	0.965
Preparation stage							
(PPC3) The business shares crisis management information and expected responsibilities of workers involved.	17.48	51.46	20.39	4.85	5.83	3.92	0.884
Long-term recovery							
(LTR5) The business long-term recovery strategies involve crisis precautionary measures.	15.00	56.00	21.00	6.00	2.00	3.76	0.915
Evaluation stage							
(EV5) The future crisis management plan is appealing to pandemic crisis situations.	21.27	48.04	17.65	7.84	4.90	3.73	1.042

The analysis on table 4 presents a strong emphasis on people, sharing, and reputation management as strong strategies and tools to resolve crisis events. This is supported by the 1.167% which is the highest standard deviation, whereas the lowest is 0.884%. This is a positive result, considering that the travel and tourism sector is largely dominated by small firms in South Africa, and the sector is at most the worst affected by different crisis events. The mean is 3.29 and the standard deviation on (PS4) coordination between travel agencies and government institutions is 1.167, which reveal that crisis management requires the involvement of government institutions, the private sector, and the public, which demands effective coordination for a successful combating of the crises to save the travel and tourism sector. Ineffective coordination raises governance challenges regarding operations of the travel and tourism sector.

The capacity to coordinate crisis management is fundamental to provide appropriate responses at the right time, to protect the collapse of the travel and tourism sector. The mean on (EV5) the future plan of travel agencies appealing to pandemic situations is 3.73 and the standard deviation is 1.042, revealing the level of resilience of travel agencies in the presence of crisis. Crises have challenged the travel and tourism sector mostly due to unexpected or unforeseen circumstances, but also due to links and breakdown of information flow (Baubion, 2013). Stakeholders must fully understand the crisis management strategy and crisis management process to prepare for further crises (Zhong et al., 2021). In times of crises, only a well-coordinated and concerted effort by these institutions will help to curb the impacts of the crisis. The results also reveal that travel agencies (LTR5) long-term recovery strategies involving precautionary measures which is the highest with (56%), a mean of 3.76 and a standard deviation of 0.915, recognises that for travel agencies recovery to an improved state, is through the travel agencies ability to learn from crises, make policy changes, adapt, and modify crisis management strategies that did not work effectively in the previous crisis (Musavengane et al., 2022).

CONCLUSION

Navigating turbulent waters during the times of any crisis event in the travel agencies increases their responsibility to consult with the stakeholders in the travel and tourism supply chain, to plan and prepare for crisis events in advance. It is critical to know what to do in times of a crisis to manage it successfully, and to improve the state of crisis management within travel agencies. The stages and results of crisis management should be evaluated consistently in a business operation to improve the preparation for the next crisis. The study found effects of crisis management on travel agency operations; they are mentioned on the Figure 3.
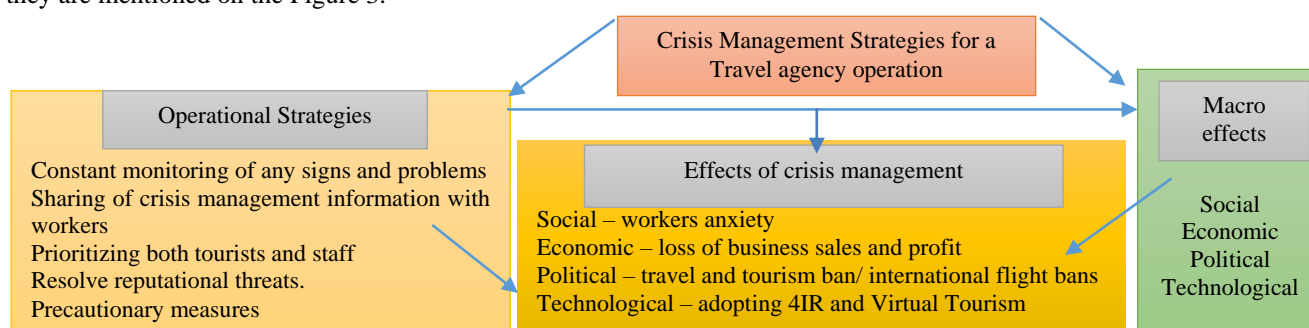

Figure 3. Effects of Crisis Management on travel agency operations (Source: Authors)

The results presented revealed that, every crisis is a source of learning to improve the handling of the next crisis, e.g., the adoption of existing technologies such as 4IR increases the level of information coordination and sharing during a crisis, which will improve the facilitation of information for the next crisis. Effective monitoring of warning signals, sharing of crisis management information with workers, prioritising both tourists and staff, resolve reputational threats, precautionary measures and coordination between the travel and tourism stakeholders which forms part of the crisis management process contributes massively to the minimal exposure of the travel and tourism sector to the dire impacts of crisis events. The study also reveals that professionals are an integral part of crisis management, since all the theories can be drafted and the planning is done, professionals are the ones who fight the crisis daily implementing the plans put in place by the travel and tourism sector. Evaluation of the crisis management strategies is critical to improving the ability of the travel and tourism sector to survive and thrive during crisis events. We argue that valuation is a critical factor in crisis management as it improves the state of both the travel and tourism sector and the crisis management process effectiveness, it helps the travel and tourism sector with planning, time, and allocation of available resources to be used to its fullest strength to deal with crisis events when they hit the sector.

Limitations

Due to the uniqueness of the COVID-19 pandemic, there is limited empirical evidence that presents travel agencies perspectives on crisis management strategies in the province of Mpumalanga. The COVID-19 pandemic was not heavily explored by tourism researchers. The study was only limited to travel agencies in the province of Mpumalanga and the travel and tourism sector is a national and international phenomenon with hotels, restaurants, casinos, and theme parks to name a few forming part of the travel and tourism supply chain. The population was only limited to travel agency employees, the managers, supervisors, key accounts, front desk manager, administrators, and booking agents to define the narrative of crisis management.

Recommendations

The practical recommendation is that the travel and tourism sector should consider the significance of "evaluation" as a critical role during the times of crisis. Increasing effectiveness of the crisis management process in the travel and tourism sector needs different strategies that are implementable and widely understood for the organisation to stay afloat during the crisis events. The study also recommends that the relationship between the travel and tourism sector and government institutions be properly managed as a method to improve the level of information sharing and easy access to financial and other forms of aid assistance, also as a method to integrate the travel and tourism stakeholder's ecosystem to improve the effectiveness of participation during a crisis event. The study recommends that future studies focus on the 5IR which focuses more on human interaction for business and crisis management purposes.

REFERENCES

Aldo, C., Blasco, D., Espallargas, M.P., & Rubio, S.P. (2021). Modelling the crisis management and impacts of 21st century disruptive events in tourism: the case of the COVID-19 pandemic. *Tourism Review*, 76(4), 929-941. https://doi.org/10.1108/tr.2020.07.0297

Alhadi, Z., Maani, K.D., Nurhabibi, P., & Syarief, A. (2018). *An analysis of problem in composing of tsunami contingency plan in Padang City*, Padang, Universitas Negeri Padang. https://doi.org/10.1051/matecconf/2018.22.903

Baubion, C. (2013). OECD Risk Management: Strategic Crisis Management. In*: OECD Working Papers on Public Governance*, 3, 1-24. https://dx.doi.org/10.1787/5k41rbd1lzr7.en

Bhaduri, R.M. (2019). Leveraging culture and leadership in crisis management. *European Journal of Training and Development,* 43(5), 534-549. https://doi.org/10.1108/ejtd.2018.10.010

Chau, K.Y., Zheng, J., Yang, D., Shen, H., & Liu, T. (2023). Contingency approach for tourism industry: The application of China model in crisis management during the outbreak and pandemic of COVID-19. *Journal of China Tourism*, 19(2), 133-154. https://doi.org/10.1080/19388160.2022.20.346

Çoban, E., & Özel, Ç.H. (2022). Determining the crisis management strategies applied by hotel managers during the outbreak of Coronavirus (COVID-19). *International Journal of Akdeniz University Tourism Faculty*, 10(1), 27-48. https://doi.org/10.30519/ahtr.951594

Dube, K. (2021). Implications of COVID-19 induced lockdown on the South African tourism industry and prospects for recovery. *African Journal of Hospitality, Tourism and Leisure*, 10(1), 270-287. hhttps://doi.org/10.46222/ajhtl.19770720.99

Giddy, J.K., & Rogerson, M.J. (2021). Nature-based tourism enterprise adaptive responses to COVID-19 in South Africa. *GeoJournal of Tourism and Geosites*, 36(2), 698-707. https://doi.org/10.30892/gtg.362spl18.700

Hamid, I.A. (2011). Travel agency strategies for managing the current dynamic environment. *Pushing Tourism to the Forefront*, 4(1), 71-79.

Jia, Z., Shi, Y., Jia, Y., & Li, D. (2012). A framework of knowledge management systems for tourism crisis management. *Procedia Engineering*, 29(12), 138-143.

Khuja, M.S., & Bohari, A.M. (2012). *A preliminary study of internet-based ticketing systems impacts on selected travel agencies in Malaysia*, Malaysia, Universiti Utara Malaysia.

Mair, J., Ritchie, B.W., & Walters, G. (2016). Towards a research agenda for post-disaster and post-crisis recovery strategies for tourist destinations: a narrative review. *Current issues in Tourism*, 19(1), 1-26. https://doi.org/10.1080/13689500.2014.932

Matiza, T. (2021). North-West. *How to revive African tourism after the COVID-19 pandemic*. accessed:27/08/2021. https://www.google.com/amp/how-to-revive-african-tourism-after-the-COVID-19-pandemic-163832

Mbatha, F., Harilal, V., & Tichaawa, T.M. (2021). Tourist guides, COVID 19 and survival mechanisms in South Africa. *GeoJournal of Tourism and Geosites*, 39, 1461-1472. https://doi.org/10.30892/gtg.394spl17-790

Mikusova, M., & Horvathova, P. (2019). Prepared for a crisis? Basic elements of crisis management in an organisation. *Economic Research-Ekonomska Istraivanja*, 32(1), 1844-1865. https://doi.org/10.1080/1331677X.2019.164

Musavengane, R., Leonard, L., & Mureyani, S. (2022). Doing tourism in Southern Africa amid the coronavirus pandemic: Navigating political, socio-economic, and environmental inequalities. *Development Southern Africa*, 39(1), 3-19. https://doi.org/10.1080/0376895X.2020.182

Nhamo, G., Dube, K., & Chikodzi, D. (2020). *Counting the Cost of COVID-19 on the Global Tourism Industry,* Gewerbestrasse, Springer. https://doi.org/10.1007/978.3.030.5623.1

Nduna, L.T., & Van Zyl, C. (2020). A benefit segmentation framework for a nature-based tourism destination: the case of Kruger, Panorama and Lowveld areas in Mpumalanga Province. *International Journal of Tourism Cities*, 6(4), 953-973. https://doi.org/10.1108/IJTC.2019.06.008

Nkwanyana, M.S. (2017). *The management strategies of selected heritage resources at tourism destinations in Kwazulu-Natal and Mpumalanga provinces*, Richards Bay, University of Zululand.

Paraskevas, A., & Altinay, L. (2013). Signal detection as the first line of defence in tourism crisis management. *Tourism Management*, 34(1), 158-171. https://doi.org/10.1016/j.tourmn.2012.04.007

Racherla, P., & Hu, C. (2009). Crisis management in the hospitality and tourism industry. *Cornell Hospitality Quarterly*, 50(4), 561-577. https://doi.org/10.1177/1938965509341633

Ritchie, B.W. (2004). *Chaos, crises, and disasters: a strategic approach to crisis management in the tourism industry*, Australia, University of Canberra. https://doi.org/10.1016/j.tourman.2003.09.004

Ural, M. (2016). Risk management for sustainable tourism. *Review Article*, 7(1), 63-71. https://doi.org/10.1515/ejhr.2016.007

Rogerson, C.M., & Rogerson, J.M. (2020). COVID-19 tourism impacts in South Africa: Government and industry responses. *Journal of Tourism and Geosites*, 3(3), 1083-1091. https://doi.org/10.30892/gtg.31321.544

Rogerson, J.M. (2021). Tourism business responses to South Africa's COVID-19 pandemic emergency. *GeoJournal of Tourism and Geosites*, 35(2), 338-347. https://doi.org/10.30892/gtg.35211.657

Rogerson, C.M., & Rogerson, J.M. (2022). The impacts of COVID-19 on urban destinations: The South African experience. *African Journal of Hospitality*, 11(1), 1-13. https://doi.org/10.46222/ajhtl.19770720.207

Santana, G. (2004). Crisis management and tourism. *Journal of Travel & Tourism Marketing*, 15(4), 299-321. https://doi.org/101300/j073v15n04.05

Viljoen, K., & Roberts-lombard, M. (2016). Customer retention strategies for disintermediated travel agents: How to stop customers from migrating to online booking channel. *The Journal of Applied Research,* 32(3), 681-694.

Zhong, L., Sun, S., Law, R., & Li. (2021). Tourism crisis management: evidence from COVID-19. *Current Issues in Tourism*, 24(19), 2671-2682. https://doi.org/10.1080/13683500.2021.1901866

FACTORS AFFECTING SUSTAINABLE POVERTY REDUCTION LIVELIHOODS IN RURAL AREAS IN THE MEKONG DELTA, VIETNAM

Vu Thi Phuong LE
Vinh University, College of Social Sciences and Humanities, Faculty of Politics and Journalism,
Nghe An Province, Vietnam, e-mail: levtp@vinhuni.edu.vn

Phan Van TUAN
Vinh University, College of Social Sciences and Humanities, Faculty of Politics and Journalism,
Nghe An Province, Vietnam, e-mail: phanvantuan94@yahoo.com

Nguyen Chi HAI[*]
An Giang University, Vietnam National University Ho Chi Minh City, An Giang Province, Vietnam;
Vinh University, College of Social Sciences and Humanities, Vietnam, e-mail: nchai@agu.edu.vn

Abstract: Sustainable poverty reduction livelihoods in rural areas is a comprehensive process to solve current problems and build sustainability for the future. Sustainable Poverty Reduction Livelihoods in Rural Areas aims at solutions to reduce poverty and ensure complete and sustainable development of rural communities. The research seeks to discover factors affecting sustainable poverty reduction livelihoods in rural areas. Research data was collected in the Mekong Delta, Vietnam. In the survey with the questionnaire, 750 people responded directly to the questionnaire. SPSS 20 and AMOS 24 software are used to analyze data. The data collection process takes place from August to October 2023. Implementation methods include data descriptive statistics, testing scales, analyzing factors' suitability, and testing research structure. The research results show that six factors affect sustainable livelihoods and poverty reduction in rural areas in the Mekong Delta, Vietnam, including local government policies, infrastructure, education and training, labour market, community involvement, and finance and banking services. From the study's findings, several contents are discussed and suggested to help understand the relationship between factors affecting sustainable poverty reduction livelihoods in rural areas.

Key words: Factors, sustainable poverty reduction, livelihoods, rural areas, Vietnam

* * * * * *

INTRODUCTION

Poverty and its consequences affect socio-economic development in countries. Many global efforts with many solutions in the fight against poverty are ongoing. Poverty reduction must first understand the poor to help people experiencing poverty have the capacity to escape poverty sustainably (Ansoms and McKay, 2010). The livelihoods of people with low incomes still face many difficulties. Research and search for solutions to help people experiencing poverty have enough livelihood capital to choose a livelihood to increase revenue and reduce poverty is necessary (Singh and Chudasama, 2020).

In Vietnam, the government has paid attention to poverty reduction with policies to support the poor in integrating into life to reduce poverty sustainably (Tuan et al., 2023). Therefore, Vietnam is considered one of the countries with impressive achievements in poverty reduction. Vietnam is among the countries that soon achieved the goal of halving the poverty rate by 2010. By 2016, Vietnam's poverty rate was 5.8%, according to the government's poverty standard. In 2019, the poverty rate continued near multidimensional poverty of 5.7% (General Statistics Office, 2019). Although Vietnam has made progress in poverty reduction, it still needs to be completed, as Vietnam's poverty standard is still low compared to the world. The rate of falling back into poverty is still high; people experiencing poverty in Vietnam are primarily farmers whose livelihoods are tied to agriculture (Andriesse, 2018). Therefore, research on the livelihoods of poor households in rural areas is typical of Vietnam's common poverty problem. The Mekong Delta is the central agricultural production region in Vietnam; the livelihoods of the poor and local people still depend mainly on agricultural production. However, uncertainties and shocks related to weather, climate, epidemics, prices, and agricultural product output markets often cause low-income people to face risks (Hai and Ngan, 2022). The output market depends on the role of traders and the value chain of purchasing agricultural products. It creates many chances for poor and farming households in the law of supply and demand to meet the market. The farm product processing industry in the entire region needs to develop faster; farmers bear many risks in terms of product output. These risks increase the risk of poverty and re-poverty for farming households (Wang et al., 2016).

Thus, the impacts of shocks by the natural environment, economic environment, urbanization, climate change, and human intervention in water resources are forces. People in the Mekong Delta choose livelihood activities that help households

---

[*] Corresponding author

sustain poverty reduction in economic growth, preventing the risk of falling back into poverty (Atkinson, 2021). In the process of finding sustainable poverty reduction solutions, the livelihood approach has been chosen and applied by many countries instead of the poverty reduction approach focusing on food concerns. The livelihood approach puts people at the centre of poverty reduction, focusing on finding and choosing livelihood activities based on the household's livelihood capital resources (Soltani et al., 2012). While studies agree on the role of livelihood resources in household livelihood choices, there are disagreements in the research branch on which livelihood activities to choose to achieve sustainable livelihood goals.

If agriculture has remained the main livelihood of poor households for many decades, recent changes in economic structure. Shrinking agricultural land and increasing population have increasingly emphasized the role of non-agricultural work in creating jobs for the landless and landless poor (You and Zhang, 2017). External hazards and shocks force many poor households to choose various livelihood activities to minimize risks. Available research theories do not agree on the position and role of livelihood activities for needy families (Wang et al., 2023). Directions for selecting livelihoods for sustainable poverty reduction should be clarified to propose long-term orientations for transforming industry structure and solutions to support livelihood transformation (Agyeman et al., 2019). Research in the context of economic change in the Mekong Delta sheds light on the characteristics of poverty reduction livelihoods in rural areas. Discover factors affecting livelihoods and poverty reduction in rural areas to make policy recommendations towards sustainable poverty reduction.

LITERATURE REVIEW

The Mekong Delta region has the third lowest poverty rate in the country compared to other economic areas. The Mekong Delta is a region with great potential for agricultural production. Rural areas in the Mekong Delta face difficulties such as crop failure, loss of property, increasing poverty, and relapse into poverty. Besides, the scale of near-poor households in the area is still high; the size of near-poor households is approximately the same as that of poor households (Zulu and Richardson, 2013). These near-poor households easily fall back into poverty if they encounter difficulties from the external environment, such as climate change and economic shocks (Barbier and Hochard, 2018). In addition, poor households in rural areas are a typical problem in the region. Localities in the region have uneven poverty rates, and some provinces have high poverty rates, including Soc Trang and Tra Vinh. Some areas, including Can Tho and Long An, have low poverty rates (Hai et al., 2023).The Mekong Delta region is facing a situation where poor households are ethnic minorities. Tra Vinh and Soc Trang provinces have a proportion of poor households that are ethnic minorities, accounting for more than 50% of poor households in the area. People with low incomes in the Mekong Delta still face many difficulties because of the vicious cycle of lack of capital for livelihood, choosing low-productivity, low-income, and poor livelihoods. The vicious cycle becomes more severe when external risk factors cause the loss of their livelihood resources (Cao et al., 2016). So that the development process does not hurt poor households because they lack livelihood capital. The requirement is to research and improve the livelihood capital capacity of vulnerable subjects. They have the opportunity to participate in highly productive livelihood activities, ensuring a sustainable escape from poverty.

Sustainable poverty reduction livelihood is a livelihood concept that refers to the parts of a livelihood, including livelihood capital, livelihood activities, and the relationship between capital and livelihood activities to maintain and develop. A livelihood is sustainable when coping with and overcoming shocks and difficulties. At the same time, it preserves and enhances capacity and assets in both the present and the future while not weakening natural-based resources (Canwat and Onakuse, 2023). Sustainable livelihoods meet three standards: economic compatibility, institutional compatibility, and socio-cultural compatibility. In terms of economic livelihood, it must meet market needs, meet financial investment, and apply techniques and technology. Institutionally, livelihood is suitable in terms of regulations, monetary policies and support programs. From a socio-cultural perspective, that livelihood must be consistent with local knowledge, ideal for low-income people, women, minority groups, and disabled people and suitable for the locality (Do and Park, 2019). In addition, climate change adaptation livelihoods are based on two criteria: climate compatibility and environmental compatibility.

Based on the perspectives of sustainable livelihoods, Sustainable poverty reduction livelihoods will help the poor recover quickly and escape poverty sustainably under short-term and long-term external impacts based on foundations, including not being dependent on external assistance that comes from internal resources from within the household. Improve households' current and future capacity and assets to choose livelihood activities that are economically, culturally, and institutionally compatible to meet short- and long-term development needs (Gentle and Maraseni, 2012).

Sustainable livelihoods and poverty reduction focus on solving the relationship between livelihood capital and livelihood activities in implementing sustainable livelihood goals. To build sustainable poverty reduction livelihoods, it is necessary to improve livelihood capital capacity so households can proactively choose livelihood activities according to social development trends instead of waiting for outside help (Hansen et al., 2019). Accordingly, building sustainable poverty reduction livelihoods must gradually help families improve their capital to choose practical livelihood activities to escape poverty proactively, avoid falling back into poverty and get rich.

The Mekong Delta region still focuses on agricultural development, developing high-quality commodity agriculture, and economic restructuring. Due to the impact of climate change, the Mekong Delta region is severely affected by rising sea levels and saltwater intrusion (Hai, 2022). Coastal areas will be seriously affected by saltwater intrusion and landslides. In addition to the impact on the natural environment, human intervention in the Mekong River flow from upstream during hydroelectric power generation increases water scarcity in the dry season, reducing alluvial flow and economic benefits during the flood season. It has threatened the livelihood security of Mekong Delta households (Hai et al., 2023). Climate change and the impact of countries upstream of the Mekong River are factors that seriously threaten agricultural production, which is the main livelihood of people in the Mekong Delta, and as a result, increasing poverty and re-poor.

In recent years, the loss of agricultural land has increased with urbanization and the formation of a series of industrial zones in the Mekong Delta. Urbanization has dramatically affected the livelihoods of people whose land was recovered but could not change industries due to the slow pace of job creation from the non-agricultural sector, further increasing poverty in the area. According to He and Ahmed (2022) in the study "Farmers' livelihood capital and its impact on sustainable livelihood strategies: evidence from the poverty-stricken areas of Southwest China". Livelihood capital affects livelihood strategies and sustainable poverty reduction. Combine achievements in sustainable poverty reduction with sustainable livelihoods, optimize livelihood strategies and enhance sustainable livelihood capacity. Farmers should comprehensively observe the environment and resources when choosing a livelihood strategy. Farmers should choose the most suitable livelihood strategy according to the actual situation of their livelihood capital to take full advantage of the benefits of their livelihood capital. Take advantage of educational level, credit capital and social network relationships to actively seek ways to increase income and job opportunities. The types of livelihood strategies adopted by farmers are not constant and will change as there are changes in livelihood capital. Therefore, farmers should choose the most suitable livelihood strategy according to their actual livelihood capital to improve their livelihood capacity (He and Ahmed, 2022).

According to Yu et al. (2022) in the study "Eliminating Deprivation and Breaking Through Dependence: A Mechanism to Help Poor Households Achieve Sustainable Livelihoods by Targeted Poverty Alleviation Strategy". Lack of capital is the hallmark of poverty, and capital support significantly reduces poverty. Implement a comprehensive livelihood system for poor households, eliminating multidimensional shortages by supplementing livelihood capital. Policies to support low-income families with capital, build sustainable poverty reduction roadmaps, and ultimately help poor households escape poverty and achieve sustainable livelihoods (Yu et al., 2022). The close links between different components of the livelihood system provide ideas for promoting poverty reduction programs to achieve sustainable goals. This study has not shown specific solutions for sustainable poverty reduction livelihoods.

In the study "How does ecological poverty alleviation contribute to improving residents' sustainable livelihoods?—Evidence from Zhejiang Province, China" by Shi et al. (2023). Poverty alleviation should pay attention to improving the welfare of local people. Tourism-based projects have been effective in promoting economic and natural capital. Agriculture-based initiatives effectively promote people's human, social and physical capital. The level of people's participation is a decisive factor in the effectiveness of village-led projects. Many factors influence sustainable poverty reduction, such as cultural and social norms, local government support, specific policies and laws, and available resources (Shi et al., 2023). The study "Measuring farmers' sustainable livelihood resilience in the context of poverty alleviation: a case study from Fugong County, China" by Sun et al. (2023). The study uses resilience theory combined with the traditional sustainable livelihood analysis framework to build a framework to describe farmers' sustainable resilience livelihood. The study developed an index of farmers' sustainable livelihood resilience and a measurement model using three internal resilience dimensions: buffering, self-organizing, and learning capacity (Sun et al., 2023). Research shows that the ability of farmers to restore sustainable livelihoods is unevenly distributed in both space and time. Therefore, further research should focus on factors affecting the ability of farmers to restore sustainable livelihoods, thereby strengthening both theory and practical application to restore farmers' sustainable livelihoods.

THEORETICAL FRAMEWORK AND RESEARCH STRUCTURE
Theoretical framework

The sustainable poverty reduction livelihood approach is appropriate when using economic measures of income and poverty rate to evaluate the effectiveness of the poverty reduction process. Besides, the advantage of the livelihood approach is that it focuses on the livelihood capacity of households to help choose sustainable livelihood strategies, putting people at the centre of the poverty reduction process. Available studies have divided household livelihoods into four components: people with livelihood capacity, livelihood activities, livelihood assets and livelihood goals. It is a primitive livelihood framework that lays the foundation for developing livelihood frameworks. In addition to internal factors, some studies have added external factors that affect the implementation of livelihood goals, such as context, conditions, trends and structural, institutional and process. Livelihood resources include human capital, natural capital, financial capital, social capital and other capital sources (Kaygusuz, 2011). Accordingly, context, conditions and trends, along with institutions and organizations, have a relationship with livelihood resources to determine the livelihood strategies of households. Currently, sustainable livelihood frameworks are applied by empirical researchers in different approaches.

In the study "Livestock Production, Rural Poverty, and Perceived Shocks: Evidence from Panel Data for Vietnam" by Do et al. (2019). The study assessed the contribution of livestock to rural poverty reduction and examined the determinants of wealth. Livestock contributes to poverty reduction, and assets are affected by the hardships households face, including access to credit, agricultural land size, Education level of the head of household, irrigation system and access to national power sources (Do et al., 2019). Allowing rural families to better cope with shocks will contribute to development and reduce poverty in rural areas. According to the study "Rural Household' Livelihood Responses to Industry-based Poverty Alleviation as a sustainable route out of Poverty" by author Ding et al. (2020). Industrialization is one way to achieve a sustainable path out of poverty. Implementing poverty reduction projects and responding to changes in the livelihoods of rural households is very important. A more robust livelihood response would reduce poverty (Ding et al., 2020). Effective poverty alleviation can also stimulate more robust household responses. External environmental factors include locality, type of industry, and local organizational capacity. Factors within the family, including resources, income, medical, education, number of employees, policy beliefs, credit availability, and social networks, have significantly impacted households' livelihood responses. However, this impact changes in different directions and has different intensities.

According to authors Deng and Zhang (2020), the study "Livelihood Sustainability and Dynamic Mechanisms of Rural Households Out of Poverty: An Empirical Analysis of Hua County, Henan Province, China". Three factors determine sustainable livelihoods: livelihood base, accelerated livelihoods, and livelihood environment. The study analyzed the livelihood characteristics of rural households escaping poverty and the dynamic mechanisms of sustainable livelihoods in hunger eradication and poverty reduction based on quantitative measurements of livelihood sustainability (Deng and Zhang, 2020). Livelihood resources, especially labour resources and proactive livelihood development of rural households influence sustainability. Rural households escape poverty sooner, are located in industrial parks or typical modern industrial zones, apply diverse, non-agricultural production methods, and have a higher level of livelihood sustainability. Developing sustainable livelihoods for rural households to escape poverty requires promoting the endogenous strength of rural households to create positive livelihood acceleration based on ensuring a livelihood base.

In the study "An Assessment of Poverty Alleviation Measures and Sustainable Livelihood Capability of Farm Households in Rural China: A Sustainable Livelihood Approach" by Su et al. (2021). Effective mechanisms for government poverty reduction measures rely on the sustainable livelihoods of farming households. The development of local industries and government financial support will improve the sustainable livelihoods of farmers and reduce poverty (Su et al., 2021). A positive correlation exists between poverty reduction measures and natural and social capital for sustainable livelihoods. This finding will help improve the sustainability of the livelihoods of farming households.

Poverty eradication measures and diverse capital sources have an impact on sustainable livelihoods. This approach has the effect of stabilizing poverty reduction mechanisms in rural areas in the long term. According to Zhang et al. (2022) in the study "The Impact of Livelihood Sources on Relative Poverty among Households in the Karst Mountains, a case study from Huajiang demonstration area". The author uses interdisciplinary analytical methods to measure household livelihood sources and relative poverty in the karst region and explores the impacts of livelihood sources on relative poverty (Zhang et al., 2022). Natural conditions influence relative poverty in the area due to a lack of material conditions. The household's labour status, production conditions, social network and natural conditions affect the household's source of livelihood. Strengthening households' sources of livelihood can significantly reduce their relative poverty.

With increased household sources of livelihood, agricultural modernization can dramatically minimize household poverty levels, helping to consolidate and expand poverty reduction activities. In the study "Analyzing the status of multidimensional poverty of rural households by using sustainable livelihood framework: Policy implications for economic growth" by Fahad et al. (2023). *Poverty* is a multifaceted and place-based problem that cannot be quantified by monetary measures alone. The multidimensional poverty line is considered a new approach to assessing poverty, determining the causes of poverty, and encouraging poor households to escape poverty sustainably (Fahad et al., 2023). Research suggests that three capital sources, natural capital, social capital and financial capital, influence sustainable poverty reduction. Some sustainable poverty reduction solutions, including enhancing the spirit of self-reliance to escape poverty, are of interest.

Hypotheses

Sustainable poverty reduction livelihoods involve effective and long-term economic and social development. Sustainable poverty reduction livelihoods aim to reduce poverty and improve the quality of life for the community. Many factors affect sustainable poverty reduction livelihoods. We can pose hypothesis: What factors affect sustainable poverty reduction livelihoods in rural areas in the Mekong Delta? Politics and the quality of governance at local and national levels significantly influence the ability to implement poverty reduction strategies. Political stability helps create a positive business environment and allows development policies to be implemented effectively.

Hypothesis 1. Does local government policy affect livelihoods and sustainable poverty reduction in rural areas in the Mekong Delta? Adequate and efficient infrastructure systems, including transportation, clean water, and electricity, are critical to creating a positive business environment and helping rural communities connect to markets and services.

Hypothesis 2. Does infrastructure affect livelihoods and sustainable poverty reduction in rural areas in the Mekong Delta?Education level and occupational skills affect the ability to generate income. Investing in education and training improves employment opportunities and access to higher-paying jobs.

Hypothesis 3. Does education and training affect sustainable poverty reduction livelihoods in rural areas in the Mekong Delta? Labour market development and access to employment opportunities can enhance community income.

Hypothesis 4. Does the labour market affect livelihoods and sustainable poverty reduction in rural areas in the Mekong Delta? Agriculture often makes up a large part of the livelihoods of many poor communities. Sustainable rural development can provide career opportunities and improve agricultural production. Active community participation and interaction in the decision-making and implementation of development policy are also essential to ensure that solutions are designed based on the actual and local needs of the community.

Hypothesis 5. Does community participation affect sustainable poverty reduction livelihoods in rural areas in the Mekong Delta? Access to finance and banking services can affect the ability to invest and grow a business. An effective financial system can provide necessary capital and support to local companies. Hypothesis 6 Do finance and banking services affect sustainable poverty reduction livelihoods in rural areas in the Mekong Delta?

Research structure

We build the research structure based on available research and theoretical frameworks. We propose a research structure for factors that affect sustainable poverty reduction livelihoods in rural areas in the Mekong Delta. The research structure has six factors affecting sustainable livelihoods and poverty reduction in rural areas: local government policies, infrastructure, education and training, labour market, community involvement, and finance and banking services. The

research structure is shown in Figure 1. The variables observed in the research structure of factors affecting sustainable poverty reduction livelihoods in rural areas in the Mekong Delta are shown in Table 1.
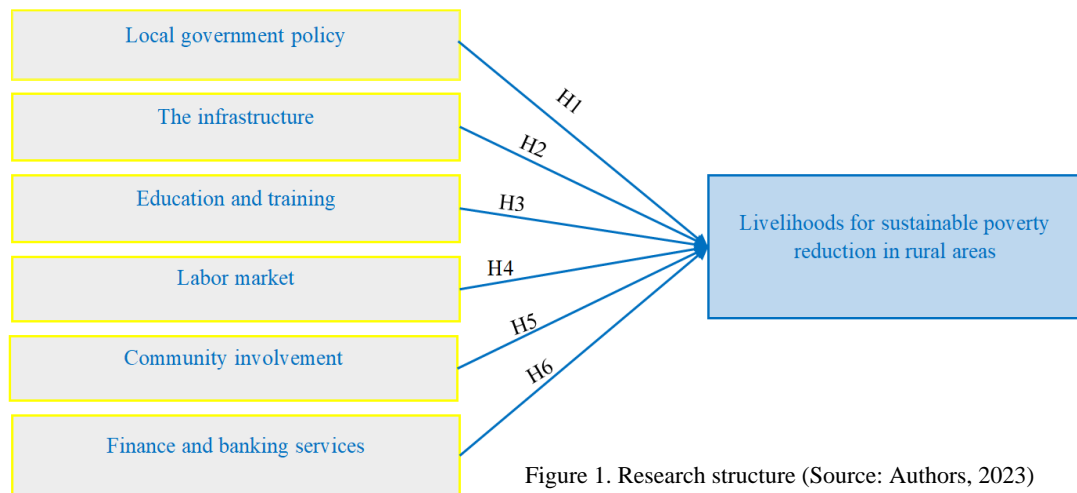

Figure 1. Research structure (Source: Authors, 2023)

Table 1. Observed variables in research structure (Source: Authors compiled from evaluation studies, 2023)

Factors in the research structure	Encode	Observed variables
Local government policy	LOGP	(1) Economic development policy; (2) Rural and agricultural policy; (3) Education and training policy; (4) Construction and maintenance of infrastructure; (5) Resource management and environmental protection; (6) Social policy.
The infrastructure	TINF	(1) Connected transportation system; (2) Irrigation works; (3) Electricity and energy; (4) Educational and medical infrastructure; (5) Internet access; (6) Agricultural product processing facilities.
Education and training	EDAT	(1) Improve educational level; (2) Develop professional skills; (3) Vocational training centre; (4) Building a community education foundation; (5) Research and application of agricultural technology; (6) Access to internet and technology.
Labor market	LAMA	(1) Job opportunities; (2) Income and consumption; (3) Population movement; (4) Market access; (5) Labor quality and skills; (6) Working conditions.
Community involvement	COIN	(1) Support community businesses; (2) Share knowledge and skills; (3) Protect and manage resources; (4) Support farmers and agricultural workers; (5) Promote community tourism; (6) Social care and support.
Finance and banking services	FABS	(1) Financial support for farmers; (2) Developing financial services in rural areas; (3) Financial training and consulting; (4) Supporting sustainable agriculture; (5) Financial incentive policies; (6) Developing agricultural product markets.
Livelihoods for sustainable poverty reduction in rural areas	LSPR	(1) The living environment in rural areas is improved; (2) Poverty reduction livelihoods are adequate; (3) Satisfaction with local government policies; (4) Income in rural areas is increased.

METHODOLOGY

Research methods used include descriptive statistics, testing of scales, analysis of the suitability of factors and testing of research structures. The steps of the research method are shown in Figure 2.
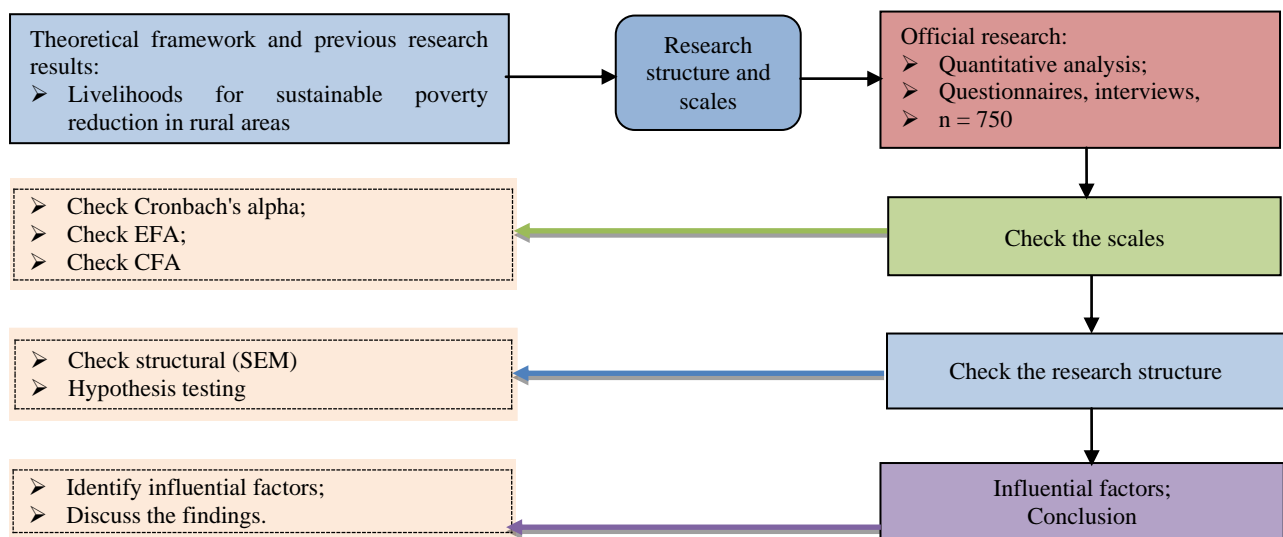

Figure 2. Flowchart of research methodology steps (Source: Authors, 2023)

188

Research area

In Vietnam, The Mekong Delta is a critical agricultural region with essential contributions to the country's fields of production and export of rice, fruits, and aquatic products. It is a region with a strategic position in ensuring national food security. Economic restructuring during the integration process has increased income and reduced poverty rates. The region's poverty rate was 12.6% in 2010, and by 2016, the region's poverty rate was 5.2%, according to the government poverty line. In 2019, the poverty rate, according to the multidimensional poverty standard, was 5.8% (General Statistics Office, 2019). However, the Mekong Delta region is facing many challenges in the process of poverty reduction. The pace of poverty reduction in the current period is slowing down due to the impact of the COVID-19 pandemic and the worldwide economic crisis. The study area is shown in Figure 3.

Research data analysis

To discover factors affecting sustainable poverty reduction livelihoods in rural areas in the Mekong Delta. A questionnaire was developed based on theoretical research. The survey questionnaire has 46 Likert items, including six demographic scales and seven scales measuring factors affecting sustainable poverty reduction livelihoods in rural areas in the Mekong Delta. Data collection took place from August to October 2023.The Likert scale is used in the range of values from 1 to 5 to measure survey subjects' perceptions of (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) completely agree. Respondents answer directly on the questionnaire.

The questionnaire was distributed to 750 people in the Mekong Delta, Vietnam. A total of 735 valid responses were collected. Responses from the survey were coded and analyzed using SPSS version 20 and AMOS version 24 software. Research factors affecting sustainable poverty reduction livelihoods in rural areas of the Mekong Delta, with statistical steps to describe demographics. Test the reliability of the scale.

Structural factor analysis. Hypothesis testing by linear structural model (SEM) on factors affecting sustainable poverty reduction livelihoods in rural areas of the Mekong Delta; Identify factors affecting sustainable poverty reduction livelihoods in rural areas of the Mekong Delta, Vietnam.

RESULTS

The results of analyzing six demographic scales in the survey area of the Mekong Delta are shown in Figure 2. Testing the scales in the research structure of factors affecting sustainable poverty reduction livelihoods in the rural Mekong Delta is shown in Table 3. Results of testing the scales in the structure study. Cronbach's Alpha coefficient was used to test the strong correlation between rankings in the construct. The results of survey data analysis show that all seven scales have high reliability. Cronbach's Alpha coefficient of the scales > .8 and total correlation coefficient > .3. It shows the appropriateness of the rankings in the research structure (Cronbach, 1951).
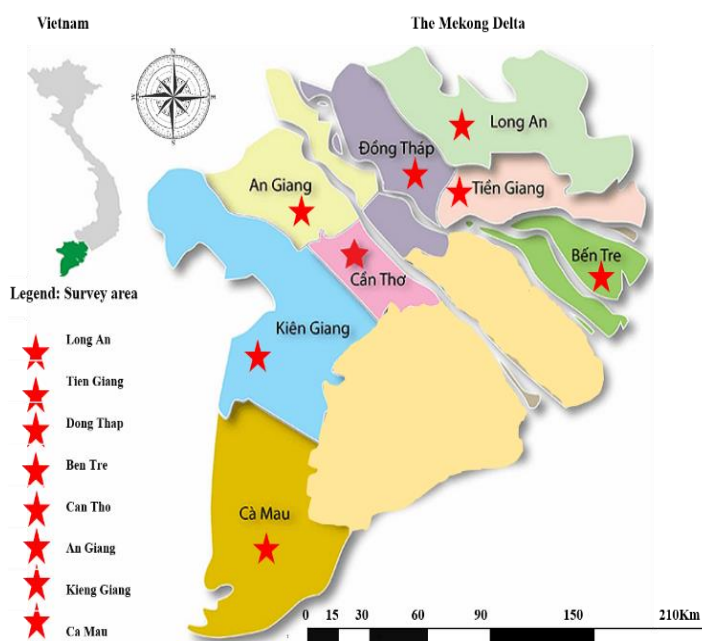

Figure 3. Survey area in the Mekong Delta, Vietnam
(Source: Authors gathered, 2023)

Table 2. Demographic characteristics of the survey sample (Source: Analysis of survey data by authors, 2023, n =735)

Characteristics and survey area	Number of respondents	Percentage
1. Survey area	735	100%
Long An	52	7.1
Tien Giang	89	12.1
Dong Thap	80	10.9
Ben Tre	139	18.9
Can Tho	61	8.3
An Giang	131	17.8
Kieng Giang	78	10.6
Ca Mau	105	14.3
2. The gender	735	100%
Male	375	51.0
Female	360	49.0
3. Occupation	735	100%
State employees	58	7.9
Company leadership	79	10.7
Researchers	61	8.3
Business staff	158	21.5
Technical staff	61	8.3
Teacher	131	17.8
Freelance labor	78	10.6
Other	109	14.8
4. Age (years)	735	100%
< 30	178	24.2
30 - 40	173	23.5
40 - 50	148	20.1
> 50	236	32.1
5. Education	735	100%
Master or PhD	42	5.7
College or Bachelor	214	29.1
Professional diploma holders	182	24.8
Other	297	40.4
6. Monthly Income (million VND)	735	100%
< 5	153	20.8
5 - 10	198	26.9
10 - 15	148	20.1
> 15	236	32.1

Table 3. Results of testing the scales in the research structure (Source: Analysis of survey data by the authors, 2023, n = 735)

Scales of measurement of factors	Encode	No. of items	Cronbach's Alpha	Corrected Item-Total Correlation range	Mean
Local government policy	LOGP	6	.914	.653 - .866	2.954
The infrastructure	TINF	6	.888	.632 - .827	3.362
Education and training	EDAT	6	.904	.594 - .900	3.672
Labor market	LAMA	6	.965	.764 - .861	3.093
Community involvement	COIN	6	.935	.687 - .899	4.005
Finance and banking services	FABS	6	.960	.715 - .941	3.595
Livelihoods for sustainable poverty reduction in rural areas	LSPR	4	.934	.841 - .900	3.765

Exploratory factor analysis (EFA) for scales in the research structure. The test results show KMO = .856. Bartlett's test, Sig. value = .000 (< .05). The test results show that Eigenvalue = 1.285 (≥ 1). The sum of squares of cumulative factor loadings = 76.482% (≥ 50%); EFA analysis shows that the structure of the model is appropriate (Hair et al., 2010). Therefore, all seven factors in the structure are retained in the research model, shown in Table 4. The rotated matrix results in Table 4 show that 40 observed variables are classified into seven factors. All observed variables have a Factor Loading coefficient > .5. Therefore, all seven elements were retained in the research structure (Doll et al., 1994). Confirmatory factor analysis (CFA) in the structure is shown in Table 5. Results of testing the reliability and convergence of the factors. The test result (CR) is > .7, guaranteeing the scale's reliability (Nunnally and Bernstein, 1994). Besides (AVE) ≥ .5, and (MSV) < (AVE), the Square Root of AVE (SQRTAVE) > Inter-Construct Correlations. Therefore, Table 5. Results of testing reliability and convergence in the research structure are guaranteed at all scales (Baumgartner and Homburg, 1996).

The results of testing the research structure are shown in Figure 4 on factors affecting sustainable poverty reduction livelihoods in rural areas of the Mekong Delta. It shows Chi-square/df = 3.948; GFI = .843; CFI = .949; TLI = .943; RMSEA = .063; PCLOSE = .000. The results of linear structural model analysis in Figure 4 show consistency in the research structure. The results of testing the linear system of the model of factors affecting sustainable poverty reduction livelihoods in rural areas of the Mekong Delta are shown in Figure 4 and Table 6. The analyzed data shows that the Sig value of LOGP scale = .000 (< .05), TINF = .000 (< .05), EDAT = .000 (< .05), LAMA = .000 (< .05), COIN = .000 (< .05), FABS = .000 (< .05). The Sig value of the six factors has proven that there is an impact relationship between the independent variables and the dependent variable (Hu and Bentler, 1999).

Table 4. Rotated component matrix
(Source: Analysis of survey data by the authors, 2023, n = 735)

	Component						
	1	2	3	4	5	6	7
LAMA5	.929						
LAMA6	.927						
LAMA3	.903						
LAMA4	.896						
LAMA1	.893						
LAMA2	.866						
FABS4		.968					
FABS3		.963					
FABS5		.958					
FABS6		.942					
FABS2		.830					
FABS1		.740					
COIN5			.937				
COIN6			.935				
COIN1			.872				
COIN4			.856				
COIN2			.768				
COIN3			.740				
LOGP5				.871			
LOGP6				.852			
LOGP3				.807			
LOGP4				.802			
LOGP1				.736			
LOGP2				.709			
EDAT5					.913		
EDAT6					.907		
EDAT3					.838		
EDAT2					.729		
EDAT1					.682		
EDAT4					.645		
TINF6						.894	
TINF5						.838	
TINF4						.811	
TINF3						.739	
TINF2						.716	
TINF1						.692	
LSPR2							.792
LSPR4							.772
LSPR1							.720
LSPR3							.651

Table 5. Reliability and convergence test results (Source: Survey data analyzed by the authors, 2023, n = 735)

Factor construct	CR	AVE	MSV	MaxR(H)	LAMA	FABS	COIN	LOGP	EDAT	TINF	LSPR
LAMA	.945	.743	.091	.998	.862						
FABS	.953	.776	.040	.997	-.130***	.881					
COIN	.924	.677	.086	.998	.122**	.083*	.823				
LOGP	.914	.645	.278	.947	.274***	-.076*	.118**	.803			
EDAT	.900	.614	.207	1.003	.210***	.038	.142***	.381***	.783		
TINF	.888	.576	.153	.935	.064†	-.040	.124**	.264***	.216***	.759	
LSPR	.937	.787	.278	.946	.302***	.201***	.293***	.528***	.455***	.391***	.887

The results of the standardized regression coefficient are shown in Table 6. Results of testing the relationship between research concepts and Figure 5 Level of factors affecting sustainable poverty reduction livelihoods in rural areas in Mekong

Delta. It shows factors affecting sustainable poverty reduction livelihoods in rural Mekong Delta, including LOGP = .340, TINF = .234, EDAT = .209, LAMA = .166, COIN = .157, FABS = .233..
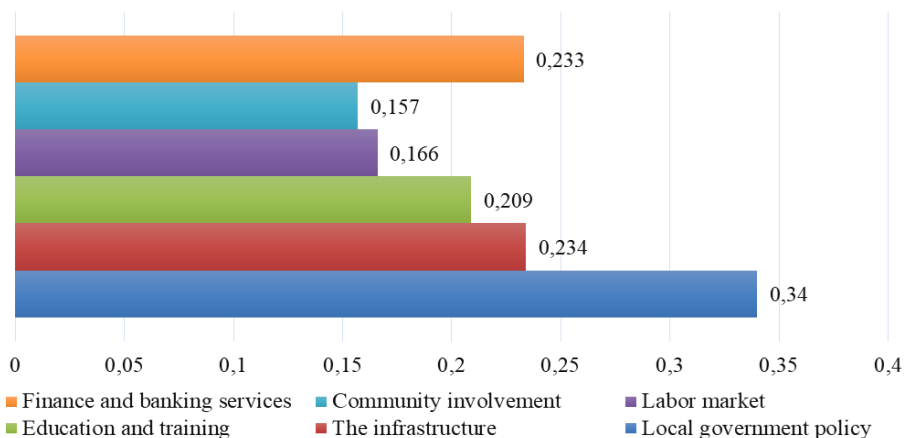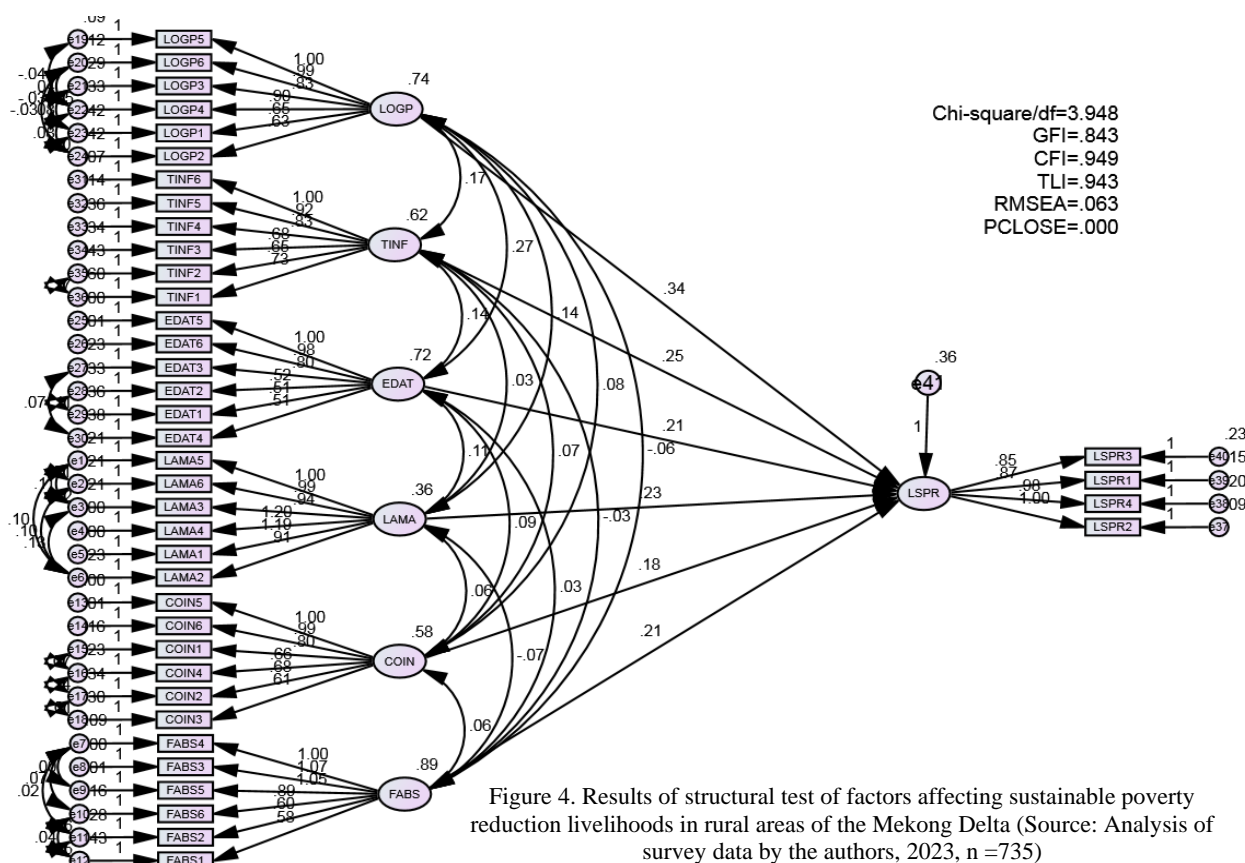

Figure 4. Results of structural test of factors affecting sustainable poverty reduction livelihoods in rural areas of the Mekong Delta (Source: Analysis of survey data by the authors, 2023, n =735)

Figure 5. Level of factors affecting sustainable poverty reduction livelihoods in rural areas in the Mekong Delta (Source: Analysis of survey data by the authors, 2023, n = 735)

Table 6. Results of testing the relationship between research concepts (Source: Analysis of survey data by the authors, 2023, n = 735)

Factors affecting sustainable poverty reduction livelihoods	Estimates	Sig	Standardized estimates
LOGP-----> LSPR	.336	.000	.340
TINF------> LSPR	.252	.000	.234
EDAT-----> LSPR	.210	.000	.209
LAMA----> LSPR	.234	.000	.166
COIN------> LSPR	.175	.000	.157
FABS------> LSPR	.209	.000	.233

DISCUSSION OF THE FINDINGS

The findings in the study show that six factors can affect sustainable poverty reduction livelihoods in rural areas in the Mekong Delta, Vietnam, including local government policies, infrastructure, education and training, the labour market, community involvement, and financial and banking services. Local government policies impacting sustainable livelihoods and poverty reduction in rural areas in the Mekong Delta are .340. Local government policies play an

essential role in supporting and shaping the process of sustainable poverty reduction (Kabir et al., 2019). Local governments can establish policies to support the development of regional economic sectors, create favourable conditions for businesses and create job opportunities. This could include supporting small and medium-sized enterprises, encouraging investment and creating a positive business environment. Local governments can develop policies for rural areas to help farmers, improve agricultural quality, and create career opportunities (Kitole et al., 2023).

Local governments can develop social policies to support vulnerable populations, including those in poverty and ethnic minorities, ensuring that everyone has equal opportunities in progress development. These policies need to be designed and implemented considering each local community's specific needs and characteristics to ensure the measures' effectiveness and sustainability (Lwasa et al., 2014). Infrastructure's impact on sustainable poverty reduction livelihoods in rural areas in the Mekong Delta is .234. Road transport systems help connect the countryside with major towns and cities. Convenient roads allow farmers to transport agricultural products to markets quickly and access various services (Liu and Xu, 2016). The Mekong Delta is famous for its vast canals and rice fields. Irrigation works and irrigation infrastructure should maintained and improved to ensure adequate water sources for farming and safety from salty sea water (Suich et al., 2015). A stable and affordable electricity supply is essential to support agricultural production activities and small and medium-sized enterprises. Clean and renewable energy can also help reduce costs and positively impact the environment (Lo et al., 2016). The Internet is essential for accessing information, markets and online services. Internet access can also create new business opportunities and increase educational attainment. Tourism infrastructure can create additional sources of income and employment opportunities for rural communities. Developing tourist attractions and related services can promote sustainable livelihoods (Liu and Wang, 2019). Improving infrastructure enhances livelihoods and helps rural communities increase their resilience to economic and environmental challenges.

Education and training policies impact sustainable poverty reduction livelihoods in the Mekong Delta rural area of .209. Education and training policies can focus on improving the educational attainment of rural communities. People with higher levels of education can often access higher-paying jobs and participate in modern economic sectors (Huang et al., 2022). Vocational training can provide specific skills for rural workers, from crop care to industrial skills such as crafts, food processing, and more. These skills can help them find new job opportunities and grow their businesses.

Building and maintaining quality schools and vocational training centres can increase access to education for rural communities. This helps provide educational and training opportunities for children and adults. Improving education continues beyond the school level and includes building a community education foundation (Mbaiwa and Stronza, 2010). Education and training programs based on the specific needs of communities can create positive changes in their livelihoods. These measures help improve the quality of human resources and access to opportunities in rural areas, creating favourable conditions for economic diversification and sustainable poverty reduction (Sharma et al., 2018).

The labour market's influence on sustainable poverty reduction livelihoods in the Mekong Delta rural area is .166. The labour market provides job opportunities for rural people. Diversification in career opportunities can help them find jobs with stable and higher incomes (Mbuyisa and Leonard, 2017). Employment opportunities can increase the revenue of rural workers, thereby improving their living standards and consumption capacity. Having a steady income helps families more easily access necessary products and services. The labour market requires quality and skills from workers. Investing in education and training can improve labour quality and increase access to high-paying jobs. Policies that support and facilitate the labour market can enhance sustainable poverty reduction livelihoods in rural areas of the Mekong Delta, providing opportunities and, at the same time, helping to build a resilient community (Ma et al., 2021).

Community participation's impact on sustainable poverty reduction livelihoods in the Mekong Delta rural area is .157. Sustainable poverty reduction livelihoods in rural areas are essential in building and maintaining community-based development strategies (Nguyen, 2022). Community participation from the decision and planning stages helps ensure that development strategies and policies are built around community needs. Participation in training and skills development programs helps build community capacity. This may include training in vocational skills that facilitate the implementation of sustainable economic activities. Finance and banking services' impact on livelihoods and sustainable poverty reduction in the Mekong Delta rural area is .233. We provide financial products and services such as loans, agricultural insurance, and farmer credit to invest in production, purchase modern equipment, and improve work processes (Snyman, 2012).

We should facilitate the increased presence of bank branches and financial transaction points in rural areas to make banking services more accessible to farming communities (Paudel Khatiwada et al., 2017). Provide training and financial consulting programs to improve the farming community's knowledge and financial management skills. This helps them understand how to use and manage personal finances and agricultural businesses. We should develop preferential policies and encourage investment in agricultural and cooperative projects that can help increase productivity and create a stable source of income (Sinyolo and Mudhara, 2018). Support agricultural cooperation and new business models to enhance negotiating power and market access. By combining the above measures, finance and banking services can contribute positively to sustainable development and poverty reduction in rural areas (Sife et al., 2010).

CONCLUSION

The hypothesized research model has been tested on scales showing the appropriateness of the factors in the research structure. The research results have verified that the model of factors affecting sustainable poverty reduction livelihoods in rural areas of the Mekong Delta is appropriate. Among them, six factors show the level of influence on sustainable poverty reduction livelihoods in rural areas, including local government policies, infrastructure, education and training, labour market, community involvement, and finance and banking services. Thus, the results achieved in the study have satisfied

the set objectives. Some of the contents discussed have suggested suggestions to help policymakers understand the relationship between factors affecting sustainable poverty reduction livelihoods in rural areas. Policymakers should make adjustments in investment in infrastructure development education, creating more job opportunities, improving people's lives, and linking economic development with society and environmental protection, market development and tourism products. Sustainable poverty reduction livelihoods are a topic of concern to the world. The findings in the study also help researchers conduct further investigations. They should collect more samples in a larger area to evaluate comprehensively.

REFERENCES

Ansoms, A., & McKay, A. (2010). A quantitative analysis of poverty and livelihood profiles: The case of rural Rwanda. *Food Policy, 35*(6), 584-598. https://doi.org/10.1016/j.foodpol.2010.06.006

Andriesse, E. (2018). Primary sector value chains, poverty reduction, and rural development challenges in the Philippines. *Geographical Review, 108*(3), 345-366. https://doi.org/10.1111/gere.12287

Atkinson, C.L. (2021). Hydropower, development, and poverty reduction in Laos: promises realized or broken? *Asian Journal of Political Science, 29*(1), 67-87. https://doi.org/10.1080/02185377.2020.1819356

Agyeman, Y.B., Yeboah, A.O., & Ashie, E. (2019). Protected areas and poverty reduction: The role of ecotourism livelihood in local communities in Ghana. *Community Development, 50*(1), 73-91. https://doi.org/10.1080/15575330.2019.1572635

Baumgartner, H., & Homburg, C. (1996). Applications of structural equation modeling in marketing and consumer research: A review. *International Journal of Research in Marketing, 13*(2), 139-161. https://doi.org/10.1016/0167-8116(95)00038-0

Barbier, E.B., & Hochard, J.P. (2018). Land degradation and poverty. *Nature Sustainability*, 1(11), 623-631. https://doi.org/10.1038/s41893-018-0155-4

Cao, M., Xu, D., Xie, F., Liu, E., & Liu, S. (2016). The influence factors analysis of households' poverty vulnerability in southwest ethnic areas of China based on the hierarchical linear model: A case study of Liangshan Yi autonomous prefecture. *Applied Geography, 66*, 144-152. https://doi.org/10.1016/j.apgeog.2015.11.016

Canwat, V., & Onakuse, S. (2023). Table banking plus certified organic agriculture: an integrated microfinance approach to sustainable livelihoods. *Journal of Development Effectiveness, 15*(2), 165-182. https://doi.org/10.1080/19439342.2022.2089200

Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika 16, 297-334. https://doi.org/10.1007/BF02310555

Do, M.H., & Park, S.C. (2019). Impacts of Vietnam's new rural development policy on rural households' income: Empirical evidence from the Heckman selection model. *International Review of Public Administration, 24*(4), 229-245. https://doi.org/10.1080/12294659.2019.1662165

Do, T.L., Nguyen, T.T., & Grote, U. (2019). Livestock production, rural poverty, and perceived shocks: Evidence from panel data for Vietnam. *The Journal of Development Studies, 55*(1), 99-119. https://doi.org/10.1080/00220388.2017.1408795

Doll, W.J., Xia, W., & Torkzadeh, G. (1994). A confirmatory factor analysis of the end-usercomputing satisfaction instrument. *MIS Quarterly, 18*(4), 453-461. https://doi.org/10.2307/249524

Ding, J., Wang, Z., Liu, Y., & Yu, F. (2020). Rural households' livelihood responses to industry-based poverty alleviation as a sustainable route out of poverty. *Regional Sustainability, 1*(1), 68-81. https://doi.org/10.1016/j.regsus.2020.07.002

Deng, Q., Li, E., & Zhang, P. (2020). Livelihood sustainability and dynamic mechanisms of rural households out of poverty: An empirical analysis of Hua County, Henan Province, China. *Habitat International, 99*, 102160. https://doi.org/10.1016/j.habitatint.2020.102160

Fahad, S., Nguyen-Thi-Lan, H., Nguyen-Manh, D., Tran-Duc, H., & To-The, N. (2023). Analyzing the status of multidimensional poverty of rural households by using sustainable livelihood framework: Policy implications for economic growth. *Environmental Science and Pollution Research, 30*(6), 16106-16119. https://doi.org/10.1007/s11356-022-23143-0

Gentle, P., & Maraseni, T.N. (2012). Climate change, poverty and livelihoods: adaptation practices by rural mountain communities in Nepal. *Environmental science & policy, 21*, 24-34. https://doi.org/10.1016/j.envsci.2012.03.007

Hansen, J., Hellin, J., Rosenstock, T., Fisher, E., Cairns, J., Stirling, C., & Campbell, B. (2019). Climate risk management and rural poverty reduction. *Agricultural Systems, 172*, 28-46. https://doi.org/10.1016/j.agsy.2018.01.019

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. (2010). *Multivariate data analysis*. 7th Edition, Pearson, New York.

Hai, N.C. (2022). Factors affecting student satisfaction with higher education service quality in Vietnam. *European Journal of Educational Research, 11*(1), 339-351. https://doi.org/10.12973/eu-jer.11.1.339

Hai, N.C., & Ngan, N.T.K. (2022). Factors affecting community participation in Khmer festival tourism development in Mekong Delta, Vietnam. *GeoJournal of Tourism and Geosites, 44*(4), 1482-1490. https://doi.org/10.30892/gtg.44436-968

Hai, N.C., Le, V.T.P., Son, N.T., & Tuan, P.V. (2023). Evaluation of citizens' satisfaction with the quality of public administrative services in the Mekong Delta, Vietnam. *GeoJournal of Tourism and Geosites, 48*(2spl), 751–762. https://doi.org/10.30892/gtg.482spl09-1075

Hai, N.C., Tuan, P.V., Le, V.T.P., & Tan, T.H. (2023). Factors affecting the policy of training and fostering civil servants of Khmer ethnic minorities in the Mekong Delta, Vietnam. *GeoJournal of Tourism and Geosites, 46*(1), 163-173. https://doi.org/10.30892/gtg.46118-1012

He, Y., & Ahmed, T. (2022). Farmers' livelihood capital and its impact on sustainable livelihood strategies: evidence from the poverty-stricken areas of Southwest China. *Sustainability*, 14(9), 4955. https://doi.org/10.3390/su14094955

Hu, L.T., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55. http://dx.doi.org/10.1080/10705519909540118

Kaygusuz, K. (2011). Energy services and energy poverty for sustainable rural development. *Renewable and sustainable energy reviews, 15*(2), 936-947. https://doi.org/10.1016/j.rser.2010.11.003

Kabir, A., & Louise Maitrot, M.R. (2019). Qualitative exploration of factors affecting progress in antipoverty interventions: Experiences from a poverty-reduction program in Bangladesh. *Cogent Social Sciences, 5*(1), 1602986. https://doi.org/10.1080/23311886.2019.1602986

Kitole, F.A., Tibamanya, F.Y., & Sesabo, J.K. (2023). Cooking energy choices in urban areas and its implications on poverty reduction. *International Journal of Sustainable Energy, 42*(1), 474-489. https://doi.org/10.1080/14786451.2023.2208680

Lwasa, S., Mugagga, F., Wahab, B., Simon, D., Connors, J., & Griffith, C. (2014). Urban and peri-urban agriculture and forestry: Transcending poverty alleviation to climate change mitigation and adaptation. *Urban climate, 7*, 92-106. https://doi.org/10.1016/j.uclim.2013.10.007

Liu, Y., & Xu, Y. (2016). A geographic identification of multidimensional poverty in rural China under the framework of sustainable livelihoods analysis. *Applied Geography, 73*, 62-76. https://doi.org/10.1016/j.apgeog.2016.06.004

Lo, K., Xue, L., & Wang, M. (2016). Spatial restructuring through poverty alleviation resettlement in rural China. *Journal of Rural Studies, 47*, 496-505. https://doi.org/10.1016/j.jrurstud.2016.06.006

Liu, Y., & Wang, Y. (2019). Rural land engineering and poverty alleviation: Lessons from typical regions in China. *Journal of Geographical Sciences, 29*, 643-657. https://doi.org/10.1007/s11442-019-1619-9

Huang, L., Yang, L., Tuyen, N.T., Colmekcioglu, N., & Liu, J. (2022). Factors influencing the livelihood strategy choices of rural households in tourist destinations. *Journal of Sustainable Tourism, 30*(4), 875-896. https://doi.org/10.1080/09669582.2021.1903015

Mbaiwa, J.E., & Stronza, A.L. (2010). The effects of tourism development on rural livelihoods in the Okavango Delta, Botswana. *Journal of sustainable tourism, 18*(5), 635-656. https://doi.org/10.1080/09669581003653500

Mbuyisa, B., & Leonard, A. (2017). The role of ICT use in SMEs towards poverty reduction: A systematic literature review. *Journal of International Development, 29*(2), 159-197. https://doi.org/10.1002/jid.3258

Ma, X., Wang, R., Dai, M., & Ou, Y. (2021). The influence of culture on the sustainable livelihoods of households in rural tourism destinations. *Journal of Sustainable Tourism, 29*(8), 1235-1252. https://doi.org/10.1080/09669582.2020.1826497

Nguyen, C.H. (2022). Factors affecting the development of cultural tourism in the Mekong Delta, Vietnam. *The Journal of Asian Finance, Economics and Business, 9*(3), 123-33. https://doi.org/10.13106/JAFEB.2022.VOL9.NO3.0123

Nunnally, J.C., & Bernstein, I.H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.

Paudel Khatiwada, S., Deng, W., Paudel, B., Khatiwada, J.R., Zhang, J., & Su, Y. (2017). Household livelihood strategies and implication for poverty reduction in rural areas of central Nepal. *Sustainability, 9*(4), 612. https://doi.org/10.3390/su9040612

Sinyolo, S., & Mudhara, M. (2018). Collective action and rural poverty reduction: Empirical evidence from KwaZulu-Natal, South Africa. *Agrekon, 57*(1), 78-90. https://doi.org/10.1080/03031853.2018.1451349

Sife, A.S., Kiondo, E., & Lyimo-Macha, J.G. (2010). Contribution of mobile phones to rural livelihoods and poverty reduction in Morogoro region, Tanzania. *The Electronic Journal of Information Systems in Developing Countries, 42*(1), 1-15. https://doi.org/10.1002/j.1681-4835.2010.tb00299.x

Soltani, A., Angelsen, A., Eid, T., Naieni, M.S.N., & Shamekhi, T. (2012). Poverty, sustainability, and household livelihood strategies in Zagros, Iran. *Ecological Economics, 79*, 60-70. https://doi.org/10.1016/j.ecolecon.2012.04.019

Snyman, S.L. (2012). The role of tourism employment in poverty reduction and community perceptions of conservation and tourism in southern Africa. *Journal of Sustainable Tourism, 20*(3), 395-416. https://doi.org/10.1080/09669582.2012.657202

Suich, H., Howe, C., & Mace, G. (2015). Ecosystem services and poverty alleviation: a review of the empirical links. *Ecosystem Services, 12*, 137-147. https://doi.org/10.1016/j.ecoser.2015.02.005

Sharma, V., Reddy, B., & Sahu, N. (2018). Sustainable rural livelihoods approach for climate change adaptation in Western Odisha, Eastern India. *In Climate Change Adaptation and Development,* 161-174, Routledge. https://doi.org/10.1080/09614524.2014.911817

Shi, C., He, Y., & Li, H. (2023). How does ecological poverty alleviation contribute to improving residents' sustainable livelihoods?-Evidence from Zhejiang Province, China. *Sustainable Production and Consumption*, 41, 418-430. https://doi.org/10.1016/j.spc.2023.09.002

Singh, P.K., & Chudasama, H. (2020). Evaluating poverty alleviation strategies in a developing country. *PloS one, 15*(1), e0227176. https://doi.org/10.1371/journal.pone.0227176

Su, F., Song, N., Ma, N., Sultanaliev, A., Ma, J., Xue, B., & Fahad, S. (2021). An assessment of poverty alleviation measures and sustainable livelihood capability of farm households in rural China: a sustainable livelihood approach. *Agriculture, 11*(12), 1230. https://doi.org/10.3390/agriculture11121230

Sun, Y., Wang, Y., Huang, C., Tan, R., & Cai, J. (2023). Measuring farmers' sustainable livelihood resilience in the context of poverty alleviation: a case study from Fugong County, China. *Humanities and Social Sciences Communications*, 10(1), 1-16. https://doi.org/10.1057/s41599-023-01575-4

Tuan, P.V., Le, V.T.P., Ly, N.K., Hai, N.C., & Ngan, N.T.K. (2023). Citizens' satisfaction with the service quality of Khmer civil servants in the Mekong Delta, Vietnam. *GeoJournal of Tourism and Geosites, 50*(4), 1318–1329. https://doi.org/10.30892/gtg.50412-1130

Wang, C., Zhang, Y., Yang, Y., Yang, Q., Kush, J., Xu, Y., & Xu, L. (2016). Assessment of sustainable livelihoods of different farmers in hilly red soil erosion areas of southern China. *Ecological Indicators, 64*, 123-131. https://doi.org/10.1016/j.ecolind.2015.12.036

You, H., & Zhang, X. (2017). Sustainable livelihoods and rural sustainability in China: Ecologically secure, economically efficient or socially equitable?. *Resources, Conservation and Recycling, 120*, 1-13. https://doi.org/10.1016/j.resconrec.2016.12.010

Yu, C., Gao, J., Han, Y., Wang, Y., & Sun, J. (2022). Eliminating deprivation and breaking through dependence: A mechanism to help poor households achieve sustainable livelihoods by targeted poverty alleviation strategy. *Growth and Change*, 53(3), 1436-1456. https://doi.org/10.1111/grow.12634

Wang, Z., Ma, D., Zhang, J., Wang, Y., & Sun, D. (2023). Does urbanization have spatial spillover effect on poverty reduction: empirical evidence from rural China. *Economic Research-Ekonomska Istraživanja, 36*(1), 2167730. https://doi.org/10.1080/1331677X.2023.2167730

Zhang, J., Zhou, Z., Chen, Q., Zhu, C., & Ma, G. (2022). The Impact of Livelihood Sources on Relative Poverty among Households in the Karst Mountains, a case study from Huajiang demonstration area, SW China. *Geografisk Tidsskrift-Danish Journal of Geography, 122*(1), 59-72. https://doi.org/10.1080/00167223.2022.2073898

Zulu, L.C., & Richardson, R.B. (2013). Charcoal, livelihoods, and poverty reduction: Evidence from sub-Saharan Africa. *Energy for Sustainable Development, 17*(2), 127-137. https://doi.org/10.1016/j.esd.2012.07.007

*** General Statistics Office. (2019). *Completed results of the 2019 Vietnam population and housing census*. General Statistics, Hanoi, Vietnam. https://bom.so/D9SUWM

THE ROLE OF GASTRONOMY TOURISM ON REVISIT AND RECOMMENDATION INTENTIONS: THE MEDIATION ANALYSIS OF TOURIST SATISFACTION

Any SUTIADININGSIH
Culinary Art Department, State University of Surabaya, Surabaya, Indonesia, e-mail: anysutiadiningsih@unesa.ac.id

Tuatul MAHFUD
Culinary Art Department, Balikpapan State Polytechnic, Balikpapan, Indonesia, e-mail: Tuatul.mahfud@poltekba.ac.id

Vu Hung DANG
Faculty of Economic and Business Administration, An Giang University, VNU-HCM, Long Xuyen, Vietnam, e-mail: dhvu@agu.edu.vn

Niken PURWIDIANI
Culinary Art Department, Universitas Negeri Surabaya, Surabaya, Indonesia, e-mail: nikenpurwidiani@unesa.ac.id

Galuh RACHMA WATI
Culinary Art Department, Politeknik Nest Sukoharjo, Sukoharjo, Indonesia, e-mail: galuh.tatabogaunesa@gmail.com

Ila Huda P. DEWI[*]
Culinary Art Department, Universitas Negeri Surabaya, Surabaya, Indonesia, e-mail: iladewi@unesa.ac.id

Abstract: Gastronomy tourism plays a very important role in a country's economy. Gastronomy tourism has been proven to have a positive impact on competitive dynamics and the long-term viability of a destination, as well as the local economy and regional development. Therefore, this study aims to examine the influence of gastronomic tourism on tourist satisfaction. Apart from that, this study also tested the influence of tourist satisfaction on revisit intention and recommendation intention. This study involved 462 domestic tourists in Surabaya. Data were analyzed using Structural Equation Modeling (SEM) analysis with SmartPLS. This study reveals that the quality of gastronomy tourism influences tourist satisfaction and will ultimately encourage potential revisit intention and recommendation intention for tourists to visit gastronomy tourism. Other findings show that tourist satisfaction mediates the effect of gastronomy tourism quality on tourists' revisit intention and recommendation intention to visit gastronomy tourism. The results of this study provide important implications for gastronomy tourism businesses to build tourist satisfaction by improving the quality of gastronomy tourism. By paying attention to and improving the quality of gastronomy tourism, a country can build a positive image, increase competitiveness and support economic growth through a sustainable tourism industry.

Key words: gastronomy tourism, tourist satisfaction, destination loyalty, revisit intention

* * * * * *

INTRODUCTION

The importance of gastronomy tourism cannot be ignored in the modern tourism industry (Durmaz et al., 2022; Jerez, 2023; Kuhn et al., 2023; Kumar, 2019; Leong et al., 2017; Okumus et al., 2018; UNWTO, 2020). Today, tourists increasingly seek authentic experiences that embrace local culture, including food and drink. This condition has encouraged the field of gastronomic tourism to become increasingly prominent due to the recognition that the local food and cuisine of a region serves as a significant representation of intangible heritage, with the potential to build a global reputation (Horng and Tsai, 2012; Ketaren, 2017). Gastronomic tourism, which is included in the broader category of tourism, has been shown to have a positive impact on the competitive dynamics and long-term viability of a destination, as well as the local economy and regional development (Cheng, 2023; Jerez, 2023; Leal-Londoño, 2023; Leong et al., 2017; Seyitoğlu and Ivanov, 2020). In contemporary society, eating out has taken on an important role in an individual's daily routine. Therefore, researchers and innovative culinary experts have used a scientific approach, namely through gastronomy, to investigate and improve the taste profile of conventional and new culinary creations (Okumus et al., 2018).

Gastronomy tourism allows tourists to explore the diverse culinary heritage of different regions, understand their history, and experience the rich flavors offered by each traditional dish. In addition, gastronomy tourism also provides significant economic opportunities for local communities, promotes the sustainability of local agriculture and trade, and supports the preservation of traditional recipes and cooking techniques. In a study by Leong et al. (2017), it was stated that gastronomy tourism significantly contributes to local economic growth and strengthens the cultural identity of a

---

region. Through food experiences, tourists can build deep connections with tourist destinations, increase cultural awareness, and stimulate positive cultural exchange. Therefore, it is very important to develop a high-quality gastronomy tourism concept to attract tourists to visit. Tourist visits to gastronomy tourism destinations depend on the quality of gastronomy tourism offered by that destination (Durmaz et al., 2022; Mora et al., 2021). The quality of the dishes, the diversity of the menu, the authenticity of the taste, and the unique eating experience are the main factors that influence the attractiveness of a gastronomic destination. Tourists are looking for culinary experiences that not only satisfy their taste buds but also convey stories of local culture and traditions. Previous studies reveal that perceptions of gastronomy tourism have a positive and significant effect on destination satisfaction and consumer behavior, and destination satisfaction has a positive and significant effect on consumer behavior (Durmaz et al., 2022).

Destinations that can serve high-quality dishes, use local ingredients, and combine traditional cooking techniques with innovative touches have a strong appeal for culinary travelers. Apart from that, the quality of service and atmosphere of the dining place also contribute to creating a memorable gastronomic experience. Tourists who are satisfied with their gastronomic experience tend to provide positive feedback, recommend the destination to others, and return to the destination in the future (Kim, 2017). In addition, other studies show that destination satisfaction has a partial mediating role between perceptions of gastronomy tourism and consumer behavior (Mora et al., 2021).

According to Haven-Tang and Jones (2005), local gastronomy is important in cultivating distinctive and memorable culinary tourism experiences. In research conducted by Hendijani (2016), it was stated that the level of tourist satisfaction with the gastronomy of a destination is influenced by two main factors: cultural richness related to culinary practices and the use of natural and healthy ingredients, which are usually sourced from local food. Gastronomic satisfaction is influenced by taste, often obtained from describing ancestral recipes (Hendijani, 2016). These recipes are an integral part of the cultural heritage of the destination's residents, offering a unique and different experience that tourists can enjoy in their place of origin. Ultimately, gastronomic experience influences tourist satisfaction (Hendijani, 2016). Therefore, tourism destinations need to pay attention to and continue to improve the quality of the gastronomy tourism they offer to attract and maintain the interest of tourists. Good quality gastronomy tourism will encourage increased tourist satisfaction and ultimately contribute to an increase in the number of tourist visits.

LITERATURE REVIEW
Gastronomy tourism and tourist satisfaction

Gastronomy tourism is identified as a significant determinant of global sustainable tourism and a driving force, as stated by the United Nations World Tourism Organization (UNWTO, 2017). Extensive scholarly inquiry has been dedicated to examining the contribution of tourism towards the attainment of the United Nations Sustainable Development Goals (SDGs) (Basaran, 2020). According to Andrade-Suarez and Caamano-Franco (Andrade-Suárez and Caamaño-Franco, 2020), the 2027 Strategic Plan for Tourism recognizes cuisine as a crucial asset of strategic relevance. Hence, the importance of developing, coordinating and controlling gastronomic tourism needs to be developed seriously.

Gastronomy tourism, or food tourism, plays a pivotal role in enhancing tourist satisfaction by offering unique culinary experiences that cater to diverse tastes and preferences (Durmaz et al., 2022). Research published indicates that the quality of gastronomic offerings significantly influences tourists' overall satisfaction during their travels (Cordova-Buiza et al., 2021; Durmaz et al., 2022; Hendijani, 2016; Prat and Canoves, 2014). Tourists seek not only delicious and authentic local cuisine but also immersive dining experiences that allow them to explore the cultural and historical context of the dishes they are enjoying. High-quality gastronomy tourism helps in creating memorable moments for tourists, leaving a lasting impression and contributing positively to their overall travel satisfaction. Additionally, previous studies highlight that the appreciation of local cuisine is closely linked to the cultural identity of a destination (Komariah et al., 2020; Kuhn et al., 2023; Pérez-Priego et al., 2023). Tourists often perceive the quality of food and beverages as an essential aspect of their travel experience. Gastronomy tourism enables tourists to indulge in regional specialties, traditional cooking methods, and local ingredients, thereby providing an opportunity to understand the unique flavors and culinary traditions of a particular place. When tourists are satisfied with the gastronomic offerings, it leads to positive word-of-mouth recommendations, increased repeat visits, and higher ratings for the destination, ultimately contributing to the growth of the local economy and tourism industry. Thus, investing in the quality of gastronomy tourism not only enriches tourists' experiences but also strengthens the overall appeal of a destination, leading to higher levels of satisfaction among travelers.

Hypothesis 1: The quality of gastronomy tourism has a positive influence on tourist satisfaction

Tourist satisfaction and destination loyalty

According to numerous destination loyalty studies (Abahre et al., 2023; Alegre and Juaneda, 2006; Cong, 2021; Hendijani, 2016; Joo et al., 2020), tourist satisfaction is a major element in whether or not travelers return to a certain location. Perceived quality of the most crucial destination facilities or dimensions is the primary factor in satisfaction (Alegre and Juaneda, 2006). It seems to reason that the good consequences are always considered, while the negative ones are often overlooked (Kapuściński and Richards, 2016). In the context of this study, tourist satisfaction plays a crucial role in determining whether they will return to visit the same destination or not. When tourists are satisfied with their travel experience, including culinary quality, they are likely to develop the intention to return (Joo et al., 2020). Positive experiences generate feelings of trust and loyalty towards the destination. Apart from that, satisfaction also creates happy and satisfying memories, which provide emotional encouragement for tourists to plan repeat visits (Hendijani, 2016; Joo et al., 2020; Loi et al., 2017). Another study states a positive influence of gastronomic satisfaction on loyalty (Mora et al., 2021).

When a tourist destination can present an attractive local culinary experience, including a diversity of distinctive flavors and aromas, this not only satisfies tourists' tastes but also builds an emotional connection with the destination. The positive experience of eating delicious and authentic local dishes creates unforgettable memories for travelers. This sense of satisfaction is the key that opens the door to loyalty. Tourists who are satisfied with their gastronomic experience are more likely to return to the same destination in the future (Acharya et al., 2023; Hendijani, 2016; Joo et al., 2020; Loi et al., 2017; Mora et al., 2021). Apart from that, tourist satisfaction also has a positive impact in providing recommendations to others (Cevdet Altunel and Erkurt, 2015; Humagain and Singleton, 2021; Joo et al., 2020), creating a profitable domino effect for the destination's gastronomic tourism.

Through a study of relevant literature, we found connections between variables that explain that when tourists enjoy diverse and authentic local cuisine, they are likely to have a vibrant and memorable experience. This satisfaction, in turn, fosters a sense of loyalty towards the destination. Research has shown that tourists who are highly satisfied with their gastronomic expertise are more likely to revisit the goal and recommend it to others. Additionally, these happy tourists tend to develop an emotional connection to the local culture and community through food, resulting in a stronger bond with the destination. As a result, destination loyalty is not based solely on beautiful views or historic sites; This is also influenced by the gastronomic delights a place offers. Therefore, investing in the quality and variety of culinary experiences can significantly increase tourist satisfaction, foster a loyal visitor base, and strengthen the long-term sustainability of a destination.

Hypothesis 2: Tourist satisfaction has a positive influence on tourists' revisit intention to visit gastronomy tourism

Hypothesis 3: Tourist satisfaction has a positive influence on tourists' recommendation intention to visit gastronomy tourism

Hypothesis 4: Tourist satisfaction mediates the influence of gastronomy tourism quality on tourists' revisit intention to visit gastronomy tourism

Hypothesis 5: Tourist satisfaction mediates the influence of gastronomy tourism quality on tourists' recommendation intention to visit gastronomy tourism

Based on existing study literature, it can be concluded that it is very important to build tourist satisfaction when they visit gastronomic tourism furthermore, this gastronomic satisfaction also encourages an increase in tourists' intentions to visit again and provides recommendations for visits to other people in the future. Conceptually, the research model for building destination loyalty, which includes revisiting intention and recommendation intention, is shown in Figure 1. In Figure 1, it can be seen that this study aims to examine the influence of gastronomy tourism on tourist satisfaction. Also, this study also tested the influence of tourist satisfaction on revisit intention and recommendation intention. The hypotheses formed in this study are:
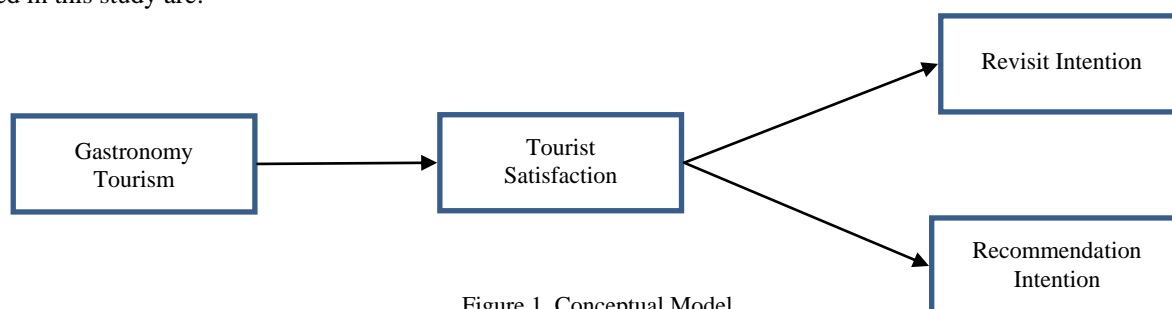

Figure 1. Conceptual Model

MATERIALS AND METHODS

This study involved domestic tourists in the Surabaya region. Four hundred sixty-two tourists completed the full survey (33.5% men and 66.5% women). The survey was conducted online using a Google Form-based questionnaire. The questionnaire link was distributed to tourists on gastronomic tours in several destinations in Surabaya-Indonesia. Next, tourists received a brief explanation regarding how to fill out the questionnaire, which was filled out using the self-administered questionnaire method. Measurement of study variables, including gastronomy tourism quality, tourist satisfaction, revisit intention, and recommendation intention, uses previous study references. Tourist perceptions regarding gastronomy tourism quality were measured using the questionnaire reference Lee et al. (2011). This questionnaire consists of five items (for example, Gastronomy tourism has provided unforgettable culinary experiences). In addition, data regarding tourist satisfaction was collected using the tourist satisfaction questionnaire (Lee et al., 2007) and developed in a gastronomy context. This questionnaire consists of four items (for example, Overall, I am satisfied with my experience in gastronomy tourism).

Tourists' perceptions regarding revisit intention were measured using the revisit intention questionnaire by Zhang et al. (2018). In this study, we have developed the original questionnaire and adapted it to the context of gastronomic tourism. Revisit intention was measured using a previous study questionnaire that we have developed (Cevdet Altunel and Erkurt, 2015). The total number of revisit intention items is three items, namely revisit propensity, revisit willingness and revisit probability shortly (for example, I tend to visit gastronomy tourism again). Finally, data regarding recommendation intention was measured using two items adapted from previous studies (Lee et al., 2007) (for example, Would you recommend gastronomy tourism to others (including your family and friends)?). The scale items were administered using a five-point Likert scale style, with a rating of 1 indicating 'strong disagreement' and 5 representing 'strong agreement' with each statement.

The present work used structural equation modeling (SEM) as a statistical technique to examine and interpret the collected data. Smart-PLS is a software application utilized for the purpose of examining structural equation modeling

(SEM) models that are specifically associated with the construct of revisit intention and recommendation intention. The criteria for evaluating model fit encompass NFI (Normed Fit Index) values greater than 0.800 and SRMR (Standardized Root Mean Square Residual) values less than 0.080, which are regarded as indicators of a satisfactory model (Hair et al., 2017). Partial Least Squares (PLS) analysis employs two distinct analytical approaches, specifically the outer model and the inner model. The validity of the items or measurement indicators for each variable is assessed by the application of external model analysis. According to Ghozali (2014), an indicator is deemed genuine when its loading factor parameter value is equal to or exceeds 0.70. Furthermore, the testing of this hypothesis necessitates the utilization of a reference p-value that is equal to or less than 0.05. According to Ghozali (2014).

RESULTS AND DISCUSSION
Validity and reliability test

The outcomes of the item validity assessment conducted using the Partial Least Squares (PLS) algorithm are presented in Figure 2 and Table 1. The test was performed with a maximum literacy level of 300 and a stop criterion of 7. The initial model test revealed that none of the variables had values below 0.7. Hence, the study of the model depicted in Figure 2 can be extended to ascertain the factor loading values associated with the variables of gastronomy tourism quality, tourist satisfaction, revisit intention, and recommendation intention of tourists to visit gastronomy tourism.
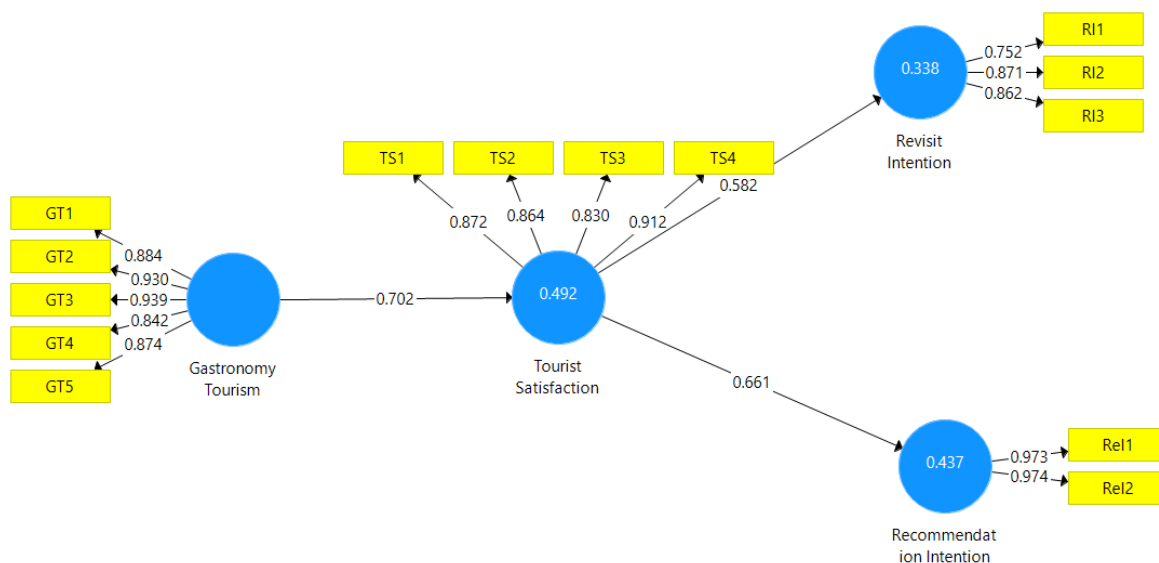

Figure 2. Test Validity (outer model)

Table 1 displays the outcomes of the item validity test for each variable. Table 1 displays the loading factor values for various constructs, including gastronomy tourism quality, tourist satisfaction, revisit intention, and recommendation intention of tourists to visit gastronomy tourism. Notably, all items within these constructs exhibit loading factor values within the range of 0.752 to 0.974, above the threshold of 0.7.

Table 1. Validity Test

Items	Gastronomy Tourism	Tourist Satisfaction	Revisit Intention	Recommendation Intention
GT1	0.884			
GT2	0.930			
GT3	0.939			
GT4	0.842			
GT5	0.874			
TS1		0.872		
TS2		0.864		
TS3		0.830		
TS4		0.912		
RI1			0.752	
RI2			0.871	
RI3			0.862	
ReI1				0.973
ReI2				0.974

Furthermore, this study assessed the questionnaire's dependability by the utilization of a reliability test. The findings from the reliability test indicated that the scores for Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE) satisfied the established standards (Table 2). In this study, the range of Cronbach's Alpha scores was observed to be between 0.771 and 0.944. This indicates that all the items used in evaluating gastronomy tourism quality, tourist satisfaction, revisit intention, and recommendation intention of tourists to visit gastronomy tourism were deemed trustworthy.

Table 2. Reliability test

Variables	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Gastronomy Tourism	0.937	0.94	0.952	0.801
Tourist Satisfaction	0.893	0.901	0.925	0.756
Revisit Intention	0.771	0.773	0.869	0.689
Recommendation Intention	0.944	0.945	0.973	0.947

Hypothesis Testing using SEM

The present study aims to examine the hypothesis through the utilization of structural equation modeling (SEM) analysis, which allows for the assessment of both direct and indirect impacts. Before testing the hypothesis on each structural equation modeling (SEM) path, it is imperative to assess the model fit criteria of the SEM model in the initial stage. The fit model test employs the NFI (Normed Fit Index) and SRMR (Standardized Root Mean Square Residual) as evaluation criteria. According to Ghozali (2017) and Hair et al. (2010), a fit model is required to possess an NFI value greater than 0.8 and an SRMR value lower than 0.08. The model fit test results show that the NFI value is 0.898, and the SRMR is 0.051. This finding means that the study model has met the model fit criteria. The output results of the SEM model analysis using the bootstrapping method are shown in Figure 3.
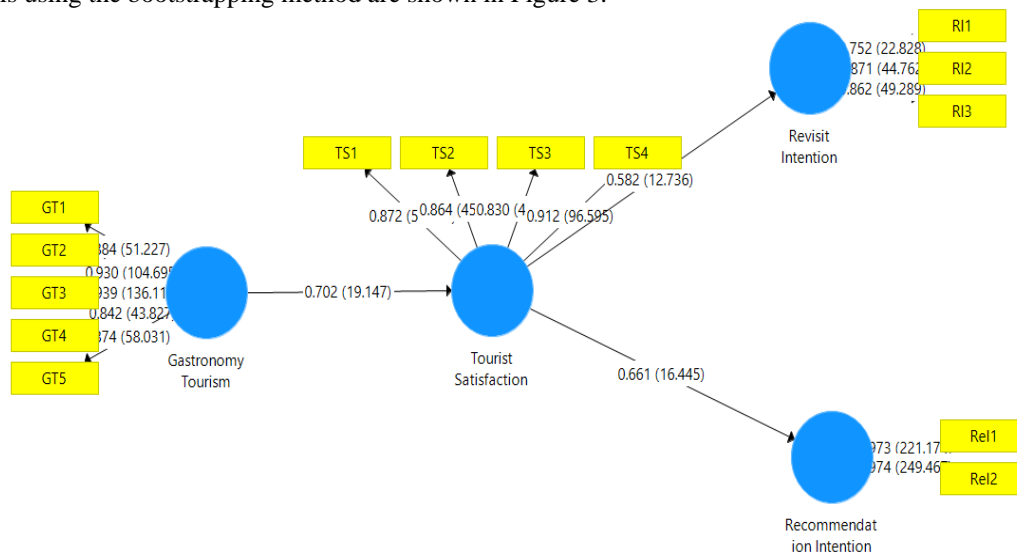

Figure 3. Bootstrapping analysis (outer model)

Hypothesis testing employs the technique of bootstrapping, wherein a subsample of 500 observations is utilized, alongside a significance level of 0.05. The confidence interval method employed is Bias-corrected and accelerated (BCa) bootstrap, and a two-tailed type test is conducted. Table 3 displays the outcomes of the hypothesis test conducted for each path. Testing the first hypothesis regarding the influence of the quality of gastronomy tourism on tourist satisfaction shows a t-statistic value of 19.147 (p-value= 0.00); the hypothesis is accepted. This means that the quality of gastronomy tourism has a positive influence on tourist satisfaction when visiting gastronomy tourism. Apart from that, the second hypothesis test showed that tourist satisfaction had a significant effect on tourists' revisit intention to visit gastronomy tourism (hypothesis accepted, t-statistic= 12.736, p-value=0.00). Next, we also tested the influence of tourist satisfaction on tourists' recommendation intention to visit gastronomy tourism. The test results revealed that tourist satisfaction was proven to significantly influence tourists' recommendation intention to visit gastronomy tourism (t-statistic=16.445, p-value= 0.00).

In addition, we tested the mediating role of tourist satisfaction on the effect of gastronomy tourism quality on tourists' revisit intention and recommendation intention to visit gastronomy tourism. In Table 3, it can be seen that tourism satisfaction successfully mediates the influence of gastronomy tourism quality on revisit intention (t-statistic= 9.422, p-value= 0.00; hypothesis accepted) and recommendation intention (t-statistic=10.479, p-value=0.00; hypothesis accepted).

Table 3. Hypothesis Testing Results

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Gastronomy Tourism -> Tourist Satisfaction	0.702	0.703	0.037	19.147	0.00
Tourist Satisfaction -> Revisit Intention	0.582	0.581	0.046	12.736	0.00
Tourist Satisfaction -> Recommendation Intention	0.661	0.660	0.040	16.445	0.00
Gastronomy Tourism -> Recommendation Intention	0.464	0.464	0.044	10.479	0.00
Gastronomy Tourism -> Revisit Intention	0.408	0.409	0.043	9.422	0.00

Discussion

The importance of increasing tourist satisfaction through quality gastronomy tourism

Eating is a primary need for tourists, different from other activities (Kumar, 2019). Therefore, tourists always budget money for food and drink. Tourists who visit a destination will most likely try the local cuisine. Gastronomy is a crucial

aspect in presenting destination culture because it results from social, natural and cultural factors and reflects local culture in the form of unique culinary values (Gordin et al., 2016). This culinary component attracts tourists who want to learn about other cultures through local food and drinks (Kumar, 2019). In addition, local gastronomy is a major tourist attraction and influences their experiences (Henderson, 2009). Therefore, it is very important to build good credibility regarding gastronomy tourism to increase tourist visits through increasing tourist satisfaction.

The study results reveal that customer satisfaction is greatly influenced by how good the quality of gastronomy tourism. The findings of this study are relevant to previous studies, which stated that positive assessments of gastronomy tourism positively and significantly influence tourist satisfaction (Durmaz et al., 2022). The quality of gastronomy tourism greatly influences tourist satisfaction because a satisfying culinary experience has a strong appeal. When tourists taste authentic and delicious local dishes, they not only satisfy their hunger but also experience the rich culture and traditions of a region. Taste quality, presentation, menu diversity, and the use of high-quality raw materials are the main factors that influence tourists' culinary experiences (Hendijani, 2016). Apart from that, the atmosphere of the restaurant or eating place, friendly service, and staff knowledge about the menu also contribute to the level of satisfaction. When tourists feel impressed by their culinary experience, they tend to leave positive reviews, share their experiences with others, and return to the destination, creating a positive effect on the tourism industry (Kim, 2017).

Efforts to build quality gastronomy tourism are very important. Gastronomy, as a cultural tourism component, presents new culinary experiences that showcase different local cultural flavors and traditions. This experience also provides valuable opportunities for visitors to gain cultural education (Widjaja et al., 2020). Travelers who have a strong inclination to eat local cuisine often seek unique gastronomic experiences. Meanwhile, tourists who consume local food tend to have an extraordinary experience, which has the potential to have a positive impact on their overall satisfaction, intention to revisit, and tendency to engage in word-of-mouth communication (Björk and Kauppinen-Räisänen, 2014).

To improve the quality of gastronomy tourism, strategic steps need to be taken seriously. First, culinary industry players must focus on the quality of raw materials and cooking techniques to ensure the dishes served are delicious and healthy. Using local and organic ingredients can also add value to the culinary experience. Second, training restaurant staff in customer service and menu knowledge is essential. Friendly, competent and knowledgeable staff can provide tourists with a better experience. In addition, introducing innovation in the menu by combining traditional and modern flavors can increase the culinary appeal of a region. Apart from that, maintaining the cleanliness and sanitation of eating places, as well as providing a comfortable and clean atmosphere, can also increase tourist satisfaction. With these efforts, tourism destinations can achieve high culinary standards and ensure visitor satisfaction, supporting tourism growth and the local economy.

The domino effect of tourist satisfaction on revisit intention and recommendation intention

The success of creating tourist satisfaction when visiting gastronomy tourism will encourage plans to visit again, and they will even recommend to others to visit. The results of this study prove that tourist satisfaction also encourages plans to return visits and recommend to others to visit gastronomy tourism. This finding strengthens previous studies that show that tourists' satisfaction with the quality of culinary delights on their tour tends to increase their intention to return (Joo et al., 2020; Mora et al., 2021). Apart from that, this study also sharpens previous findings, which stated that when tourists feel satisfied, they will provide recommendations to other people (Cevdet Altunel and Erkurt, 2015; Humagain and Singleton, 2021; Joo et al., 2020). The findings of this study mean that when a tourist feels satisfied with their travel experience, especially their culinary experience, both in terms of service, facilities and overall tourism experience, they tend to have a strong intention to return to that gastronomic destination. Traveler satisfaction creates an emotional bond with the destination, triggers a strong sense of attachment, and strengthens the desire to repeat their positive experience in the future. Apart from that, tourist satisfaction also has a direct impact on the intention to recommend the destination to others. Satisfied travelers not only share positive stories about their travels but also provide recommendations to their friends, family, and colleagues, influencing others' travel decisions. These positive recommendations create a widespread domino effect, inviting more new tourist visits and increasing the popularity of the destination, as well as strengthening the positive image of the destination in the eyes of potential tourists.

Apart from the direct impact of increasing tourist visits, the domino effect of tourist satisfaction on revisit intention and recommendation intention also creates a sustainable circle in the development of the tourism industry. With the increasing number of visits and recommendations from satisfied tourists, tourism destinations can experience sustainable growth in revenue, investment and infrastructure development. This attractive potential for gastronomic tourism is an important strategic element in the tourism and hospitality sector. Therefore, tourism destinations increasingly use their gastronomic resources to differentiate themselves from their competitors (Kumar, 2019). Thus, providing memorable experiences will produce sustainable competitive advantages (Widjaja et al., 2020). Along with this, tourist satisfaction levels continue to increase, creating a positive cycle that supports economic growth and sustainability in the tourism industry. Thus, gastronomy tourism destinations must provide a satisfying culinary tourism experience because this not only influences individual satisfaction but also has a broad impact on building and strengthening the tourism industry.

CONCLUSION

Gastronomy tourism has a very important role in driving a country's economy. Apart from being a tourist attraction, the culinary richness of an area also reflects the cultural heritage and traditions of the local community. Travelers from all over the world often look for authentic culinary experiences when they visit a country. Therefore, improving the quality of gastronomy tourism is very important to provide tourist satisfaction and will ultimately build visit loyalty, which includes

revisiting intention and recommendation intention. This study reveals that the quality of gastronomy tourism influences tourist satisfaction and will ultimately encourage potential revisit intention and recommendation intention for tourists to visit gastronomy tourism. Other findings show that tourist satisfaction mediates the effect of gastronomy tourism quality on tourists' revisit intention and recommendation intention to visit gastronomy tourism.

The results of this study provide important implications for gastronomic tourism businesses to build tourist satisfaction by improving the quality of gastronomic tourism. When tourists feel satisfied through an extraordinary culinary experience, they are more likely to leave positive reviews, recommend the destination to others, and even return to visit. This creates a profitable domino effect, increasing the popularity of gastronomy tourism destinations and directly increasing the number of tourist visits. Also, the increase in the number of tourists has a positive impact on the local economy by increasing sales in the food and beverage sector, as well as various supporting businesses such as gift shops and tour guides. Furthermore, satisfying culinary experiences encourage sustainable development in the local food industry, supporting local farmers, producers and entrepreneurs. By paying attention to and improving the quality of gastronomy tourism, a country can build a positive image, increase competitiveness and support economic growth through a sustainable tourism industry. Relevant to previous studies (Sutiadiningsih et al., 2023), it provides an important note that tourists' attitudes towards consuming traditional food and perceptions of traditional food consumption remain controls that influence tourists' intentions in choosing gastronomy as part of their tourism activities. The subjective values of social media and traditional food consumption culture have not been able to influence tourists' intentions to make traditional food a tourist destination. This can be interpreted as saying that things related to local gastronomy can be accepted by tourists, but really need the support of the government, academics and tourism practitioners to develop gastronomic tourism so that it can become an alternative attractive new tourism object (destination) for tourists, in this case including variations of various gastronomic tourism promotion programs taking into account culture (including building distinctive and professional communication), behavior and tourist objectives.

REFERENCES

Abahre, J., Al-Rimmawi, H., Abu Raida, L., Alkhateeb, M., Bishawi, W., Mahmoud, S., Suleiman, A., & Khlaif, Z.N. (2023). Impact of political instability on 1948-Palestinian shoppers' satisfaction: Palestinian tourist destination as a case study. *Heliyon*, 9(6), e17235. https://doi.org/10.1016/j.heliyon.2023.e17235

Acharya, S., Mekker, M., & De Vos, J. (2023). Linking travel behavior and tourism literature: Investigating the impacts of travel satisfaction on destination satisfaction and revisit intention. *Transportation Research Interdisciplinary Perspectives*, 17, 100745. https://doi.org/10.1016/j.trip.2022.100745

Alegre, J., & Juaneda, C. (2006). Destination Loyalty: Consumers' Economic Behavior. *Annals of Tourism Research*, 33(3), 684–706. https://doi.org/10.1016/j.annals.2006.03.014

Andrade-Suárez, M., & Caamaño-Franco, I. (2020). The Relationship between Industrial Heritage, Wine Tourism, and Sustainability: A Case of Local Community Perspective. In *Sustainability,* 12(18). https://doi.org/10.3390/su12187453

Basaran, B. (2020). Perceptions, Attitudes and Behaviours of Consumers Towards Traditional Foods and Gastronomy Tourism: The Case of Rize. *Journal of Tourism & Gastronomy Studies*, 8(3), 1752–1769. https://jotags.net/index.php/jotags/article/view/769

Björk, P., & Kauppinen-Räisänen, H. (2014). Culinary-gastronomic tourism – a search for local food experiences. *Nutrition and Food Science*, 44(4), 294–309. https://doi.org/10.1108/NFS-12-2013-0142

Cevdet Altunel, M., & Erkurt, B. (2015). Cultural tourism in Istanbul: The mediation effect of tourist experience and satisfaction on the relationship between involvement and recommendation intention. *Journal of Destination Marketing & Management*, 4(4), 213–221. https://doi.org/10.1016/j.jdmm.2015.06.003

Cheng, D. (2023). Exploring the cultural anthropology of gastronomic tourism: Supply-side stakeholders' perspectives and experiences of Suzhou-style cakes. *International Journal of Gastronomy and Food Science*, 34, 100819. https://doi.org/10.1016/j.ijgfs.2023.100819

Cong, L.C. (2021). Perceived risk and destination knowledge in the satisfaction-loyalty intention relationship: An empirical study of european tourists in vietnam. *Journal of Outdoor Recreation and Tourism*, 33, 100343. https://doi.org/10.1016/j.jort.2020.100343

Cordova-Buiza, F., Gabriel-Campos, E., Castaño-Prieto, L., & García-García, L. (2021). The Gastronomic Experience: Motivation and Satisfaction of the Gastronomic Tourist—The Case of Puno City (Peru). In *Sustainability*, 13(16). https://doi.org/10.3390/su13169170

Durmaz, Y., Çayırağası, F., & Çopuroğlu, F. (2022). The mediating role of destination satisfaction between the perception of gastronomy tourism and consumer behavior during COVID-19. *International Journal of Gastronomy and Food Science*, 28, 1–11. https://doi.org/10.1016/j.ijgfs.2022.100525

Ghozali, I. (2014). *Structural Equation Modeling metode alternatif dengan Partial Least Square*. Badan Penerbit Universitas Diponegoro.

Ghozali, I. (2017). *Structural equation models: Concepts and applications with the AMOS 24 bayesian SEM update program (Indonesian version) (Edisi 7)* (7th ed.). Badan Penerbit Universitas Diponegoro.

Gordin, V., Trabskaya, J., & Zelenskaya, E. (2016). The role of hotel restaurants in gastronomic place branding. *International Journal of Culture, Tourism and Hospitality Research*, 10(1), 81–90. https://doi.org/10.1108/IJCTHR-05-2015-0049

Hair, J., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate data analysis: A global perspective* (7th.). Pearson Prentice Hall.

Hair, J., Hult, G.T., Ringle, C.M., & Sarstedt. (2017). *A Primer on Partial Least Squares Structural Equation Modelling (PLS-SEM)*. Sage Publications.

Haven-Tang, C., & Jones, E. (2005). Using Local Food and Drink to Differentiate Tourism Destinations Through a Sense of Place. *Journal of Culinary Science & Technology*, 4(4), 69–86. https://doi.org/10.1300/J385v04n04_07

Henderson, J.C. (2009). Food tourism reviewed. *British Food Journal*, 111(4), 317–326. https://doi.org/10.1108/00070700910951470

Hendijani, R.B. (2016). Effect of food experience on tourist satisfaction: the case of Indonesia. *International Journal of Culture, Tourism and Hospitality Research*, 10(3), 272–282. https://doi.org/10.1108/IJCTHR-04-2015-0030

Horng, J.S., & Tsai, C.T. (Simon). (2012). Culinary tourism strategic development: an Asia-Pacific perspective. *International Journal of Tourism Research*, 14(1), 40–55. https://doi.org/10.1002/jtr.834

Humagain, P., & Singleton, P.A. (2021). Examining relationships between COVID-19 destination practices, value, satisfaction and behavioral intentions for tourists' outdoor recreation trips. *Journal of Destination Marketing & Management*, 22, 100665. https://doi.org/10.1016/j.jdmm.2021.100665

Jerez, M.R. (2023). Tourism marketing of the Autonomous Communities of Spain to promote gastronomy as part of their destination branding. *International Journal of Gastronomy and Food Science*, 32, 100727. https://doi.org/10.1016/j.ijgfs.2023.100727

Joo, D., Woosnam, K.M., Lee, S., & Lee, C.K. (2020). Destination loyalty as explained through self-congruity, emotional solidarity, and travel satisfaction. *Journal of Hospitality and Tourism Management*, 45, 338–347. https://doi.org/10.1016/j.jhtm.2020.06.017

Kapuściński, G., & Richards, B. (2016). News framing effects on destination risk perception. *Tourism Management*, 57, 234–244. https://doi.org/10.1016/j.tourman.2016.06.017

Ketaren, I. (2017). *Upaboga Gastronomy Indonesia (in Indonesian Version)*. AGASI & AGI.

Kim, J.H. (2017). The Impact of Memorable Tourism Experiences on Loyalty Behaviors: The Mediating Effects of Destination Image and Satisfaction. *Journal of Travel Research*, 57(7), 856–870. https://doi.org/10.1177/0047287517721369

Komariah, K., Razzaq, A.R.B.A., Nugraheni, M., Lastariwati, B., & Mahfud, T. (2020). The antecedent factor of tourists' intention to consume traditional food. *GeoJournal of Tourism and Geosites*, 32(4), 1209–1215. https://doi.org/10.30892/gtg.32403-559

Kuhn, V.R., Gadotti dos Anjos, S.J., & Krause, R.W. (2023). Innovation and creativity in gastronomic tourism: A bibliometric analysis. *International Journal of Gastronomy and Food Science*, 100813. https://doi.org/10.1016/j.ijgfs.2023.100813

Kumar, G.M.K. (2019). Gastronomic tourism— A way of supplementing tourism in the Andaman & Nicobar Islands. *International Journal of Gastronomy and Food Science*, 16, 1–6. https://doi.org/10.1016/j.ijgfs.2019.100139

Leal-Londoño, M. del P. (2023). *Chapter Eleven - Gastronomic tourism and alternative food networks: a contribution to the Agenda 2030* (F. X. Medina, D. Conde-Caballero, & L. B. T.-F. Mariano-Juárez Gastronomy, Sustainability, and Social and Cultural Development (eds.), 185–199, Academic Press. https://doi.org/10.1016/B978-0-323-95993-3.00006-2

Lee, C.K., Yoon, Y.S., & Lee, S.K. (2007). Investigating the relationships among perceived value, satisfaction, and recommendations: The case of the Korean DMZ. *Tourism Management*, 28(1), 204–214. https://doi.org/10.1016/j.tourman.2005.12.017

Lee, S., Jeon, S., & Kim, D. (2011). The impact of tour quality and tourist satisfaction on tourist loyalty: The case of Chinese tourists in Korea. *Tourism Management*, 32(5), 1115–1124. https://doi.org/10.1016/j.tourman.2010.09.016

Leong, Q.L., Ab Karim, S., Awang, K.W., & Abu Bakar, A.Z. (2017). An integrated structural model of gastronomy tourists' behaviour. *International Journal of Culture, Tourism and Hospitality Research*, 11(4), 573–592. https://doi.org/10.1108/IJCTHR-05-2016-0047

Loi, L.T.I., So, A.S.I., Lo, I.S., & Fong, L.H.N. (2017). Does the quality of tourist shuttles influence revisit intention through destination image and satisfaction? The case of Macao. *Journal of Hospitality and Tourism Management*, 32, 115–123. https://doi.org/10.1016/j.jhtm.2017.06.002

Mora, D., Solano-Sánchez, M.Á., López-Guzmán, T., & Moral-Cuadra, S. (2021). Gastronomic experiences as a key element in the development of a tourist destination. *International Journal of Gastronomy and Food Science*, 25, 100405. https://doi.org/10.1016/j.ijgfs.2021.100405

Okumus, B., Koseoglu, M.A., & Ma, F. (2018). Food and gastronomy research in tourism and hospitality: A bibliometric analysis. *International Journal of Hospitality Management*, 73, 64–74. https://doi.org/10.1016/j.ijhm.2018.01.020

Pérez-Priego, M.A., García-Moreno García, M., de los B., Jara-Alba, C., & Caro-Barrera, J.R. (2023). Local gastronomy as a destination tourist attraction: The case of the 'Chiringuitos' on the Costa del Sol (Spain). *International Journal of Gastronomy and Food Science*, 100822. https://doi.org/10.1016/j.ijgfs.2023.100822

Prat, J., & Canoves, G. (2014). The Importance of Satisfaction in Relation to Gastronomic Tourism Development. *Tourism Analysis*, 19. https://doi.org/10.3727/108354214X14029467968321

Seyitoğlu, F., & Ivanov, S. (2020). A conceptual study of the strategic role of gastronomy in tourism destinations. *International Journal of Gastronomy and Food Science*, 21, 1–10. https://doi.org/10.1016/j.ijgfs.2020.100230

Sutiadiningsih, A., Purwidiani, N., Dewi, I.H.P., Hamdani, A.T., & Le, H.T. (2023). Gastronomic experience as a motivation for tourists to choose tourist destinations in Indonesia and Vietnam. *GeoJournal of Tourism and Geosites*, 47(2), 424–431. https://doi.org/10.30892/gtg.47208-1040

UNWTO. (2017). *Second global report on gastronomy tourism* (Affiliate). World Tourism Organization. https://www.e-unwto.org/doi/pdf/10.18111/9789284418701

UNWTO. (2020). *Gastronomy*. https://www.unwto.org/gastronomy

Widjaja, D.C., Jokom, R., Kristanti, M., & Wijaya, S. (2020). Tourist behavioural intentions towards gastronomy destination: evidence from international tourists in Indonesia. *Anatolia*, 31(3), 376–392. https://doi.org/10.1080/13032917.2020.1732433

Zhang, H., Wu, Y., & Buhalis, D. (2018). A model of perceived image, memorable tourism experiences and revisit intention. *Journal of Destination Marketing & Management*, 8, 326–336. https://doi.org/10.1016/j.jdmm.2017.06.004

BUSINESS PARTNERSHIPS, PERSONNEL COMPETENCY, AND MARKETING STRATEGIES INFLUENCING THE SUCCESS OF TOURISM BUSINESS OPERATIONS IN THAILAND

Pisit POTJANAJARUWIT[*]
Suan Sunandha Rajabhat University, Business Administration,
Faculty of Management Science, Bangkok, Thailand, e-mail: pisit.po@ssru.ac.th

Somsak KLAYSUNG
Suan Sunandha Rajabhat University, Business Administration,
Faculty of Management Science, Bangkok, Thailand, e-mail: somsak.kl@ssru.ac.th

Krisakorn SUKAVEJWORAKIT
Mahidol University, Nakhon Pathom, Thailand, e-mail: krisakorn.suk@mahidol.ac.th

Abstract: In this study, an attempt has been made to examine factors affecting the success of various types of tourism business in Thailand. A total of 100 copies of the questionnaires were given to operators and managers engaged in tourist businesses in Thailand. These respondents were chosen by Proportionate Random Sampling-a method that ensures an unbiased cross-section from every section of society. The statistical methods used in data analysis include percentage calculation ; determining a mean value for all readings ; assessing standard deviation; analysing frequencies and multiple regression analysis. Entrepreneurs in Thailand's tourism industry have indicated that for the success of their operations marketing strategy, personnel competency, and business partnerships are the most important factors. When the study carried out the hypothesis tests it showed that price, place, and product (the 4Ps of marketing mix) location, and physical surroundings on one hand skills of human resource management to bring employees together while business partnership are positively correlated with success in operating a tourism business statistically.

Key words: business partner, marketing strategy, personnel competency, the success of the operation of the tourism business, tourism industry

* * * * * *

INTRODUCTION

The current globalization is driven by rapid changes in economic, social, and technological situations, which led to changes in commerce practice. This meant that businesses were always looking for more productive and efficient ways to ensure they are staying ahead protected in fierce competition. In the contemporary world, there are so many consumption options available for consumers due to this kind of "borderless world," evolving in many different aspects all time in society. A host of news comes in, covering changes in social, ational, political, cultural, technological economic landscapes. Yet these same changes continually revise what the people need and want like never before. Business people who fail to pay attention to such changes and do not adjust their strategies in response will find it difficult to sell any products or services with any prospect of success on the market. For that reason, given these changing times, marketing strategy is shifting toward satisfying customers. No matter what the period, consumers are always the most important element in any business, for they provide most of its income. Prioritizing and sustaining market mechanism satisfaction is a core strategy to improve income. This view is consistent with (Waramontri et al., 2022); analysis that maintaining happy customers is essential if seafood businesses are to increase their sales.

Today, Thailand's tourism industry is emerging from the severe blow it received due to the worldwide coronavirus epidemic in 2020-21. The reopening of the country, coupled with a relaxation of controls against disease, has effectively revived the tourism sector that once was the lifeblood of this kingdom. Now it has been seen that the success of Thailand's tourism industry is significantly affected by its wholesale trading partners. Some of these include:

1. Changes in trade policies or worry about the market can impact operations. For example, a shift of alliances or withdrawal by either party can disrupt operations and long-term planning. If, for example, a major partner airline that is vital for the flow of tourists into Thailand runs into financial difficulties or changes its route system, it will hamper tourist accessibility. 2. Disagreements or disputes with partners can have a negative effect on a project's quality and efficiency for example, arguments between Thai tour operators and foreign partners over issues such as prices or the scheduling of trips will damage customer satisfaction. 3. Reliance on trading partners puts Thai tourism companies in a position of possible outside control, or even dependence. For example, if Thai tourism depends heavily on foreign airlines and tour operators, any change by these partners will have adverse effects on Thai business (Fernández et al., 2022).

---

[*] Corresponding author

Additionally, the problem of human resource capability is an important factor affecting the success of Thailand's tourism industry. These challenges include:

1. A scarcity of personnel with specialized skills because the tourism industry needs employees who are versed in foreign languages, regional customs knowledge and customer-service skills. When skilled manpower is lacking, service quality becomes poor. For example, if a tour company lacks Chinese-speaking guides when Chinese tourists are at their peak, their satisfaction levels may suffer such as this.

2. Lack of ongoing training and development staff may mean that they are unable to evolve with changing market requirements. Take the situation of tour company employees for example who have not received the latest in technological advances or travel trends, but continue nonetheless to offer outmoded services that cannot possibly fit with today's customer needs.

3. Labour instability characterized by high staff turnover undermines service continuity and quality, thus increasing costs for businesses as the need to constantly retrain new staff arise. For example, a high turnover in hotel employees hurts the provision of stable, quality services (Banmairuroy et al., 2022).

Problems with marketing strategies significantly impact the success of Thailand's tourism industry. These issues include: 1. Insufficient market analysis and understanding of customer needs. A lack of comprehensive information or analysis about the target market and customer preferences can lead to ineffective marketing strategies. For instance, if tour operators fail to grasp the desires of newer generations seeking unique travel experiences, traditional tour package-focused marketing strategies may prove ineffective. 2. Inadequate brand presentation and communication. Unclear or unengaging branding and marketing communications can result in a lack of customer interest. For example, if a tour operator's website is unappealing or missing crucial information, customers might opt for competitors with more compelling presentations. 3. Not keeping pace with new technology and trends. Neglecting to utilize or adapt to emerging technologies in marketing can render a business outdated and uncompetitive. For instance, if a tour company neglects social media or digital technologies for promotions, it risks missing out on reaching customers who predominantly engage with digital media. Addressing these challenges requires well-informed marketing planning, effective brand communication, and the adoption of new technologies to align with market and customer needs (Damnet et al., 2023). For these reasons, Thailand tourism companies employ various success strategies. They need to do this in order to keep the customers happy with their products and services, maintain their loyalty, as well as attract new for sale. Successful customer service serves several purposes: first and foremost, it helps a company's revenue come in; next the attitudes of people who are in charge is another direct factor to operational success and corporate growth because this influences those around them strongly. Therefore, researchers are growing weary of trying to find out what circumstances engender success in Thailand tourism ventures. The results they thereby deduce will be applied to further enhance and develop Thai tourism, making it more efficient and effective.

LITERATURE REVIEW
Business partnership strategy concepts in the tourism and service industry

As is reported in the review of literature, scholars have given the concept of "alliance strategy" different meanings. Generally, it refers to the relationship between at least two organizations and various forms Biao, such as cooperation, investment, exchange and sharing in order to achieve common goals such as increased market share or profit; cost cutting through economies of scale or different sources at least to some extent shared amongst partners to minimize risk while maintaining returns for all involved by applying these traditional ways of thinking and Project Cycle Management principles from rural development rather than empirical evidence (Chen et al., 2023). According to (Wan et al., 2022) definition alliance strategy is this: "A business for businesses position in partnership, in the pursuit of mutual gain through working together and carrying on edge-defining coordinated activities." Such assertions are consistent with (Su and Wen, 2023); research results, at least in part that is. The tourism company MyTravel and the world's largest cruise ship operator – Carnival Cruise Lines started using strategic alliances in 1996. Carnival Cruise Lines obtained a 29.5% share of MyTravel, but this relationship between corporations that battles the sea came to an end in 2001 after being only five years old which both parties described as mutual agreement. In addition, one of the international British tour package providers, First Choice, cooperated with (Ramukumba et al., 2012); as RCCL obtained some First-Choice stock. Opodo, an online travel service, also cooperated with airlines. Many of the services it provides can be demanded on the internet by passengers over Opodo's website for example (Ghanem and Ghaley, 2024).

Thailand was a place where the implementation of alliance strategies in tourism truly became visible around the time of Tom Yum Kung Crisis 1997. The 2022 research conducted by (Chirakranont and Sakdiyakorn, 2022); showed that businesses economically hurt from that year's debacle responded by allying themselves with related enterprises. Among the sectors of the Thai economy that adopted this technique as a form of crisis: life insurance. The same was true for the travel business. During this time, both domestic and outbound operators in Thailand were incurring losses because of tourists postponing their trips and a drastic loss in the exchange rate for baht. In response to these challenges, those operators formed a united front - a collaborative business model in which each member brings their own strengths and knowledge to perform specific functions. The roles were clearly defined; for instance, Company A took care of room bookings, while Company B was responsible for bus reservations and Company C saw to it that restaurants were booked for every meal. Moreover, all companies jointly launched public relations campaigns through all types of mass media. Despite some operational and cost-sharing problems, such a joint operation was a strategic move that allowed the inbound and outbound routes to ride the rough times. In 2017, Thai inbound tour operators will also adopt alliance strategies. They ally with various merchandise sales organisations, such as travel agents, drug companies and many others, and travel there together. In general agreements are signed to get special prices

for the company's tourists or a commission from tourists' product purchases. Additionally, Mr. Adit Chairattananon, Secretary-General of the Association of Thai Travel Agents (ATTA), mentioned in a recent interview that in 2017, the direction of the inbound tourist market was clear. He held that Thai travel operators would have to work more closely with each other and make trade agreements between sectors, such as tour companies and hotels (Mota and Neira-Gómez, 2023).

Concepts of personnel competency in the tourism industry

Derco and Tometzová (2023); literature review defined 'competency' as the combination of an individual's knowledge, skills, and personal attributes. These competencies sound as the thinking habits or work habits and behaviour of people in their work in every area, nursing staff for instance could never be successful in this type of environment. From statistics is also clear that if people are all inept in these skills they still won't work together properly - we choose how comfortable it is on four wheels. Furthermore, by constant self-improvement in these areas, one can reach or even surpass the levels being proposed by the organization itself. Today, Personnel Competency is established feedback and systematic measurements tool. It is effectively employed for both of a country's human resources development. This method helps to ensure that government departments at every level can provide human resources consistent with what the market needs, from qualified labour force to top management positions. For example, a key objective at present is to establish the "Basic Competency Standards for ASEAN Tourism Professionals" (ASEAN Common Competency Standards for Tourism Professionals: ACCSTP) which is to be used across all ASEAN member countries. This framework outlines the basic competencies in tourism as follows. They must be able to carry out responsibilities that a normal worker would do in what colomb is here that he was always trying to do for other people. Consisting of primary and conventional competencies, it covers practical competencies as well as advanced skills. In general terms, the basic competencies required of a workforce are the following: in several skills and functions, there is a shortage greater than 10 percent (as tallied in both low-skill jobs and professionally-skilled positions); on average across all categories of workless than 100 days (Wong et al., 2011).

1. Three aspects of Effective collaboration with fellow workers and customers: open and effective communication; good working relationships so that you can do your work without it getting in anyone else`s face; and teamwork.

2. Dealing with people and environments that are different than what you are used to viewing. How to manage this challenge generally lies in two main aspects: learning to be sensitive when talking or working with diverse groups who speak languages other than your own and also increasing your comprehension skills on cross-cultural issues.

3. Uphold workplace health and safety standards. This entail four key components: providing information about health and safety practices, setting up standards to reduce hazards and obviate risks, conducting or overseeing health and safety education programs and keeping track of attendance records.

4. According to the standard, the site must be kept in compliance with strict health regulations. The site is responsible for four main areas: establishing conditions that ensure a safe environment, following safety precautions and procedures, responding quickly to emergency situations on site such as power cuts or machinery failures, even kicking back negative reports from management onto subordinate workers for followup. Any other safety issue you want feedback about from your employee such as how much is appropriate exercise time during his break period or which way today's fuse box lock works. Also collecting ideas put up by employees and maintaining effective safety and security control.

5. To track the current flow of industry trends, always keep yourself informed with the latest information. Key points of concern are three: gaining access to information about developments within our sector through sources that are both regular and reliable, looking for well-placed reports on key affairs in travel from distant shores and other areas of interest outside your own sphere thus improving our general horizons-- and getting forceful advice about Chinese tourism when we need it.

Contrary to the findings of (Almeida et al., 2021); just four main educational institutions in Lao PDR are specializing solely in tourism and hotel management. Given that visitors are pouring into the country but its educational infrastructure does not match a corresponding quantitative expansion in the number of tourism-hospitality workers to be trained, we can only look at this as a potential source of woe. Such a paucity of personnel serving tourism as needful workers is also compounded by the limited number in educational institutions on tourism. Moreover, in Lao PDR the development of human resources for tourism seems to be confined predominantly to schools. Simultaneously, this indicates a deficiency in wider social context integration. As observed with (Khasawneh et al., 2023); the methology of current teaching and learning in tourism and hotel education institutions doesn't meet the government's stamdards. This shortage is reflected in the labor force, where people working in tourism often lack professional skills or the capability necessary to fulfill the needs of entrepreneurs operating in that industry. This deficiency in skill base programmes drastically underscores the necessity for overhauling or ramping up these educational approaches and institutions to better prepare individuals to match the congeries of demands which tourism is currently making.

Concepts of marketing strategy in the tourism industry

Tourism marketing mix: referred to a collection of marketing tools that organizations use in order to affect market, focusing on meeting their target consumers ' needs and tastes. The paper explores four key concepts of the marketing mix: (Ploadaksorn et al., 2023). Tourism Products: products in the tourism sector are continually created and consumed at the same time. Because tourism products are almost entirely service oriented, they cannot be stored. These products are based on seasonal changes and consumer demand. They are made in the line at several levels, with implications that it does not consist merely (or at all) of a single item. Smog-forecasting systems combine basic hardware (facilitators) an advanced software quality of service is monitored by support. The relief map is an ancillary product. In order to bring products in line with the needs of prospective tourists, it is very important to examine product line length and variety.

In addition, an understanding of product life cycle is crucial if one is to decide correctly on resources in development how far distributed where little how widely so as to meet all standards comprehensively. Efforts related to tourism products, and efforts to raise the level of service standards, have to take the shape of a strategic product mix.

Price in the Travel and Tourism Industry: In the tourism industry, they ask tourists to pay for their services. In such cases, the experiences themselves are sold as tourism products--participants will go to certain service providers in order to pay for entry fees and so on. As tourism products are intangible and unique, developing an effective pricing strategy is essential. Pricing varies depending on the cost of services, competition and demand. The strategies for pricing also will vary--mainly according to tourists' perceived value of this service. This perception of value can be moderated by a variety of factors, such as whether or not quality is associated with the price and the overall importance placed on price within this service. Moreover, the price also represents the services received by the beneficiary. Therefore, it is important to have a holistic strategy for price mix which includes elements such as discounts, special offers, some packaged pricing, at-yourservice products and the like in order to attract customers and increase profitability.

For Distribution Channels: Tourism organizations must have the means of planning, arranging, coordinating, and operating specific activities. The aim is to enable tourists to utilize tourism services. This is nothing like a single company however; it requires various distribution channels. These channels include tour operators, travel agencies, hotel owners, franchisees, intermediaries, tour guides, escorts and means of transportation. And with tourism products because they contain multiple services, it is necessary to have different intermediaries preparing it. There are major decisions to be made over how to divide up the labor or what sort of channels will be employed for product distribution. As a consequence, one must also build an integrated location strategy that makes it easy for tourists to buy tourism products. In establishing product awareness and characteristics among consumers, promotion cannot be ignored. It is necessary to portray and deliver the features, quality, service availability and price of the product in various promotional forms thus. The aim is to raise sales, clip users overall amount of satisfaction from using products and recoup more than one's company-paid outgoings on right-hand (profitable) performance In particular attractions, something that the buyers of promotional weapons will see eminently sensible, is continuous engagement with clients.

For tourism organizations that aim to attract tourists, they must use promotional tools that are appropriate such as advertising, public relations or personal selling. These campaigns should be geared towards buying behavior of tourists, tailored to seasonal needs and trends, aiming to stimulate demand for product purchases. But this promotional strategy should be complete in development work. Tangible Evidence, physical Evidence: The characteristics of the tourism industry as a tertiary industry requires that in the case of services to client's tangible elements need to be present. As tourists principally pay a visit to service providers who are involved in distributing their goods then this invisibility of the services presents a problem. Under these circumstances physical aspects of service thereby stand in for proof that can be fed back to service providers. such as how service provision is arranged, the local climate in which it is provided, noise levels in those areas of service and furniture quality. But these are hard core evidences for service to tourists. Tourist satisfaction levels can be gauged by comparing the actual service performance outsourced by tourism providers with what tourists should reasonably anticipate. And just as nature splits her camels evenly between two humps to offer equilibrium on either side, it is necessary to introduce Lingering physical evidence into strategies. On the one hand, this helps to make distinctions, while on the other it is aimed at accommodating itself to tourists' perceptions and expectations.

The success of the tourism business operation

Arquero et al. (2024); evaluated a total of seven major sectors in the hospitality and tourism fields, finding that between 1992 and 2011: There was noticeable growth in the use of balanced scorecards (BSC) for performance measurement by managers in these professions. The main regions which adopted BSCs were the United States, Europe and Asia. But in recent years very little published research on this topic has been conducted in African countries, including ESwatini. The study found a major increase in the Innovation and Learning Perspectives of BSC, which is providing quite a competitive advantage to hotel and tourism industries. However, as the previous studies show, this is not supported as thoroughly in the Customer and Internal Business Process perspectives. And yet, innovation coupled with worthwhile measures has the potential to keep hotels in business during times of economic decline and result in profitable growth.

Issakov et al. (2023); took an in-depth look into the concept of corporate reputation. They found that an organization's reputation is fundamentally a reflection of its historical performance. As a result of these performance outcomes, the company is able demonstrate clearly that it can deliver valuable results to a diverse group range of stakeholders. In a highly competitive environment, within the organization or outside it, corporate reputation is used as a yardstick to measure a company's comparative position. Nonetheless, Arifin et al. (2023); contend that corporate reputation is mainly an overall impression concentrating principally on the emotions of people either within or outside the organization. In their view, this perspective fails to take into account the intellectual aspect of reputation. As it gives undue weight to the perceptions held by individuals within and outside the organization this definition makes difficult a clear assessment of corporate reputation's range and extent. As a result, it muddles the difference between a firm's reputation and its image.

In the fiscal years 2009-2010 and 2012-2013, enterprise performance assessment in the Republic of Serbia relied primarily on net financial performance, as (Iqbal et al., 2023); have pointed out. With operating profit as a major variable for comparison the report also took an in-depth look across various tourism sectors annually. Compared to the previous year, in 2013 operating income experienced a decrease as a result of both revenue and expenditure. This decline affected the economic efficiency and profitability of the hotel and tourism sector.

In a separate study on small and medium-sized enterprises (SMEs) in the Cape Town region, South Africa, (Maduekwe and Kamala, 2016); found that whilst the lion's share of SMEs employed balanced scorecard approach for ad hoc

performance measurement, financial performance metrics were followed more frequently. Financial performance indicators most commonly used were sales growth, cash flow, operating income and net profit margin.

Discussing customer performance measures, (Fatima and Elbanna, 2020); mentions earlier writings from (Sainaghi et al., 2013); showing that firms with a strong customer focus pattern positively influence their overall performance as an organization. The result he obtained underlines the importance of a customer-oriented strategy for management to pursue. For this reason, such undertakings are put forward as being the most beneficial way to raise performance levels in the hotel and tourism SME sector. Part of customer measurement is that it formalizes a marketing-led mindset that values what customers want. This idea is also stressed by a group of authors such as (Faraji et al., 2022); which combined confirms that strategically oriented marketing actions are significant in contributing to company performance. Also said in these studies is the consumer advocacy strategy is an essential tool for organisations, it helps them in improving customer satisfaction and business performance. Consequently, SMEs operating in the hotel and restaurant businesses should promote customer-oriented systems and build up a degree of trust with their customers. Successful customer relationship management strategies are crucial since they are competitive advantage tools developed and used by companies at all levels.

In terms of the Balanced Scorecard's inner business process perspective, our pick-up concerns are those for which financial effects will come soonest. Customer, learning and growth look at simply a few examples among many. As (Faraji et al., 2022); points out: in this domain of measurement it is not enough to attend standard operating procedures (SOPs); you must focus on improving output and process control. In 24% of the case studies conducted by (Sainaghi et al., 2013); balanced scorecards are instrumental & quintessential tools for evaluating overall performance as well as growth in internal business processes. Additionally, 62% of managers expressed a strong independent belief that internal processes are largely served by standard operating systems. According to (Fatima and Elbanna, 2020); there exists an enduring and consistent link between internal business process strategies and almost any financial strategy. This also involves cash flows, price-to-earnings ratios and so on. A substantial relationship appears to exist between a hotel's shareholder value growth and those business strategies pursued. According to (Iqbal et al., 2023); the price to earnings (PE) ratio is a function of factors lying within internal business processes. These include customer relations, innovation, learning and financial matters. This underscores how vital internal business processes are in determining the overall performance and added value of an enterprise.

The aim of this study is to examine factors such as business partners, potential employees and business strategies that contribute to the success of Thailand's business tourism. This study explored the following key points: 1. Business partners: This includes cooperation with tourist centres, restaurants, souvenir shops, hotels and transport services. 2. Staff ability: Staff's service quality, product and service knowledge, problem solving, fast service, etc. Measure its features. 3.Marketing quality: This study analyzes the marketing mix (product, price, location, promotion and physical evidence) in the context of Berlin tourism. Additionally, the study also identified key elements for the success of Thailand's business operations, such as the organization's reputation, customer relations, financial management and internal marketing. Which can be illustrated as shown in Figure 1, the conceptual framework of the research on business partnerships, personnel competency, and marketing strategies influencing the success of tourism business operations in thailand (Pisit, 2023).
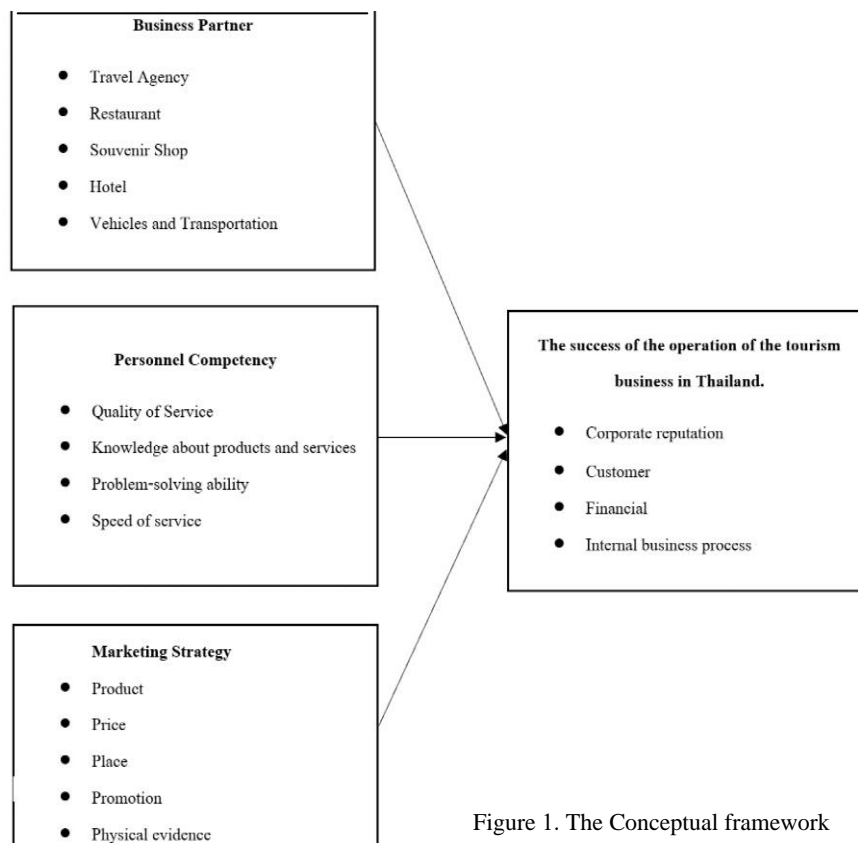

Figure 1. The Conceptual framework

RESEARCH METHODOLOGY

In the research study titled "Business Partnerships, Personnel Competency, and Marketing Strategies Influencing the Success of Tourism Business Operations in Thailand," the researcher has developed a comprehensive methodology. The steps of this research methodology are illustrated in Figure 2 (Pisit, 2023). The methodology is elaborated upon in the following sections:
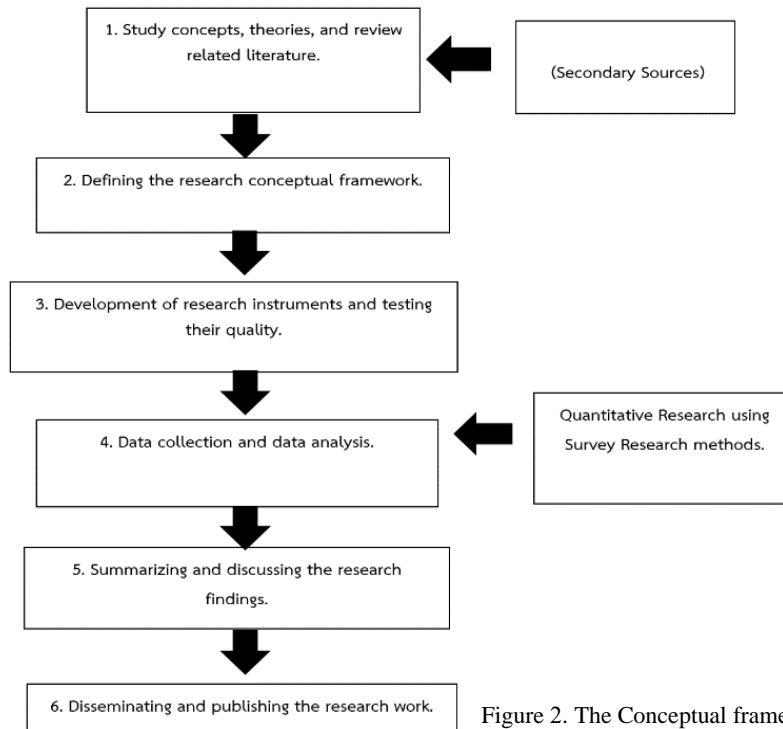

Figure 2. The Conceptual framework

Population and sample

According to www.tourismcentre.go.th, the study's population was made up of tour operators in Thailand. was 9,707 persons at the last count 17th January 2010. They then divided up Thailand's industry of Tourism Enterprises into The sample group for it research kind high-school classes of children. Using the size is a formula described in (Ploadaksorn et al., 2023); for calculating samples from some population, our sample size was determined. According to this data and the specified formula the sample group comprised 100 people. The information represents each component in "Table 1" shows the demographic information of different workplaces and samples. The Central Registry Office has the largest population of 4,492 people and a sample size of 46. The Eastern Health Department and the Southeastern Department (Regions 1 and 2) have populations between 335 and 3,237 and sample sizes of 4 to 33. The Northern Regional Office recorded a population of 1,211 people and a sample size of 12 people. Overall, the total population of the office is 9,707 people and the total sample size is 100 sampling. The sample was taken using a method called "proportionate random sampling." This strategy takes into account the size of strata. As explained by (Wong et al., 2011). The formula used to calculate this method is given below.

$$n = \frac{Z_{\frac{\alpha}{2}}^2 \sigma^2 N}{e^2(n-1) + Z_{\frac{\alpha}{2}}^2 \sigma^2}$$

$$\frac{\text{Desired sample group} \times \text{The population size of each office}}{\text{Total population size}}$$

In the Table 1 below the sample sizes resulting from calculations using the above formula are given.

Table 1. Population Numbers and Sample Groups (Source: Data from www.tourismcentre.go.th as of January 17, 2010, indicating the total count of registered tour business operators holding valid tour business licenses)

Office Name	Total Population	Sample Sizes
1. Central Registration Office	4,492	46
2. Northeastern Regional Office	335	4
3. Southern Regional Office, Zone 1	432	5
4. Southern Regional Office, Zone 2	3,237	33
5. Northern Regional Office	1,211	12
Total	**9,707**	**100**

Research Instrument

Experts who have knowledge and expertise in relevant fields studied each detail to assess the content validity of a questionnaire. Three experts, Dr. Metha Suteeraroj, Asst. Prof. Ratchadaporn Pinrattananon, and Mr. Sakon Teeraphongtha-nakorn, conducted this evaluation. Subsequently, the researcher analyzed the results to determine the Index of Item Objective Congruence (IOC), a measure of the questions' consistency with Rensis Likert and others objects represented by the data. This rule also says that if consistency should reach a particular percentage figure in order for it to be considered good enough. These

questionnaires, which thoroughly conformed to the characteristics of the surveyed community, were subjected to validation by experts and along these lines similarities to standard data were eliminated. Thirty suits were handed out at this time. The data from these questionnaires was then analyzed for reliability, using the Cronbach's Alpha Coefficient formula. This analysis yielded an average value of 0.96, which surpasses the standard benchmark mark at 0.7. Following this, the questionnaires were refined on the basis of try-out feedback and then used with a designated sample group of one hundred people.

Data Collection

For data collection, the researcher has given a series of steps: Here they are:

1. In preparing the questionnaires, take as many pages as are necessary. Make them correct and complete, then post these documents off.

2. Fill out a letter on official paper from the Faculty of Business Administration at Rajamangala University of Technology Isan (accompanying the questionnaire). This letter is sent to Thai tour operators to induce their cooperation and willingness that the interviewer will reply to questionnaires they receive.

3. Send questionnaires to those registered with the Tourism Development Department who operate in the tour business. A total of 100 questionnaires are mailed out with a self-addressed pre-stamped envelope, making return right easy for all members of the tested population. Respondents are all given a period of 15 days, counting from when they get questionnaire through post in return to receive it again by mail.

Data analysis

Multiple regression analysis (Multiple Regression-Analysis), lectures will be provided with tables due to the large volume of content to transcribe and then research results will be summarized at the end. Test the relationship between variable Business Partnerships, Personnel Competency, Marketing Strategy If we want to call this a "realistic example", for tourism in Thailand as a sample case study. We conjecture that business partners, staff and marketing technique has a close relationship with how successfully businesses conduct their activities.

RESEARCH RESULTS

This research aims at investigating the influence of Business Partner factors, Personal Competency, and Marketing Strategy on the operational effectiveness of various types of tourism enterprises in Thailand. The research concludes that entrepreneurs in this business area see personnel Competency as another direct influence upon operations success in Thailand's tourist trade, earning an overall score that is half way to perfection: Personnel Competency above all else gets a 4.42 average rating (mean = 4.42, st. dev. = 0.67). From the analysis of several aspects, it can be seen that those companies with employees who have a good grasp on service skill contents also harbored staffs committed to providing nuanced services for clients. Doing so enhanced customer satisfaction significantly and caused service usage to rise. Entrepreneurs rank highly the influential effect of having service-minded personnel flexibility and service skillfulness in company human resources (mean = 4.49, standard deviation = 0.65). At the same time, the presence of (in a company's human resources) personnel knowledgeable about our company's products and services, as well as capable providing clear service recommendations to customers is also judged to have an extremely high impact (mean = 4.48, standard deviation = 0.61). In addition, to have staff of tour Services capable of effectively handling problems is looked on as critical in its influence (mean = 4.48, standard deviation = 0.62). Having staff who are able to provide quick and punctual Service itself is yet another aspect that is taken as highly influential by Entrepreneurs (mean = 4.39, standard deviation = 0.67). At last the importance of organizing training seminars in order to raise the knowledge of employees is recognized since that keeps staffs current and their work standards high. This factor is also rated as having a significant influence (mean = 4.28, standard deviation = 0.78). Which can display the average values and standard deviations of factors related to personnel competencies in Table 2 (Pisit, 2023).

Table 2. Average values and standard deviations of factors related to personnel competencies

Factors Related to Personnel Competencies	n = 100		
	$\bar{x}$.	S.D.	Meaning
23. The company employs staff who possess both knowledge and understanding of service-oriented tasks, and demonstrate a public-spirited commitment to delivering comprehensive service to customers. This approach fosters customer satisfaction and attracts an increasing number of clients to use the service.	4.49	0.65	highest level
24. The company has personnel who are knowledgeable about the company's products and services, enabling them to provide clear guidance to customers.	4.48	0.61	highest level
25. The company's personnel possess both knowledge and problem-solving skills, which they effectively apply in delivering travel services to customers.	4.48	0.62	highest level
26. The company employs skilled personnel who deliver services promptly and efficiently, leading to high customer satisfaction.	4.39	0.67	highest level
27. The company conducts training programs to enhance the knowledge of its personnel, ensuring they are always updated with new information. This approach enables the staff to work more efficiently.	4.28	0.78	highest level
Total	**4.42**	**0.67**	**highest level**

The results for the hypothesis tests are found in a multiple comparison regression analysis. H1--Elements of product strategy, pricing, distribution, place, physical environment, personnel competency and business partnerships, all show a positive correlation to success for tourism operations. Table 3 illustrates ways in which marketing strategy, personnel abilities and business partnerships may affect tourism businesses.

Table 3. Displays the relationship between variables that predict marketing strategies, personnel competencies, and business partnerships

Predictive Variables	β	T	Sig.
Marketing Strategy			
1. Product	0.353	3.736	0.000*
2. Price	0.327	3.078	0.003*
3. Place	0.258	3.431	0.001*
4. Promotion	0.343	2.649	0.009*
5. Physical evidence	0.531	3.270	0.002*
Personnel Competency	0.352	6.208	0.000*
Business Partner	0.297	2.925	0.004*
R2 = 0.392; *P < .05			

According to Table 3 data show what are the factors of product strategy, pricing, distribution, location, physical environment, personnel ability and partnerships that positively affect tourism business operation success. In statistical rhetoric it is also dominant: This is statistically significant impact, as shown by the following predictive equation, Barth and Koch (2019). Critical success factors in ERP upgrade projects. Industrial Management & Data Systems, 119(3), 656–675.

$$STB = \beta_1 MS_1 + \beta_2 MS_2 + \beta_3 MS_3 + \beta_4 MS_4 + \beta_5 MS_5 + \beta_6 PC + \beta_7 BA$$

The predictive equation, Barth and Koch (2019). Critical success factors in ERP upgrade projects. Industrial Management & Data Systems, 119(3), 656–675. in standard score form is as follows:

STP = 0.353 × Product Aspect + 0.297 × Price Aspect + 0.327 × Distribution Aspect + 0.258 × Sales Promotion Aspect + 0.343 × Physical Environment Aspect + 0.531 × Personnel Ability + 0.352 × Business Partner Aspect.

CONCLUSION AND DISCUSSION

The test result shows that in Thailand's tourism business operations, factors such as product strategy, pricing, distribution, location physical characteristics, personnel ability, and business partnerships, and statistically speaking at the .05 level do positively affect their outcomes. One standout example is personnel ability itself; with entrepreneurs revealing its strong influence on both overall performance in tourism business operations and each individual facet of this form of work (0.531 impact score), this looks like more than what most people would suspect. These findings echo Damnet et al. (2023); which discovered that tour operators in Bangkok have four primary strategies for their tours (core product strategies and additional services) plus pricing strategy with significant impacts on levels of parity achieved for trade in Thailand's tourism industry. As Banmairuroy et al. (2022); reported, tour businesses operating in Thailand all value service in terms of meeting customer requirements, be this via growing distribution channels or providing services that are flexible to fit individual customer needs and tastes. It also stresses the importance of personnel and the value of personnel.

For example, regular training programs help staff work with greater efficiency and effectiveness, thereby revealing the recognition of the high value of personnel competency. As Asean Common Competency Standards for Tourism Professionals (ACCSTP) In keeping with these standards, the site should be run in full compliance with local hygiene regulations. The site bears four major duties: creating conditions of a safe work environment, obeying safety precautions and methods, dealing promptly with emergencies that crop up on-the-spot like power failures, equipment breakdowns and alert handling of negative reports from higher management by sending them down to your subordinates to follow through Instead it calls for soliciting input from staff about different aspects of safety, such as estimating how to split up breaks for exercise or getting the modern fuse box lock open today. It involves gathering and enacting proposals made by the employees themselves for ensuring proper safety and security controls (Aulia et al., 2024).

Suggestions

It is important to examine the quality of services offered by tour businesses. High-quality service is crucial for business sustainability as it impresses customers, fosters satisfaction, and encourages repeat patronage, thereby reinforcing the perception of the tour business's quality. Understanding the level of service provided is essential for further improvement and development of service quality. In addition to factors like marketing strategy, personnel competency, and business partnerships, which this research has explored, future studies should investigate other elements that impact the success of tourism business operations in Thailand, such as government policies. Additionally, assessing the operational effectiveness of the tourism industry is vital to gauge the overall efficiency of tourism businesses in Thailand.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCES

Almeida, F., Buzady, Z., & Ferro, A. (2021). Exploring the role of a serious game in developing competencies in higher tourism education. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 29, 100347. https://doi.org/10.1016/j.jhlste.2021.100347

Arifin, Y.I., Pattiro, W.M., Manyoe, I.N., Napu, S.S.S., & Sugawara, H. (2023). Analysis and quantitative assessment of geodiversity at Karya Murni, Gorontalo, Indonesia. *GeoJournal of Tourism and Geosites*, 48, 763-773. https://doi.org/10.30892/gtg.482spl10-1076

Arquero, J.L., Fernández-Polvillo, C., & Jiménez-Cardoso, S.M. (2024). Financial literacy in tourism and management & business administration entry-level students: A comparative view. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 34, 100474. https://doi.org/10.1016/j.jhlste.2023.100474

Aulia, M.R., Junaidi, E., Hendrayani, Rizki, M., Mulyadi, Abdullah, A., et al. (2024). The development of the partnership program and business performance: In terms of communication behavior and social networks of MSMEs. *Journal of System and Management Sciences,* 14(1), 159-174. https://doi.org/10.33168/JSMS.2024.0110

Barth, C., & Koch, S. (2019). Critical success factors in ERP upgrade projects. *Industrial Management & Data Systems*, 119(3), 656-675. https://doi.org/10.1108/IMDS-01-2018-0016

Banmairuroy, W., Kritjaroen, T., & Homsombat, W. (2022). The effect of knowledge-oriented leadership and human resource development on sustainable competitive advantage through organizational innovation's component factors: Evidence from Thailand's new S-curve industries. *Asia Pacific Management Review*, 27(3), 200-209. https://doi.org/10.1016/j.apmrv.2021.09.001

Chen, S., Sotiriadis, M., & Shen, S. (2023). The influencing factors on service experiences in rural tourism: *An integrated approach. Tourism Management Perspectives,* 47, 101122. https://doi.org/10.1016/j.tmp.2023.101122

Chirakranont, R., & Sakdiyakorn, M. (2022). Conceptualizing meaningful tourism experiences: Case study of a small craft beer brewery in Thailand. *Journal of Destination Marketing & Management*, 23, 100691. https://doi.org/10.1016/j.jdmm.2022.100691

Damnet, A., Sangnak, D., & Poo-Udom, A. (2023). Thailand's Innovative Agritourism in the Post COVID-19 New Normal: A New Paradigm to Achieve Sustainable Development Goals. *Research in Globalization,* 100171. https://doi.org/10.1016/j.resglo.2023.100171

Derco, J., & Tometzová, D. (2023). Entry-level professional competencies and skills in tourism–The case of Slovakia. *Journal of Hospitality, Leisure, Sport & Tourism Education,* 32, 100437. https://doi.org/10.1016/j.jhlste.2023.100437

Fernández, J.A.S., Martínez, J.M.G., & Martín, J.M.M. (2022). An analysis of the competitiveness of the tourism industry in a context of economic recovery following the COVID19 pandemic. *Technological Forecasting and Social Change,* 174, 121301. https://doi.org/10.1016/j.techfore.2021.121301

Faraji, O., Ezadpour, M., Dastjerdi, A.R., & Dolatzarei, E. (2022). Conceptual structure of balanced scorecard research: A co-word analysis. *Evaluation and Program Planning,* 94, 102128. https://doi.org/10.1016/j.evalprogplan.2022.102128

Fatima, T., & Elbanna, S. (2020). Balanced scorecard in the hospitality and tourism industry: Past, present and future. *International Journal of hospitality management,* 91, 102656. https://doi.org/10.1016/j.ijhm.2020.102656

Iqbal, M., Yanuarni, E., Mawardi, M.K., & Astuti, E.S. (2023). Linking knowledge management to tourism business of SMEs in aftermath of disaster: Implications for open innovation. *Journal of Open Innovation: Technology, Market, and Complexity,* 9(2), 100054. https://doi.org/10.1016/j.joitmc.2023.100054

Ghanem, M., & Ghaley, M. (2024). Building a framework for a resilience-based public private partnership. *Journal of Destination Marketing & Management,* 31, 100849. https://doi.org/10.1016/j.jdmm.2023.100849

Issakov, Y., Imanbekova, B., Beisembinova, A., Moldgaliyeva, A., Abisheva, Z., Ussenov, N., & Dávid, L.D. (2023). Study of the effectiveness of tourism and local lore activities of geography teachers in Kazakhstan. *GeoJournal of Tourism and Geosites,* 48, 741-750. https://doi.org/10.30892/gtg.482spl08-1074

Khasawneh, N.A., Al Rousan, R., Bader, M., Mayyas, A.S., & Slehat, M. (2023). Perception of Local Community Towards Tourism Development: A Study on Rural Tourism Sites of Jordan. *GeoJournal of Tourism and Geosites,* 50(4), 1232-1239. https://doi.org /10.30892/gtg.50403-1121

Mota, B., Rua, O.L., & Neira-Gómez, I. (2023). New advances in science mapping and performance analysis of the open innovation and tourism relationship. *Journal of Open Innovation: Technology, Market, and Complexity,* 100154. https://doi.org/10.1016/j.joitmc.2023.100154

Maduekwe, C.C., & Kamala, P. (2016). Performance measurement by small and medium enterprises in Cape Metropolis, South Africa. *Problems and Perspectives in Management,* 14(2), 46-55. https://doi.org/ 10.21511/ppm.14(2).2016.05

Ploadaksorn, P., Angkananon, K., & Damrongsakmethee, T. (2023). Digital Marketing for Promoting Yoga Tourism on Kho Phangan, Thailand. *GeoJournal of Tourism and Geosites,* 50(4), 1400-1410. https://doi.org/10.30892/gtg.50421-1139

Pisit, P. (2023). The effect of e-service quality on the competitive advantages of tourism and hotel businesses in Thailand. *GeoJournal of Tourism and Geosites,* 47(2), 363-369. https://doi.org/10.30892/gtg.47201-1033

Ramukumba, T., Mmbengwa, V.M., Mwamayi, K.A., & Groenewald, J.A. (2012). Analysis of local economic development (LED) initiated partnership and support services for emerging tourism entrepreneurs in George municipality, Western Cape Province, RSA. *Tourism Management Perspectives,* 2, 7-12. https://doi.org/10.1016/j.tmp.2011.12.006

Sainaghi, R., Phillips, P., & Corti, V. (2013). Measuring hotel performance: Using a balanced scorecard perspectives' approach. *International Journal of Hospitality Management,* 34, 150-159. https://doi.org/10.1016/j.ijhm.2013.02.008

Su, H., Liang, Y., & Wen, T. (2023). Structural embeddedness, entrepreneurial behavior, and firm performance in the industry network of small tourism enterprises: The moderating role of relational embeddedness and leadership self-efficacy. *Journal of Hospitality and Tourism Management,* 56, 431-442. https://doi.org/10.1016/j.jhtm.2023.06.007

Waramontri, R., Charoenit, K., & Guzikova, L. (2022). Tourism Strategy responses to Covid-19 Pandemic: Case Study in Air Transport. *Transportation Research Procedia,* 63, 2500-2505. https://doi.org/10.59865/abacj.2023.26

Wan, Y.K.P., Li, X., Lau, V.M.C., & Dioko, L.D. (2022). Destination governance in times of crisis and the role of public-private partnerships in tourism recovery from COVID-19: The case of Macao. *Journal of Hospitality and Tourism Management,* 51, 218-228. https://doi.org/10.1016/j.jhtm.2022.03.012

Wong, E.P., Mistilis, N., & Dwyer, L. (2011). A model of Asean collaboration in tourism. *Annals of Tourism Research,* 38(3), 882-899. https://doi.org/10.1016/j.annals.2010.12.008

THE ROLE OF GEOLOGICAL RELATIONSHIP AND BRAND OF GEOPRODUCT ON REGIONAL DEVELOPMENT IN SAMOSIR ISLAND OF GEOPARK CALDERA TOBA WITH MEDIATING METHOD

Poppy Marulita HUTAGALUNG

Departement of Regional Planning, Postgraduate Program, Universitas Sumetera Utara,
Medan, Indonesia, e-mail: poppymarulita2020@gmail.com

Zulkifli NASUTION

Center of excellence for Sustainable Tourism, Universitas Sumatera Utara, Medan, Indonesia, e-mail: zulnasution@usu.ac.id

RUJIMAN

Departement of Economic Development, Faculty of Economics and Business, Universitas Sumatera Utara,
Medan, Indonesia, e-mail: rujiman@usu.ac.id

Nurlisa GINTING[*]

Department of Architecture, Faculty of Engineering, Universitas Sumatera Utara, Medan, Indonesia, e-mail: nurlisa@usu.ac.id

Abstract: Geoproducts have a specific philosophy, a geological relationship that visible and understandable through the utilization of geological and geomorphological features from diversity of geological, biological and cultural heritage then strengthened by geo-brand as added value of the product. As local products of certain region, geoproducts as an unique tourism product, through membership of Geopark Global Network (GGN), play role identifying the geopark itself and become market tools where geo-brands can take it. Samosir Island, as part of Toba Caldera Geopark, is the world's greatest Caldera with outstanding potential, became member of GGN in year of 2020. Data processing in this study used smartPLS SEM (Partial Least Square - Structural Equation Modeling) software.Various tourism products as geoproducts activity grow, whereas geoproducts are expected to follow the philosophy then becoming sector in development region of geopark, yet have no geo-brand. The geological relationships significantly impact the rise of tourism activities in the regional development of Toba Caldera. This is achieved by incorporating the products' geological, biological, and cultural factors. Using geological features must catch up to its potential as a world heritage site. Therefore, it is crucial to maintain these highly delicate elements through geotourism. A study was conducted on geoproduct actors from the supply side of tourism to see how the geological relationship is related to various products that can provide regional development in principle of sustainability and how geoproduct actors comprehend geo-brand on their products as an identity of worldwide product.

Key words: Regional Development, Geoproducts, Geological Connections and Geo-brand

* * * * * *

INTRODUCTION

Regional development is complex and comprehensive, involving stakeholders in a participatory manner at local, regional and global dimensions, but is often unbalanced and unevenly distributed towards welfare (Rustiadi, 2022; Amini et al., 2021; Brinkley and Hoch, 2021; Mukhopadhyay, 2019; Soja, 2009). Bruntland (1987) with Our Common Future and then the Prism of Sustainability by Eddins and Cottrell (2013); Spangenberg and Valentin (1999), in the economic, social, institutional, biogeophysical, geographic and geographic location dimensions into a multidimensional system in sustainable development (Ruggerio, 2021; Sirojuzilam, 2016). Until 2020, achieving the 2030 Agenda SDG's on 17 goals and 169 targets of sustainable development was obtained in the dimensions of society, economy, environment, means of implementation and cooperation in different countries (Huan et al., 2021). Tourism is the ninth highest growth sector in the world, the last five years provided one-fifth of new jobs (Alamineh et al., 2023; Ólafsdóttir and Tverijonaite, 2018). In the tourism trend, the fastest growing market segment in nature tourism focuses on geological features and geomorphological landscapes, heritage, aesthetics, culture, biodiversity conservation and the well-being of its inhabitants through appreciation and learning (Frey, 2021; Dowling and Newsome, 2018; https://www.nationalgeographic.com).

Geoproducts emerged along with tourism, as tourism products inspired by geological diversity as an attraction, as well as tools in local economic development; conservation of heritage sites strengthens the relationship between humans and the earth in scientific interpretation and diffusion (Rodrigues et al., 2021; Pásková et al., 2021; Chi, 2018; Yuhora et al., 2014; Compľová, 2010). Aspects of product development are essential and realized in order to meet the objectives of geoparks in

---

[*] Corresponding author

global networks in sustainable development (Yuliawati et al., 2022; 2021; Geert, 2019; Andrăşanu et al., 2018; Arjana et al., 2018; Carvalho and Rodrigues, 2017). In 2020, the Toba Caldera Geopark was accepted as a member of the GGN, where the Lake Toba Region has a natural phenomenon of world heritage with the class Outstanding Universal Value (Kemenparekraf, 2020; https://calderatobageopark.org/) but until now it has not had geo brand on geoproducts. It is interesting to examine how the development of products that utilize aspects of its development aspects as a unique product of the Samosir Island region in the Toba Caldera Geopark in regional development that prioritizes the concept of sustainability in the global market (Ginting et al., 2020a; Ginting et al., 2021).

Objectives:
1. To identify the relationship between geological factors and brand to Geoproduct variables
2. To identify the relationship of geological relationship variables to regional development through Geoproduct variables.

LITERATURE REVIEW

Geoparks as earth parks are an alternative to sustainable development where in achieving these goals, parks utilize residents' network activities, knowledge and labour (https://en.unesco.org/global-geoparks). Geotourism is a pioneer geopark that meets geological-based requirements where the management of nature tourism promotion focuses on geology and landscape, biodiversity conservation and public education as well as local economic development and community participation for tourist satisfaction (Dowling, 2018; Ginting et al., 2018; Farsani et al., 2011; Dowling and Newsome, 2014, 2010). Geoproducts are local products or the integration of traditional products with new concepts and interpretations in entrepreneurship. Inspired by the geodiversity of a region, as a symbol of heritage and geomorphology in a geopark (Rodrigues et al., 2021; Farsani et al., 2012a; Carvalho and Rodrigues, 2017). Geoproduct is a tourism product of activities, services, and benefits and is a tourist experience starting when leaving the place of origin to the tourist area until returning to the place of origin which consists of destination attractions, destination facilities, accessibility, image, and price as products in the tourism industry that visitors enjoy (Medlik and Middleton, 1989).

Geoproduct are tourism products that are different from others because they have a philosophy that is realized and implemented as aspects of its development aspects, namely (1) The Identity Axis as a Geological Relationship explains cultural identity in geological diversity between society and the natural environment where it lives; (2) Product Development Axis as an aspect of Economic Feasibility explains Geoproduct productivity in sustainable tourism; (3) Management Axis as a Partnership aspect explains cooperation in geoproduct productivity: geological relationships, economic feasibility and geopark partnerships embodied in tangible and intangible geoproducts (Rodrigues et al., 2021; Andrăşanu et al., 2018). Geoproducts refer to commercially viable services or goods that are derived from the geodiversity of a particular place. In the context of regional development, geoproducts can be used as a territorial marketing strategy (Carvalho and Rodrigues, 2017) where Geo-brand as a communication strategy in the promotion of products globally with elements of geodiversity and geoheritage as the focus as well as added value in the development of products that are environmentally friendly and origin (Yuliawati et al., 2022; Rodrigues et al., 2021; Arjana et al., 2018). Geoproduct development as a product of a geopark area utilizes Geo-brand as a marketing communication strategy. The Geo-brand must be visible and provide benefits in the added value that can bring geopark identity globally (Yuliawati, 2022; Rodrigues et al., 2021; Arjana, 2018; Carvalho and Rodrigues, 2017).

Geological Relationships, one aspect of product development, explains the utilization of the diversity of geological and geomorphological elements, soils and hydrological features as geoheritage (Gray, 2019; Brilha, 2018); abiotic components of geology, microorganisms, fauna, flora and elements of cultural heritage in the form of ideas, ideas, values, norms, activities as inspiration and raw materials either partly or wholly from the geopark area in a product in the form of tangible or intangible which is carried out sustainably (Yuliawati et al., 2022; Pásková et al., 2021; Rodrigues et al., 2021; Bieniek et al., 2019; Liliweri, 2019; Pásková et al., 2021; Andrăşanu et al., 2018; Koentjaraningrat, 2009).

Another aspect is Brand has tangible and intangible identity elements, including name, visual logo, and slogan/tagline (Musfar, 2021; Kotler and Keller, 2016; Kotler and Armstrong, 2013). Functions in forming a brand image, informing product specificity (Pan, 2019; Galí et al., 2017). Slogans, short phrases convey descriptive and persuasive information about the tourist destination brand with the function of enhancing the image and existence of the brand and brand differentiation in the minds of consumers, which is effectively obtained through the complexity, length, rhythm and jingle of the slogan plus the influence of the media (Galí et al., 2017; Kohli et al., 2013) on the promotional communication conducted (Musfar, 2021; Kotler and Keller, 2016; Dinar and Hasan, 2018). Pan's research (2019) results on tourism destination slogans, and company products explain that the average number of words in tourism slogans is 3.64 words, and as many as 4.47 other words for slogans of company products and services.

Geo-brands on products provide benefits such as the promotion of geological and geomorphological attractions, creating local economic opportunities through local product development and partnerships and entrepreneurship, attracting investors, standardizing tourism services involving local communities as well as participation and support in the conservation of regional tourism resources (Tosun et al., 2020; Shafiei et al., 2017; Stylidis et al., 2014). In the context of the geo-brand region, it provides identity and regional image of a geopark, increasing regional competitiveness through products by utilizing geological and geomorphological wealth that has international recognition and extraordinary visibility (Geert, 2019; Farsani et al., 2012b; Mckeever and Zouros, 2009). Branding a product on its packaging or tourism facilities has a whole and singular characteristic of the geopark concept (Rodrigues et al., 2021). As explained above, several hypotheses were formulated to obtain answers to research questions, namely (1) There is significant and positive effect of Geological Relationship on Geoproduct; (2) There is significant and positive effect of Geo-brand on Geoproduct; (3) There is significant

and positive effect of Geoproduct on Regional Development; (4) There is significant and positive effect of Geological Relationship on Regional Development; (5) There is significant and positive effect of Geo-Brand on Regional Development.

METHODOLOGY
Data Collection

The Study Area is located in Samosir Island, Samosir Regency, North Sumatra Province, part of the Toba Caldera Geopark with an area of approximately 1,130 Km2 (Figure 1). The population is geoproduct actors in the category of (1) Tourism Object/ Goods Actors, namely tourist attraction services, artisans, tour guides, and souvenir traders; (2) Accommodation Service Actors, namely homestay actors, hotel actors; (3) Food and Drinking Service Actors: café n restaurant, (4) Tourism Facilities and Infrastructure Actors (Rodrigues et al., 2021; Dryglas, 2014; Medlik and Middleton, 1989) and other Necessity Services such as hawkers and grocery stalls with a population of 1,126 actors through the Slovin formula (Noor, 2014) with an error rate of 5% obtained a sample of 295 respondents with and 27 measurable question items. Data processing in this study used PLS-SEM (Partial Least Square - Structural Equation Modeling) with software SmartPLS 4.0. PLS can explain the relationship between variables and the ability to perform analyses in one test.
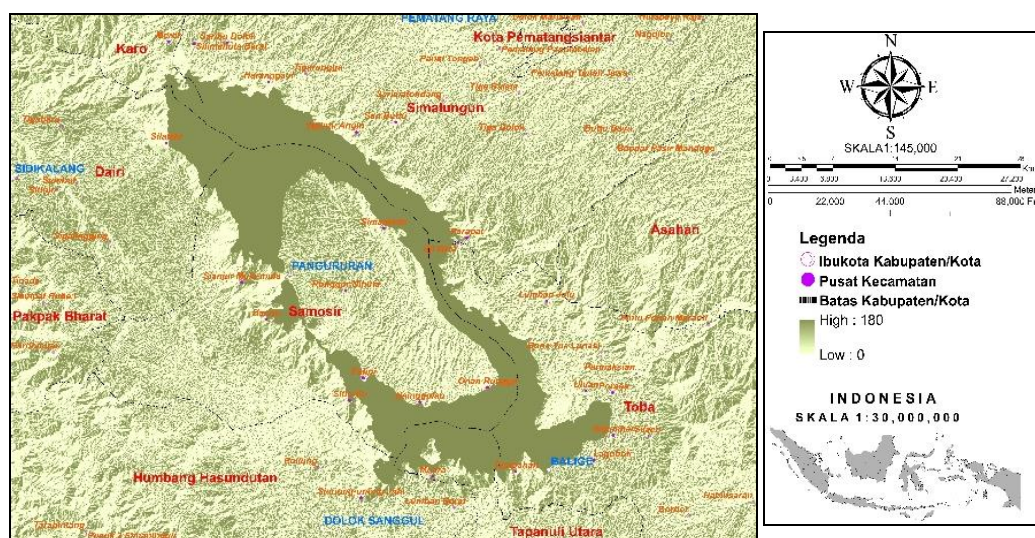

Figure 1. Toba Caldera Geopark (Source: Toba Caldera Geopark Management Agency, Master Plan Geopark Kaldera Toba, 2018)

DATA ANALYSIS

Based on the table below, it can be seen that all questionnaire items have met the convergent validity test standards, namely AVE above 0.5 and factor loading above 0.5, which means that all items are declared valid, and have met the composite reliability test standard which is more significant than 0.7 (Hair et al., 2017; Chin, 2010) which means that all items are declared reliable (Table 1).

Table 1. Indicator Loadings, Cross-Loadings and Reliability Measures (Source: Processed Data, 2022)

Construct	Indicator Item	Instrument Item	Outer Loading	Cronbach's alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	AVE
Brand	B1.1	Brand Meaning	0.620	0.758	0.783	0.837	0.511
	B2.1	Brand Usage	0.819				
	B2.2	Standard Brand	0.818				
	B3.2	Promotion Media	0.685				
	B3.3	Promotion Cost	0.599				
Geoproduct	G1.1	Visitor Interest	0.762	0.865	0.868	0.903	0.652
	G1.2	Product Quality	0.753				
	G2.2	Ease of Transportation	0.818				
	G2.3	Availability of Fas	0.890				
	G2.4	Feasibility Fas	0.807				
HG	HG1.1	Geological Utilization	0.806	0.718	0.779	0.834	0.627
	HG2.1	Flora, fauna Utilization	0.718				
	HG3.1	Cultural Utilization	0.846				
PW	PW1.1	Improved Development	0.868	0.927	0.929	0.948	0.821
	PW1.2	Tourism Improvement	0.908				
	PW1.3	Length of Visit	0.922				
	PW2.1	Community Education Improvement	0.925				

The Discriminant Validity test of the reflexive manifest indicator shows
(1) the cross-loading correlation value has a more excellent value with other construct variables (Hair et al., 2017);

(2) the Fornell-Larker Criterion value of each latent variable is greater than the correlation between other latent variables (Chin, 2010; Fornell and Larker (1981); and

 (3) the Heterotrait-Monotrait Ratio / HTMT value on each latent variable < 0.9 (Henseler et al., 2015).

The results of the Discriminant Validity analysis obtained that the Regional Development, Geoproducts, Geological Relationships, and Brand constructs have been met as in HTMT test obtained a value of less than 0.9, which means the discriminant validity value has been achieved (Table 2).

Table 2. Discriminant Validity Heterotrait Monotrait Ratio (HTMT) (Source: Processed Data, 2022)

Construct	B	G	HG	PW
B				
G	0.637			
HG	0.593	0.606		
PW	0.496	0.852	0.553	

Table 3. Analysis Discriminant Validity: Fornell Larcker Criterion (Source: Processed Data, 2022)

Construct	B	G	HG	PW
B	**0.715**			
G	0.530	**0.807**		
HG	0.438	0.505	**0.792**	
PW	0.441	0.765	0.490	**0.906**

The Fornell Larcker Criterion tests discriminant validity by comparing the square root of the AVE for each construct with the correlation value between constructs in the research model. Based on the test results, it can be seen that all variables have met the criteria where the value of the correlation line between diagonals has been reached, and the value is greater than the correlation between indicators in the variable, which means that discriminant validity has been achieved (Table 3). Testing the validity and reliability of the manifest outer model reflective indicator variable by looking at the results the Discriminant Validity, Internal Consistency and Convergent Validity tests, it was found that the manifest outer model reflective indicator variable was valid and reliable in measuring the construct variable (Figure 2).
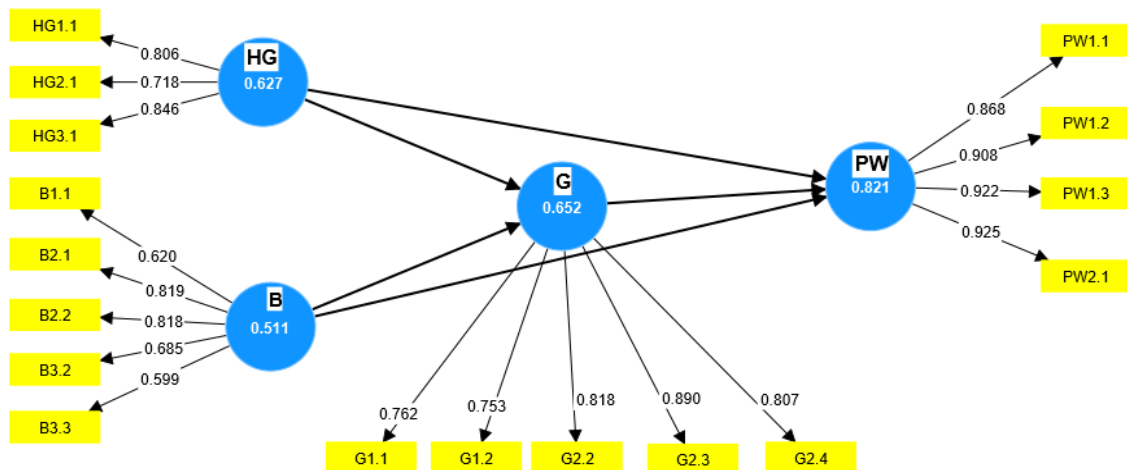

Figure 2. Outer Model Diagram of SEM PLS (Source: Processed Data, 2022)

The results of the SEM PLS bootstrapping output by looking at the t-value and p-value obtained results, namely H1: Geological Relationship to Geoproducts and H2: Brand to Geoproducts; H3: Geoproducts to Regional Development; H4: Geological Relationship to Regional Development and has a significant effect and has a positive direction.

Table 4. Significance Analysis and Hypothesis Decision (Note: $p \leq 0.05$ and 1 tail test) (Source: Processed Data, 2022)

Hypothesis	Path	Std Beta	Std Error	t value	p values	Bias	0.050	0.950	Decision
H1	HG → G	0.338	0.055	6.195	0.000	0.001	0.244	0.423	Accepted
H2	B →G	0.382	0.054	7.084	0.000	0.004	0.283	0.462	Accepted
H3	G → PW	0.689	0.051	13.479	0.000	-0.001	0.604	0.772	Accepted
H4	HG → PW	0.134	0.049	2.723	0.003	0.003	0.052	0.215	Accepted
H5	B → PW	0.017	0.054	0.309	0.379	0.004	-0.074	0.103	Not Accepted

Thus, the hypothesis is accepted. While H5: Brand on Regional Development has no significant effect and positive direction, Hypothesis H5 is rejected (Table 5). The results of SEM PLS bootstrapping (Zhao et al., 2010), indirect relationship between Geological Relationship to Regional Development mediated by Geoproduct with coefficient value of 0.233, between the Brand variable to Regional Development mediated by Geoproduct with coefficient value of 0.263 and both are indirect or full mediated (Table 5 and Figure 3).

Table 5. Indirect Path Analysis (Source: Processed Data, 2022)

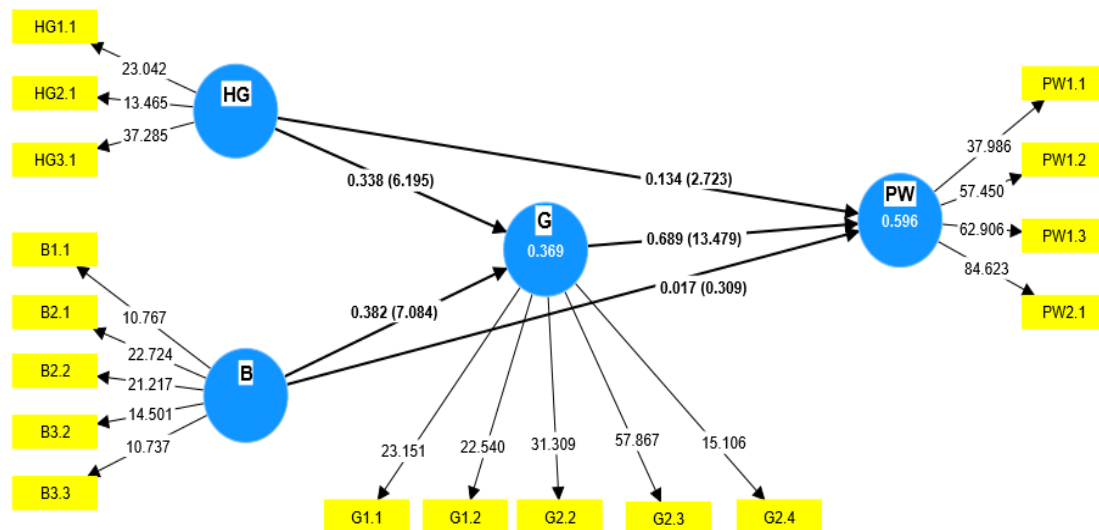| Path	Indirect Path	Std Beta	Std Error	t value	p values	Bias	0.050	0.950	Decision
Path 1	HG -> G -> PW	0.233	0.040	5.887	0.000	0.000	0.171	0.302	Full Mediated
Path 2	B -> G -> PW	0.263	0.041	6.419	0.000	0.002	0.197	0.332	Full Mediated

Figure 3. PLS-SEM Inner Model Diagram (Source: Processed Data, 2022)

DISCUSSION

Geological Relationships Effect on Geoproducts

The Geological Relations has a significant effect on the Geoproduct, as seen from the utilization of geological elements, biological and culture as inspiration and elements of forming geoproducts. As the respondent of Geoproduct Actors produce more than one product category at 51.5% and even those who produce three categories of goods, services/activities, and infrastructure at 18%. Individual Geoproduct Actors include artisans, bicycle rentals, and tour guides as well as other Geoproduct Actors have homestay inns Rumah Bolon (Figure 4A), souvenir shops and also as tour dancers of the Sigale - Gale Statue attraction. Utilizing cultural elements is more desirable because it provides more income than geological elements or biological. In contrast, due to high costs, geological elements still need to be widely utilized as products and still require more understanding in their management.
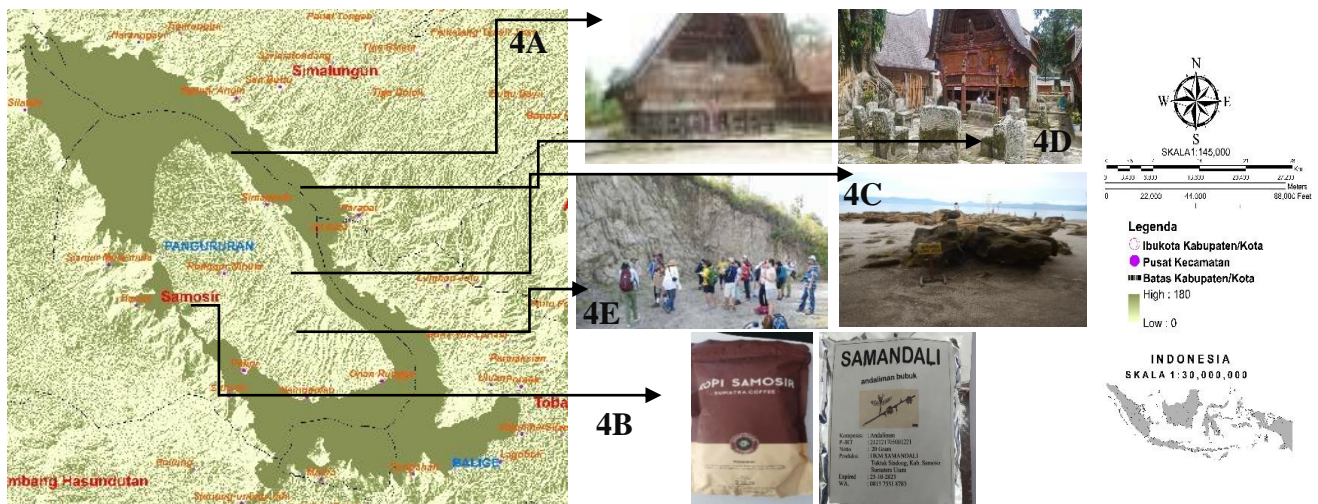

Figure 4. Geoproducts in Samosir Island of Geopark Caldera Toba (Source: Processed Data, 2022)

Brand Effect on Geoproducts

The Brand has a significant effect on the Geoproduct which means that the increase in Brand, as seen from meaning, elements, standard used, promotion media and cost will affect Geoproduct activities. The meaning of the geo-Brand is mostly inspired from cultural value, geological, biological which explains the identity and uniqueness of Lake Toba Region products. Brand elements seen from name, logo and tagline on geoproducts related to geological elements, biological and culture element with illustrations Lake Toba, coffee plants, andaliman, tradisional script (Figure 4B). Various Geoproducts have individual brands and additional brands depending on sponsorship or donations of government-assisted partnerships from the production generally placed on the back of the packaging. On geoproducts category of service/attraction, are using brand of Management Agency Institution, UNESCO and partnership funding institution.

Promotion are important and routinely carried out in budget needed through digital by Geoproduct Actors as marketing tools, spreads information, influences, persuades persuasively the visitors (Musfar, 2021; Kotler and Keller, 2016; Tjiptono, 2008). Furthermore, promotion substance related to Toba Caldera Geopark, was not much found on the product nor its packaging or even on the geoproduct facilities but more about individual tourism products promotions. This condition was also explained by the Samosir District Cooperatives and UMKM Service and Grocery Stores.

However, there is no Geo-brand in represents the Toba Caldera Geopark on various geoproducts that carries the identity, character, and value of the geopark (Yuliawati, 2022; Rodrigues et al., 2021; Arjana, 2018; Farsani et al., 2012b; Carvalho and Rodrigues, 2017). No specific brand on geoproduct as identity of geopark in which Management Agency/North Sumatra Provincial Tourism Office stated about it. Realizing the economic added value, Geopark Actors are willing and strive to adjust product quality to these standards to be worthy of using the Geo-brand.

Geoproducts Effect on Regional Development

Geoproduct variable has a significant effect on the Regional Development as seen from Product Quality and Product Service Level. As in the Province Regional Development Planning 2019-2024, tourism sector development imply sustainable tourism that enhanced benefit on local communities and attract tourists in area of Geopark Caldera Toba (Rusata et al., 2022; Kemenparekraf, 2020).
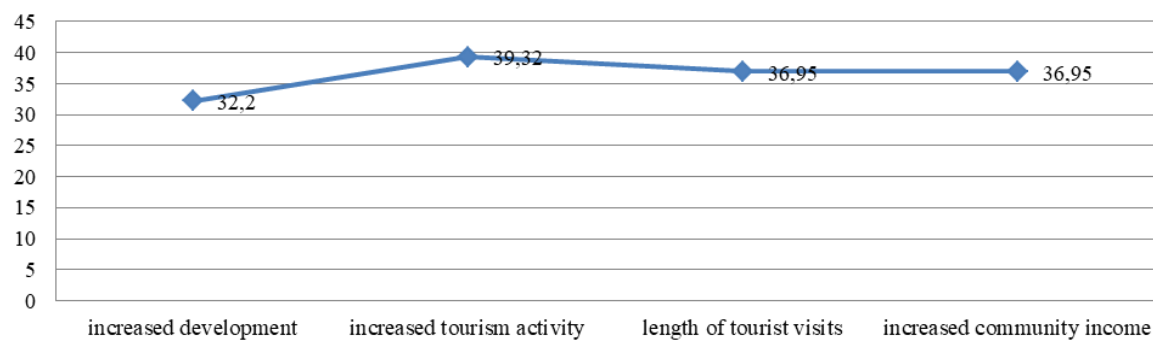

Figure 5. Regional development on Caldera Toba (Source: Authors, 2023)

After being assigned of the Geopark Caldera Toba, more infrastructure facilities, goods, and services available, and community activities have increased both in terms of, type, intensity, services of tourism sector build by the government and private sector. Increasing of tourism activities 49.49%, the length of stay 48.74% as well as increasing income 48.14% mentioned by Geoproducts Actors on Samosir Island. Geopark, a concept of regional development through tourism, increases socioeconomic activities through sustainable development by attracting visitors, income local communities and conservation (Sirojuzilam, 2016; Farsani et al., 2011; Frey et al., 2006). However, some of Geoproduct actors has never even heard of geoproducts concept where they are direct actors in these activities.

Scenery of Lake Toba and cultural value on Batu Hoda Beach (Figure 4C), mostly inspired creativity and develop various geoproducts on 91.18% stated by Geoproduct Actors as seen from the growth and emergence of 44.44% new business of respondent activities within 2-5 years from establishment of the Geopark Caldera Toba began on 2020 such as transportation, accommodation, places to eat and drink, shops, entertainment, activity facilities, and hotel services to meet the needs of tourist satisfaction (Pitana, 2020; Dryglas, 2012, 2014; Hal, 2011).

Geological Relations Effect on Regional Development

Geological Relations has a significant effect on the tourism activity and has improved Regional Development from the utilization of geological, biological and cultural elements as inspiration and forming elements of geoproducts as well as increasing the local community income in the area of geopark (Yuliawati et al., 2021; Rodrigues et al., 2021; Andrășanu et al., 2018; Farsani et al., 2012b; Compľová, 2010).

The complex geological diversity of geological elements in Samosir Island makes it an ideal international geoproducts as tourism objects Stone Chair of King Siallagan (Figure 4D). Integration of geological, biological and cultural elements in the productivity of geoproducts is needed to provide conservation balance as well as preparing local human resources as the main actors on Figure 4E (Muzambiq et al., 2021).

Brand Effect on Regional Development

The Brand doesn't effect Regional Development as in the Samosir Island area, no destination brand but individual brand equipped with a companion brand from various institutional assistance and sponsorship on products, which are expressed in elements in name, logo illustrations and taglines. Promotion run with little substance information about Geopark Caldera Toba on product packaging, location of services and Geoproduct activity took place.

The Toba Caldera Geopark, which has only been established in 2020. The absente of geo-brand explains that there is not yet a strong brand as a promotional tool for geoproducts, therefore various promotional activities and events to promote geoproducts and geoparks are not optimal on a regional scale let alone on a global scale. Likewise, efforts to geo brand have not been carried out optimally and adequately by the Geopark Management Agency/Provincial Tourism Office and Region Tourism Office;

CONCLUSION

Geological Relationships affect thus will increase Geoproducts activities. Using cultural elements in products is more desirable and provide more income than biological and geological elements. The utilization of geological elements needs more attention because it requires more handling to become a tourism product. Geological Relationships affects

and increase tourism activities on Regional Development inspired and utilized geological, biological and culture elements inclusively on Toba Caldera geoproducts. Utilization of geological elements is less compared to its world heritage class potential thus, which is very fragile need to be conserved through geotourism.

The Brand effect and increase on Geoproduct activities in where affect Geoproduct but as individual brand which seen on illustrations of Lake Toba, coffee plants, andaliman, traditional script on name, logo and tagline and brand of Institution as well as partnership funding institution but less information related to geopark substance. Therefor less impact on Regional Development as an ambassador of Toba Caldera Geopark to identity and promote tool on a regional scale to global scale. As a tourism product with a specific philosophy, one of which is Geological Relations (Rodrigues et al., 2021; Andrășanu et al., 2018), focusing on landscapes and geo-heritage sites where innovation products as strategy of new tourist attraction. (Ginting et al., 2018; Chi et al., 2018) and geobrands provide added value as an identity and promotional tool on a regional to global scale (Yuliawati et al., 2022; Rodrigues et al., 2021; Arjana et al., 2018).

Through tourism products as Geoproducts, increasing Regional Development activity in balanced, providing opportunities for the local economy as well as conservation of geological, biological and cultural diversity in sustainable (Rustiadi, 2022; Ruggerio, 2021; Amini et al., 2021; Brinkley and Hoch, 2021; Mukhopadhyay, 2019; Sirojuzilam, 2016).

REFRENCES

Alamineh, G.A., Hussein, J.W., Endaweke, Y., & Taddesse, B. (2023). The local communities' perceptions on the social impact of tourism and its implication for sustainable development in Amhara regional state. *Heliyon,* 9(6), e17088. https://doi.org/10. 1016/j.heliyon.2023.e17088

Andrășanu, Alexandru & Ciobanu, C. (2018). *Danube Geo Tour, Valorisation of geo-heritage for sustainability and innovative tourism development of Danube Geoparks.* Pilot geo- culture and geo- outdoor product tested. University of Bucharest.

Amini, H., Jabalameli, M.S., & Ramesht, M.H. (2021). Development of regional foresight studies between 2000 and 2019: an overview and co-citation analysis. *European Journal of Futures Research*, 9(1), 1. https://doi.org/10.1186/s40309-021- 00170-7

Arjana, I.W., Basi., Ernawati, N.M., & Astawa. I.K. (2018). Geotourism products industry element: A community approach The 2nd International Joint Conference on Science and Technology (IJCST) 2017 Series: *Journal of Physics:* Conf. Series 953gionti.

Badan Pengelola Geopark Kaldera Toba (2018). Masterplan Geopark Kaldera Toba 2018 – 2030. Provinsi Sumatera Utara.

Bieniek, B., Kordysh, A., Mirosławski, M., Nowak, K., Sękowski, K., & Sierka, E. (2019). Geoproduct potential analysis based on the example of the GEOsfera Ecological and Geological Education Center in Jaworzno. *Geotourism/Geoturystyka*, 3–4 (58–59), 28-28.

Brilha, J. (2018). *Geoheritage and geoparks.* In Geoheritage: Assessment, Protection, and Management. https://doi.org/10.1016/B978-0-12-809531-7.00018-6

Brinkley, C., & Hoch, C. (2021). The Ebb and flow of planning specializations. *Journal of Planning Education and Research,* 41(1), 79–93. https://doi.org/10.1177/ 0739456x18774119

Brundtland, G.H. (1987). Our Common Future World Commission on Environment and Developement.

Carvalho, C., & Rodrigues, J. (2017). Development of geoproducts as successful approaches to strengthen the identity. *Euro Geop Magaz*, 14:43.

Chi, H.T.P., Hai, H.Q., & Nam, N.T.Q. (2018, June). *Proposing Geo-Products for Ly Son Geopark, Vietnam.* In Proceedings, 2(10), 568, MDPI. https://doi.org/10.3390/iecg_2018-05343

Chin, W.W. (2010). *How to write up and report PLS analyses.* in Esposito Vinzi, V., Chin, W.W., Henseler, J., et al. (Eds), Handbook of Partial Least Squares: Concepts, Methods and Applications (Springer Handbooks of Computational Statistics Series), Springer, Heidelberg, Dordrecht, London, New York, NY, II, 655-690.

Compľová, M. (2010). The identification of geoproducts in the village of Jakubany as a basis for geotourism development. *Acta Geoturistica, 1(1).*

Dowling, R.K. (2010). Geotourism's Global Growth. *Geoheritage, 3(1), 1–13.* https://doi.org/10.1007/s12371-010-0024-7

Dowling, R.K. (2014). Global Geotourism – An Emerging Form of Sustainable Tourism. *Czech Journal of Tourism,* 2(2), 59–79. https://doi.org/10.2478/cjot-2013-0004

Dowling, R.K., & Newsome, D. (2018). *Geotourism: definition, characteristics and international perspectives.* in Dowling, R.K. and Newsome, D. (Eds), Handbook of Geotourism, Edward Elgar, Cheltenham.

Dryglas, D. (2012). Spa and Wellness Tourism as a Spatially Determined Product of Health Resorts in Poland. *Current Issues of Tourism Research,* 2: 30–3.

Dryglas, D. (2014). Construction Of The Geotourism Product Structure On The Example Of Poland. In: 14th GeoConferences on Ecology, Economics, Education and Legislation International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM, 2(5). https://doi.org/10.5593/SGEM2014/B52/S20.021

Eddins, E., & Cottrell, S. (2013). Sustainable Development and Sustainable Livelihoods Frameworks: Theory and Practice in Volunteer Tourism. Sustainability Policy and Practice. The International Journal of Sustainability Policy and Practice, 9(4). Colorado State University https://www.researchgate.net/publication/261146123 \

Dinar, M., & Hasan, M. (2018). Pengantar Ekonomi: Teori dan Aplikasi. Pustaka Taman Ilmu. Makassar.

Farsani, N.T., Coelho, C., & Costa, C. (2011). Geotourism and geoparks as novel strategies for socio-economic development in rural areas. International Journal of Tourism Research, 13(1). https://doi.org/10.1002/jtr.800

Farsani, N.T., Coelho, C., & Costa, C. (2012a). Geotourism and Geoparks as Gateways to Socio-cultural Sustainability in Qeshm Rural Areas, Iran. Asia Pacific Journal of Tourism Research, 17(1). https://doi.org/10.1080/10941665.2011.610145

Farsani, T., Coelho, C., Costa, C., & Carvalho, C. (2012b). Geoparks and Geotourism. New approaches to sustainability for the 21st century. BrownWalker Press. Boca Raton.

Frey, M.L. (2021). Geotourism - Examining Tools for Sustainable Development. Geosciences 2021, 11, 30. https://doi.org/10.3390/geosciences11010030

Frey, M., Schäefer, K., & Büchel, G. (2006). Geoparks - A regional, European and global policy. Geotourism, Dowling, R., Newsome, D., Eds.; Elsevier, Ltd.: Oxford, UK

Fornell, C.G., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39-50.

Geert, F.V. (2019). The uses and challenges of the geopark label as a place branding tool. The case of the Geopark of the Tremp Basin-Montsec (Catalonia-Spain). International Journal of Geoheritage and Parks. 7 (2019) 72–8. Beijing Normal University https://doi.org/10.1016/j.ijgeop.2019.03.005 2577-4441/

Ginting, N., & Sasmita, A. (2018). Developing tourism facilities based on geotourism in Silalahi Village, Geopark Toba Caldera. IOP Conference Series: Earth and Environmental Science, 126(1). https://doi.org/10.1088/1755-1315/126/1/012163

Ginting, N., Marpaung, B.O.Y., Sinaga, F.A., Narisa, N., & Siregar, N. (2020a). Geotourism and stakeholders: An approach to enhance geoconservation. IOP Conference Series: Earth and Environmental Science, 452(1). https://doi.org/10.1088/1755-1315/452/1/012156

Ginting, N., Vinky Rahman, N., Nasution, A.D., & Niswa Dewi, A. (2020b). Land-use Planning for Geotourism Development in Bakara Caldera Toba, Indonesia. IOP Conference Series: Earth and Environmental Science, 452(1). https://doi.org/10.1088/1755-1315/452/1/012135

Ginting, N., Rahman, N., Vinky., Nasution, D., & Dewi, A. (2021). Geotourism Development Through the Public Facilities in Geotrail Bakkara, Toba Caldera Geopark, Geojurnal of Tourism and Geosites, 37(3). https://doi.org/10.30892/GTG.37324-726

Ginting, P., & Situmorang, H.S. (2008). Filsafat Ilmu dan Metode Riset (Edisi Pert). USU Press.

Galí, N., Camprubí, R., & Donaire, J.A. (2017). Analysing tourism slogans in top tourism destinations. Journal of Destination Marketing and Management, 6(3), 243–251. https://doi.org/10.1016/j.jdmm.2016.04.004

Gray, M. (2019). Geodiversity, geoheritage and geoconservation for society. International Journal of Geoheritage and Parks, 7(4), 226–236. https://doi.org/10.1016/j.ijgeop.2019.11.001

Hair, J.F., Hult, G.T.M., Ringle, C.M., & Sarstedt, M. (2017). A primer on partial least squares structural equation modeling (2nd ed.). Sage, Thousand Oakes, CA.

Hair, J., Hult, G.T.M., Ringle, C.M., Sarstedt, M., Danks, N., & Ray, S. (2021). Partial Least Squares Structural Equation Modeling (PLS-SEM). Springer, Using R. A work book. (1 st).

Hall, C.M. (2011). Policy learning and policy failure in sustainable tourism governance: From first- and second-order to third-order change? Journal of Sustainable Tourism Vol 19(4–5). https://doi.org/10.18052/www.scipress.com/SGG.2.44

Huan, Y., Liang, T., Li, H., & Zhang, C. (2021). A systematic method for assessing progress of achieving sustainable development goals: A case study of 15 countries. Science of the Total Environment, 752, 141875. https://doi.org/10.1016/j.scitotenv.2020.141875

Henseler, J., Ringle, C.M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, Vol. 43 No. 1, 115-135.

Kemenparekraf. (2020). Rencana Strategis Kementerian Pariwisata dan Ekonomi Kreatif/Baparekraf 2020-2024.

Koentjaraningrat, (2009). Kebudayaan, Mentalitas dan Pembangunan. Gramedia Pustaka Utama, Jakarta.

Kohli, C., Thomas, S., & Suri, R. (2013). Are you in good hands? Slogans recall: What really matters. Journal of Advertising Research 53.1, 31-42. https://doi.org/10.2501/JAR-53-1-031-042

Kotler, P., & Amstrong, G. (2013). Prinsip-Prinsip Pemasaran (12th ed.). Erlangga.

Kotler, P., & Keller, K.L. (2016). Manajemen Pemasaran (Ed 13 Tran). Penerbit Erlangga.

Liliweri, A. (2019). Pengantar Studi Kebudayaan. Penerbit Nusamedia, Bandung.

McKeever, P.J., & Zouros, N. (2005). Geoparks: Celebrating earth heritage, sustaining local communities. Episodes, 28(4), 274–278. https://doi.org/10.18814/epiiugs/2005/v28i4/006

Medlik, S., & Middleton, V.T.C. (1989). Product Formulation in Tourism. In Tourism and Marketing. 13, Berne: AIEST.

Mukhopadhyay, S. (2019). Regional Development Models. In International Encyclopedia of Human Geography, Second Edition (Second Edition, Vol. 9). Elsevier. https://doi.org/10.1016/B978-0-08-102295-5.10119-2

Musfar, T.F. (2021). Manajemen Produk dan Merek. Media Sains Indonesia.

Muzambiq, S., Walid, H., Ganie, T.H., & Hermawan, H. (2021). The Importance of Public Education and Interpretation in the Conservation of Toba Caldera. Geoheritage, 13(1). https://doi.org/10.1007/s12371-020-00523-x

Noor, J. (2014). Metodologi Penelitian : Skripsi, Tesis, Disertasi dan Karya Ilmiah (Ed 4). Prenadamedia Group.

Ólafsdóttir, R., & Tverijonaite, E. (2018). Geotourism: A systematic literature review. In Geosciences, Switzerland, 8(7). https://doi.org/10.3390/geosciences8070234

Pan, S. (2019). Tourism slogans – Towards a conceptual framework. Tourism Management, 72, 180–191. https://doi.org/10.1016/j.tourman.2018.11.023

Pásková, J., Zelenka, T. Ogasawara, B., Zavala, I., Astete. (2021). The ABC Concept—Value Added to the Earth Heritage Interpretation? Geoheritage Journal, 13, 1-25. https://doi.org/10.1007/s12371-021-00558-8

Pitana, I. G. (2020). Kajian Antara Quality dan Quantity dalam Pariwisata. https://www.balipost.com/news/2020/02/12/104081/Kajian-antara-Quality-dan-Quantity...html

Rodrigues, J., Neto de Carvalho, C., Ramos, M., Ramos, R., Vinagre, A., & Vinagre, H. (2021). Geoproducts – Innovative development strategies in UNESCO Geoparks: Concept, implementation methodology, and case studies from Naturtejo Global Geopark, Portugal. *International Journal of Geoheritage and Parks*, 9(1), 108–128. https://doi.org/10.1016/j.ijgeop.2020.12.003

Ruggerio, C.A. (2021). Sustainability and sustainable development: A review of principles and definitions. *Science of the Total Environment*, 786, 147481. https://doi.org/10.1016/j.scitotenv.2021.147481

Rusata, T., & Prihatini, R. (2022). *Pembangunan Inklusif Dalam Pengembangan Pariwisata Berkualitas: Kasus Desa Wisata Pulisan, Likupang Sulawesi*. Prosiding Seminar Pesona Wisata. Universitas Pembangunan Nasional.

Rustiadi, E., Saefulhakim, S., & Panuju, D.P. (2022). *Perencanaan dan Pengembangan Wilayah* (Ke-5). Yayasan Pustaka Obor Jakarta. Indonesia.

Shafiei, Z., Farsani, N.T., & Abdollahpour, M. (2017). The benefit of geo-branding in a rural geotourism destination: Isfahan, Iran. *GeoJournal of Tourism and Geosites*, 19(1).

Sirojuzilam. (2016). P*embangunan Ekonomi Regional* (Edisi ke 2). USU Press.

Soja, E.W. (2009). Regional Planning and Development Theories. *International Encyclopedia of Human Geography*, 259–270. https://doi.org/10.1016/B978-008044910-4.00877-4

Stylidis, D., Biran, A., Sit, J., & Szivas, E.M. (2014). Residents' support for tourism development: The role of residents' place image and perceived tourism impacts. *Tourism Management*, 45, 260–274.

Tosun, C., Dedeoğlu, B.B., Çalışkan, C., & Karakuş, Y. (2021). Role of place image in support for tourism development: The mediating role of multi-dimensional impacts. *International Journal of Tourism Research,* 23(3), 268–286. https://doi.org/10.1002/jtr.2405

Spangenberg, J.H. (2002). Environmental space and the prism of sustainability: frameworks for indicators measuring sustainable development. *Ecol. Indic.* 2, 295–309. https://doi.org/10.1016/S1470-160X(02)00065-1

Spangenberg, J.H., & Valentin, A. (1999). Indicators for sustainable communities. 2007. http://www.foeeurope.org/sustainability/ sustain/t-content-prism.htm

Tjiptono, F. (2012). *Service Management Mewujudkan Layanan Prima*. Yogyakarta, CV.

UNESCO. 2006. Guidelines and Criteria for National Geoparks seeking UNESCO's assistance to join the Global Geoparks Network (GGN), New York.

UNESCO (2019a). Evaluation of the International Geoscience and Geoparks Programme. IOS/EVS/PI/182, Paris, UNESCO.

Yuhora, K., Atsuko, N., Hiroyuki, K., Kuniyasuet, M. (2014). The role of geographical perspective in the development of geoparks. *Ejournal GEO,* 9(1), 13–25. https://doi.org/10.4157/ejgeo.9.13

Yuliawati, A K., Rofaida, R., Hadian, M S D., Gautama, B P., Aryanti, A.N. (2022). Promoting Geo-Tourism at UNESCO Global Geoproduct Belitong Through Geo-Product Development In Small Medium Enterprise. *International Journal of Communication and Society*, 4(1). https://doi.org/10.31763/ijcs.v4i1.424

Yuliawati, A K., Rofaida, R., Hadian, M S D., Gautama, B P., Aryanti, A.N. (2021). Kebangkitan UMKM melalui inovasi geoproduk berbasis geodiversity dan kearifan lokal (Ed 1). Penerbit Andi.

Zhao, X., Lynch, J.G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37(2), 197–206. https://doi.org/10.1086/651257

https://calderatobageopark.org/

https://en.unesco.org/global-geoparks

https://www.nationalgeographic.com/maps/article/geotourism-principles

RESEARCH ON TOURIST SATISFACTION AND BEHAVIORAL INTENTION IN ECOLOGICAL HEALTH TOURISM ACTIVITIES IN BAMA, GUANGXI BASED ON STRUCTURAL EQUATION MODEL

Hongbo GE
Faculty of Humanities and Social Sciences, Macao Polytechnic University, Macao, China;
Shanghai Jian Qiao University, Shanghai, China, e-mail: P2315345@mpu.edu.mo

Xiaolong CHEN[*]
Faculty of Humanities and Social Sciences, Macao Polytechnic University, Macao, China, e-mail: osakacool@hait.edu.cn

Abstract: This study endeavors to delve into the intricacies of tourist contentment and proclivities in the realm of ecological health tourism activities within Bama, Guangxi. An exploration of the intricate structural relationships is undertaken, unraveling the quintet of variables encompassing tourists' engagement in Bama's ecological health tourism - namely, the effects of activities, the experiential facet of activities, the pecuniary dimension of activities, coupled with tourist satisfaction and behavioral intent. Employing the methodological framework of constructing a structural equation model, this study leverages IBM SPSS 23.0 software to execute correlation analyses across various variables, including demographic information statistics, reliability and validity metrics. Survey research orbits around the quintet of variables. The findings illuminate that the experiential tapestry woven by tourists partaking in ecological health tourism activities exerts a conspicuously affirmative influence on both their satisfaction and behavioral intentions. Conversely, the financial investment made by tourists in ecological health tourism activities manifests a counteractive impact on their satisfaction and behavioral intentions. Evidently, heightened tourist activity experiences and diminished costs conduce to the facilitation of tourists' aspirations for individualistic tourism activities, thereby enhancing travel satisfaction and behavioral intent. Nevertheless, the potency of tourists' activity effects on tourist satisfaction remains suboptimal. Consequently, it is proffered that the propagation of health care paradigms be fortified, coupled with the augmentation of activity experience design. Further, the optimization of cost structures and the enhancement of resource utilization efficiency are recommended, alongside ameliorating activity effects and steering behavioral intent. This comprehensive approach is anticipated to immerse tourists more profoundly into the local ethos of longevity culture, thereby fostering the robust and sustainable evolution of longevity tourism in Bama.

Key words: Ecological health tourism; Tourist satisfaction; Activity experience; Behavioral intention

* * * * * *

INTRODUCTION

As the worldwide population elegantly advances, harmonizing with the rapid rhythm of life and escalating professional requisites, there arises an augmented inclination toward a manner of existence that is not only conducive to well-being but also infused with simplicity and felicity. This burgeoning desire has, in turn, precipitated the ascent of wellness tourism, thereby manifesting itself as an avant-garde trajectory in the unfolding narrative of contemporary and prospective tourism development (Michael et al., 2022; Wang et al., 2023).

The burgeoning trend of aging in China is progressively manifesting itself in the demographic landscape. Insights gleaned from the seventh national census reveal a cohort of individuals aged 60 and above, numbering 264.02 million, constituting a substantial 18.7% of the populace. The authoritative declaration encapsulated in the report of the 20th National Congress of the Communist Party of China eloquently articulates a determination to proactively engage with the imperatives of a burgeoning population maturity. It explicitly advocates for the strategic implementation of measures tailored to the burgeoning demographic of the elderly, with a particular emphasis on the cultivation and enhancement of both elder care and the burgeoning geriatric care industry. Amidst the proliferation of environmental pollution, demographic aging, suboptimal health, and sundry other concerns, China's focus on the realm of health tourism steadfastly ascends (Bai and Lei, 2020; Fang et al., 2020). Generally speaking, China's health tourism market has begun to take shape and has now become an important health tourism consumer market in the Asia-Pacific region.

However, compared with the relatively mature health tourism market abroad, the gap still exists.

Health care and recuperation have become a trend in elderly care in today's era and a policy choice to explore healthy elderly care and expand new tourism markets (Majeed and Gon Kim, 2023; Liao et al., 2023). Through various means such as nutritious diet, cultivating the mind and character, maintaining beauty and keeping fit, people can achieve a natural and harmonious state both physically and mentally. Academic research on wellness tourism originated in

---

[*] Corresponding author

developed countries in Europe and the United States. Different scholars have explored issues related to wellness tourism from different perspectives. Its theoretical basis mainly covers modern health science, welfare economics, tourism sociology, and population geography and other subject knowledge. The research content mainly focuses on the conceptual connotation of health and wellness tourism (Lyulicheva et al., 2023), the health and wellness functions of health and wellness tourism (Sthapit et al., 2023), the dynamic mechanism of health and wellness tourism (Bočkus et al., 2023), the innovative development of health and wellness tourism, and the classification and evaluation of health and wellness tourism resources (Phuthong et al., 2023), spatial flow characteristics of health and wellness tourists (Zhou et al., 2023; Perschke et al., 2023) and other aspects. In aggregate, the extant body of scholarly inquiry pertaining to wellness tourism is notably copious. However, the facet examining tourist satisfaction through the lens of quantitative research remains comparatively deficient and warrants a more robust augmentation.

Bama has earned the distinguished epithets of the "Crucible of Global Longevity" and "Paragon of Longevity in China." Within its environs, the ambient air is enriched with a remarkable concentration of negative oxygen ions, ranging from 20,000 to 50,000 per cubic centimeter at its zenith. The county maintains an average density exceeding 2,000 negative oxygen ions per cubic centimeter, fostering an environment unparalleled in its salubrious attributes. Bama makes full use of the advantages of being the "Land of Longevity" to vigorously develop the health care and elderly care industries (Zhang et al., 2023). According to the design ideas of the "Guangxi Bama Panyang River Basin Health Care, Longevity and Health Industry Development Plan (2012-2020)" issued by the autonomous region government, efforts are made to develop eight series of health care industries. Among these, entities that amalgamate health care and geriatric assistance encompass the sector of health care and elderly care services, as well as the manufacture of products pertinent to health care and elderly care, among other components (Hong et al., 2023; Tan and Zhou, 2022).

A spectrum of ecological health tourism endeavors has beguiled a considerable cadre of enthusiasts. The sentiments and contentment undergone by participants in these pursuits exert a discernible influence on the evaluation of the success of such tourism engagements. Moreover, these factors intricately contribute to the formulation of the behavioral intentions harbored by tourists, delineating their proclivity to revisit in the future. By methodically conducting surveys and research that illuminate the intricate interplay between the foundational sentiments of tourists, their holistic contentment, and the resultant behavioral intentions arising from their participation in tourism activities, we intricately scrutinize and comprehend the evolutionary trajectory of ecological health tourism pursuits in Bama, Guangxi. Subsequently, we proffer insightful recommendations aimed at shaping the future development of ecological health tourism endeavors in this locale.

THEORETICAL BASIS AND RESEARCH HYPOTHESES
1. Tourist activity experience
The experiential assessment of tourists' activities constitutes a comprehensive evaluation of their engagement. It embodies the immediate sensory perception of the costs incurred and benefits derived by tourists during their participation in said activities (Rachao et al., 2020). In other words, tourists' basic feelings about tourist activities are formed during the process of comparing gains and losses based on personal senses and experiences during participating in the activities. In this study, tourists' feelings about activities are composed of three dimensions: activity effect, activity experience and activity cost. Concurrently, tourist satisfaction is utilized as a mediating variable to meticulously examine the intricate interconnection among tourists' experiential sentiments, their levels of contentment, and the ensuing behavioral intentions manifested by the tourists.

2. Tourist satisfaction
Tourist satisfaction serves as an evaluative gauge, encompassing the degree of contentment experienced by tourists with services, amenities, and activities throughout the entirety of their travel or tourism sojourn (Jeong and Kim, 2020; Biswas et al., 2021). It mirrors the holistic impression and qualitative essence of tourists regarding a destination, tourism product, or service. The caliber of tourist satisfaction invariably mirrors the comprehensive efficacy of the tourism industry and exerts an influence on the destination's standing and recurrent visitation rates. Hence, this investigation delves into the analysis of tourist satisfaction, grounded in fundamental management concepts.

From an individual perspective during the implementation of tourism behavior, if tourists' actual tourism "sense of gain" is higher than their expectations for the tourism destination, then tourists' satisfaction is positive, that is, they are satisfied (Jia et al., 2022; Peng et al., 2023). Tourist (customer) satisfaction refers to the result of comparing the cost paid by tourists (customers) for the purchased service or product itself with the benefits obtained from enjoying the service or using the product (Hjalager and Flagestad, 2012; Huang et al., 2022). Tourist satisfaction is the degree to which tourists' actual experience balances their expectations before the implementation of the tourism behavior and what they get after the completion of the tourism behavior during the implementation of the tourism behavior. Tourist satisfaction refers to the degree of pleasure after being satisfied during the travel process. The "expectations" before travel are not included in the study, but it is the difference between the perceived effect and the expected effect (Zhong et al., 2022).

Derived from the foregoing research, it is discernible that tourist satisfaction predominantly gravitates toward the idiosyncratic sentiments forged through the juxtaposition of tourists' pre-travel expectations for the destination and their elemental perceptions subsequent to the sojourn. This phenomenon encapsulates a profound psychological odyssey. Derived from this inquiry, tourist satisfaction embodies a psychological state of contentment or disillusionment cultivated by tourists subsequent to their immersive encounters with ecological health tourism activities. It is plausible to posit that a discernible correlation exists between the experiential milieu of tourists during their travels and the resultant satisfaction or

dissatisfaction they harbor. Grounded in these considerations, three hypotheses are posited, postulating the potential impact of the triad of individual emotional dimensions within tourist activities on the ultimate satisfaction experienced by individual tourists.

(1) The effect and satisfaction of the activity.

During the ecological health tourism activities, tourists watched beautiful performances and felt very professional and considerate services. Comparing tourists' expectations of the activity before participating in the activity with the effect after participating in the activity, the effect was obvious and the mood was pleasant or comfortable, then satisfaction with the activity increases. So, assuming:

H1: The effect of ecological health tourism activities felt by tourists is directly proportional to the individual satisfaction of tourists.

(2) Activity experience and satisfaction.

Bama is located in Guangxi and is rich in natural resources, including magnificent mountains and rivers, clear rivers and virgin forests. Visitors can experience the serenity and beauty of nature here, such as taking part in hiking tours, admiring waterfalls or admiring the verdant vegetation along the way. To develop health activities and wellness experiences, Bama focuses on ecological health care and provides various wellness activities. For example, tourists can participate in activities such as yoga, Tai Chi, and herbal foot soaks, experience traditional Chinese medicine health concepts, and improve physical and mental health. Providing a variety of activities, focusing on service quality, and protecting the natural ecological environment can directly affect tourists' overall satisfaction. So, assuming:

H2: Tourists' individual experience of ecological health tourism activities itself is directly proportional to tourists' individual satisfaction.

(3) Cost and satisfaction of activities.

The cost of tourist activities is an important factor for tourists to consider. If the price of Bama eco-wellness tourism is relatively reasonable and consistent with the services and experiences provided, tourists are more likely to be satisfied. For example, if the cost of a health tea art class includes a professional tea art teacher, a comfortable venue and high-quality equipment, tourists may feel that this is a value-for-money experience. Bama ecological health tourism emphasizes health and wellness activities, such as yoga, Tai Chi, etc. Tourists' satisfaction with these health and wellness activities is closely related to the quality of the activities and the matching with the cost. If the wellness services provided are professional, in-depth, and meet tourists' expectations, they may be more willing to pay the corresponding fees. The tour guide service of Bama ecological health tourism is also an important factor affecting satisfaction. If the tour guide has a high service level and can vividly introduce local culture and history and answer tourists' questions, tourists will be more satisfied with the overall travel experience. This also directly relates to the cost of tourist activities, as tourists may consider whether guided tour services are worth paying for. So, assuming:

H3: The cost tourists spend on ecological health tourism activities is inversely proportional to tourists' individual satisfaction.

3. Tourists' behavioral intention

Tourist behavioral intention refers to an action or behavior trend that tourists take towards tourism products, services or derivative products after the tour and related activities are completed (Hashemi et al., 2023; Li et al., 2023). Tourists' behavioral intentions in Bama ecological health tourism activities are mainly reflected in their willingness to choose the destination again, recommend it to others, and participate in other related activities. By participating in ecological health tourism activities, tourists not only understand the content of ecological health tourism activities, enhance their experience and feelings of the activities, and improve their satisfaction with the activities, but also have a direct impact on their repeated participation in the activities. Then, the higher the tourist's intention to participate in eco-health tourism activities, the greater the possibility of repeated participation, and vice versa. The better the visitor's experience of the activity, the higher the likelihood that they will continue to participate. Consequently, we postulate the ensuing hypothesis, premised upon the potential influence exerted by the three dimensions encapsulating the emotional resonance of tourists' activities on the trajectories of their behavioral intentions.

(1) Activity effects and behavioral intentions. Various activities of ecological health tourism are colorful, including the folk customs of longevity villages, the etiquette and customs of ethnic minorities, the longevity culture and art performances, health yoga, herbal medicine and traditional Chinese medicine health care all provide tourists with a real sensory experience and strengthen the cultural symbols of the hometown of longevity. With good "longevity"-themed activity effects, the possibility of tourists' behavioral intention to participate in ecological health tourism will be enhanced. So, assuming:

H4: The effect of tourists' experience of ecological health tourism activities is directly proportional to tourists' behavioral intentions.

(2) Activity experience and behavioral intention. Tourists can personally feel and experience the fun by participating in various health tourism activities. For example, participating in related health-preserving yoga activities, watching longevity culture and art performances, and experiencing traditional Chinese medicine health-preserving activities not only relaxed the body and mind, but also experienced the activities related to ecological health-preserving tourism. Then, the more profound the tourists' activity experience and the better the sense of experience, the higher their behavioral intention to participate in ecological health tourism activities. So, assuming:

H5: Tourists' experience of ecological health tourism activities is directly proportional to tourists' behavioral intentions.

(3) Activity costs and behavioral intentions. With the diversification of eco-health tourism activities, including longevity product sales, health yoga activities, and health-preserving traditional Chinese medicine cultural experiences, the content of ecological health tourism activities has become more and more abundant. In addition to the form, effect, service level and experience of ecological health tourism activities, tourists are also more concerned about the cost of the activities. For example, the expenditure during the event, whether the location of the event is convenient, whether the surrounding environment is beautiful, and whether the consumer price is reasonable. When tourists' activity costs are low and satisfaction is high, their behavioral intention to participate in the activity again will increase, and vice versa. So, assuming:

H6: The cost of tourists participating in ecological health tourism activities is inversely proportional to tourists' behavioral intentions.

(4) Tourist satisfaction and behavioral intention.

By means of a comprehensive review of the literature, the prevailing consensus among scholars and research findings converges upon the recognition of a noteworthy positive correlation existing between tourist satisfaction and the proclivity toward subsequent behavioral intentions (Tuncer et al., 2021; Tran and Le, 2020). After tourists participate in ecological health tourism activities, their feelings about participating in the activities are greater than their previous expectations, and tourists' satisfaction with participating in ecological health tourism activities will also increase accordingly. The augmentation of activity satisfaction serves to pique the interest of tourists and kindles a predilection for such endeavors, thereby escalating the likelihood of recurrent engagement. Concomitantly, an elevation in tourist satisfaction yields a commensurate rise in behavioral intention. Thus, we posit under the assumption:

H7: Tourist satisfaction is directly proportional to behavioral intention.

4. Research model

Based on the interrelationship between the above variables, it can be seen that this study focused on five variables: the effect of Bama ecological health tourism, activity experience, activity cost, satisfaction and behavioral intention. Among them, the effect, experience and cost of tourist activities are the dependent variables, behavioral intention is the independent variable, and satisfaction is the mediating variable. The theoretical framework is visually represented in Figure 1.
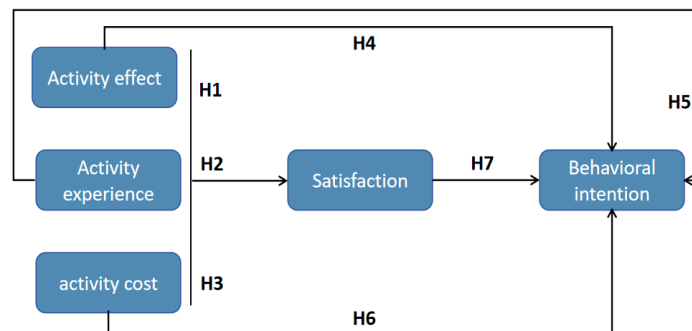

Figure 1. Theoretical research model

DATA COLLECTION AND RESEARCH METHODS

The participants under scrutiny within this investigation comprise individuals engaging in ecological health tourism activities. To collect data, an online questionnaire serves as the instrument of inquiry. In total, 300 questionnaires were disseminated, with 268 subsequently retrieved. Out of this pool, 246 were deemed valid, culminating in a questionnaire validity rate of 91.79%. Based on previous literature and preliminary measurement indicators determined by scholars in their research, the measurement indicators were appropriately modified and improved based on the actual situation of ecological health tourism activities in Bama, Guangxi. The research variables include activity effect, activity experience, activity cost, satisfaction and behavioral intention, with a total of 16 measurement items. Each variable includes multiple measurement items and options, all using Likert's five-point scale. point scale) (Kam, 2020) to ensure the rigor and reliability of the analysis. Using IBM SPSS 23.0 software to conduct correlation analysis between variables such as demographic information statistics, reliability and validity, the following basic data can be obtained.

1. Basic data situation

Through a meticulous analysis of the fundamental information encapsulated in the valid questionnaire data, a discernment emerged regarding the gender composition: men constituted 47.1%, while women comprised 52.9%, resulting in a notably equilibrated gender ratio. Delving into the stratification of age, a breakdown reveals that 24.6% fall within the bracket of 30 to 40 years, 41.8% within 41 to 50 years, and 33.6% surpassing the age of 50. Notably, the focal demographic is concentrated within the age group of 41 to 50 years, commanding a significant majority, as individuals over 40 years of age collectively constitute 75.4% of the study's participants. Regarding educational attainment, 27.5% of participants are currently enrolled in high school, 40.2% pursue college education, 25.3% are pursuing a bachelor's degree, and 7% are enrolled in master's programs. The educational landscape of survey respondents is predominantly characterized by a prevalence of college students. Turning to the dimension of monthly income, 23.1% reported earnings below 3,000 yuan, 38.9% fell within the income bracket of 3,000-5,000 yuan, and 38% boasted incomes surpassing 5,000 yuan. The monthly earnings of the surveyed cohort prominently converged in the

range of 3,000-5,000 yuan, encompassing a substantial 76.9% of the participants earning more than 3,000 yuan.

2. Reliability and validity analysis

In the present investigation, the internal reliability of the questionnaire was assessed utilizing Cronbach's α, a widely employed metric for estimating the reliability of Likert scale-based research. Cronbach's α coefficient, also acknowledged as the internal consistency α coefficient, stands as a preeminent choice in questionnaire survey research for its efficacy. The scrutiny of the internal consistency of the questionnaire was meticulously conducted by scrutinizing the reliability of each facet of the scale independently. The outcomes of this evaluative process are succinctly presented in Table 1.

Table 1. Questionnaire measurement results

Measuring variables	Dimension	Item	Cronbach's α
Activity effect	A1	site infrastructure	0. 899
	A2	Staff service level	
	A3	Health program effect	
	A4	Rich festival activities	
Activity experience	B1	Strong health culture atmosphere	0. 881
	B2	Health tourism products	
	B3	feeling of joy	
	B4	Feel that you are getting value-for-money health products	
Activity cost	C1	Accessibility (cost) of event location	0. 866
	C2	Gifts received	
	C3	Consumption (cost) of surrounding activity environment infrastructure	
	C4	Ecological health products at reasonable prices	
Activity satisfaction	D1	Satisfaction with the effects of ecological health tourism activities	0. 777
	D2	Satisfaction level with ecological health tourism activity experience	
Behavioral intention	E1	Repeated participation in ecological health tourism activities	0. 786
	E2	Recommend ecological health tourism to friends	

It is conventionally accepted that an α coefficient falling within the range of 0.70 to 0.80 signifies a commendable level of reliability, while an α coefficient ranging from 0.80 to 0.90 is indicative of exceptional reliability. Examining Table 1 reveals that the Cronbach's α of the scale surpasses the 0.7 threshold, denoting a notably elevated level of internal consistency in the questionnaire and attesting to its commendable reliability.

In this investigation, the analysis of each dimension's composition was undertaken employing IBM SPSS 23.0 software. Broadly speaking, the exploratory factor with a Kaiser-Meyer-Olkin (KMO) statistic surpassing 0.9 signifies an exceptionally conducive milieu for the extraction of common factors. A KMO within the range of 0.8 to 0.9 indicates a setting apt for common factor extraction, while a KMO falling between 0.7 and 0.8 suggests the feasibility of common factor extraction, albeit with slightly diminished suitability. Conversely, a KMO below 0.7 denotes an environment less amenable to the extraction of common factors. Derived from the outcomes, it is deduced that the Kaiser-Meyer-Olkin (KMO) value attains 0.887, a magnitude markedly surpassing the conventional threshold of 0.70. Concurrently, Bartlett's sphericity test manifests a value of 3023.122, accompanied by a conspicuously significant P value of 0.00, thereby affirming the appropriateness of the dataset for factor analysis. Subsequently, the principal component analysis methodology was deployed to extract factors characterized by eigenvalues surpassing the threshold of 1.

Table 2. Common factor variance and rotated factor matrices for exploratory factor analysis

characteristic root		Bartlett's test of sphericity			
		KMO	Approximate chi-square	Significance P value	Rotated cumulative sum of squares
1	10.665	0.887	3023.122	0.000	76.57%
2	2.14				
3	1.991				
4	1.219				
5	1.146				

Consequently, a total of five common factors emerged from the analysis. The cumulative sum of squares following rotation reached an impressive 76.57%, a figure surpassing the 60% benchmark and harmonizing with the dimensions of the measured variables. Upon orthogonal rotation, the sixteen questionnaire options seamlessly coalesce into five distinct categories of factors. The loadings of each item, each exceeding the threshold of 0.5, attest to the comprehensive information encapsulated within the five extracted factors, with an absence of any instances of double factor loading. In this configuration, each observational variable is elegantly aggregated into its respective dimension, adhering to the theoretical underpinnings. Given this nuanced scrutiny, the chosen scale in this investigation demonstrates commendable construct validity.

RESULTS AND ANALYSIS

The software employed for the structural equation analysis and model verification was AMOS 22.0. The analysis of moment structures (AMOS), a sophisticated analytical tool, finds its principal utility in the examination of structural equation models (SEM). It combines the traditional general linear model and common factor analysis techniques (Hui et al., 2020). Confirmatory factor analysis, a sophisticated statistical method, is executed on survey data. This analytical approach

principally serves to ascertain the alignment between a specific factor and the corresponding observed variables, scrutinizing whether said alignment adheres to the theoretical presuppositions delineated by the researcher. In the genesis of this inquiry, extant theories and accumulated knowledge serve as the fulcrum, providing a foundation upon which hypotheses are posited and systematically constructing a model elucidating the intricate interplay among a constellation of variables. Subsequently, Confirmatory Factor Analysis (CFA) is employed to scrutinize the interrelationship between an array of measured variables and factor constructs deemed adequate to elucidate the variances within the measured variables. CFA, with its methodical precision, affords researchers the capability to scrutinize and corroborate the validity of the a priori presumed relationships between measured variables and underlying factors (Shrestha, 2021). The raison d'être of this research lies in the initiation from theoretical hypotheses, embarking upon the meticulous examination of the congruence between these suppositions and the resultant empirical data. Through this rigorous process, the aim is not only to assess the veracity of the theoretical constructs but also to refine and evolve the theoretical framework itself.

1. Confirmatory factor analysis

The outcomes of the confirmatory factor analysis, delineated in Table 3, manifest conspicuous revelations. The standardized factor loadings for items situated within the ambit of the five latent variables—namely, activity effect, activity experience, activity cost, satisfaction, and behavioral intention—uniformly exceed 0.6. This attests to the robust association between each observed variable and its respective latent construct, substantiating the reasoned existence of these latent variables. Notably, the collective reliability (CR) surpasses or closely approximates 0.8, markedly surpassing the conventional benchmark of 0.7. This augurs well for the interpretability of the observed variables within each dimension, rendering them more adept at expounding upon the findings specific to their respective realms.

Convergent Validity, in the context of this study, is evidenced when diverse observed variables employed to gauge a common latent variable yield scores that exhibit pronounced correlation. Notably, when the Average Variance Extracted (AVE) surpasses the threshold of 0.5, it serves as a substantive attestation to the compliance of measurement convergent validity with established standards. Intriguingly, the square root of the AVE for each dimension, when juxtaposed against the interdimensional correlation coefficients, unveils a compelling revelation. This juxtaposition suggests that the utilized measurement scale not only excels in convergent validity but also demonstrates a commendable discriminant validity.

Table 3. Confirmatory factor analysis results

Observed variable	Dimension	Normalization factor load	CR	AVE
Activity effect	A1	0.860	0. 899	0. 691
	A2	0.798		
	A3	0.788		
	A4	0.876		
Activity experience	B1	0.860	0. 883	0. 654
	B2	0.769		
	B3	0.730		
	B4	0.867		
Activity cost	C1	0.838	0. 867	0. 621
	C2	0.735		
	C3	0.746		
	C4	0.827		
Activity satisfaction	D1	0.850	0. 781	0. 641
	D2	0.749		
Behavioral intention	E1	0.763	0. 792	0. 656
	E2	0.855		

2. Structural equation model testing

Structural Equation Modeling (SEM) resides within the realm of multivariate statistics, serving as a sophisticated synthesis of two statistical methodologies: factor analysis and path analysis. In its intricate embrace, SEM meticulously scrutinizes the pivotal variables encapsulated within the model through concurrent testing. The inquiry into the nexus between latent variables and intervening or error variables is employed to glean insights into the direct, immediate, or aggregate impact of the independent variable upon the dependent variable (Sarstedt et al., 2022; Leong et al., 2020).

The foundational tenets underpinning Structural Equation Model (SEM) analysis align with those inherent in the broader domain of multivariate population statistics. Prerequisite to this analytical framework is the assumption of normality in the distribution of data, coupled with the imperative that measurement index variables manifest a linear relationship. Illustrated in Figure 2 is the structural equation model delineating the intricate interplay between tourist satisfaction and behavioral intention within the milieu of Bama ecological health activities in Guangxi.

In gauging and appraising the establishment of a structural equation model, the primary avenue lies in the measurement of various fitting indicators. Within these metrics, the criterion $\chi 2/df$ typically mandates a value less than 3, while GFI denotes the fitness index, AGFI signifies the adjusted fitness index, and NFI represents the normed fit index. Additionally, IFI stands as an incremental fit index, and CFI is a comparative fit index. The general stipulation is that these values surpass 0.9, signifying commendable model adaptability. A threshold exceeding 0.8, while deemed acceptable, falls slightly below the pinnacle of adaptability. Furthermore, an RMSEA below 0.08 serves as an indicator of exemplary adaptability and model fitting. It is discernible from Table 4 that the structural equation model evinces a praiseworthy fitting effect.
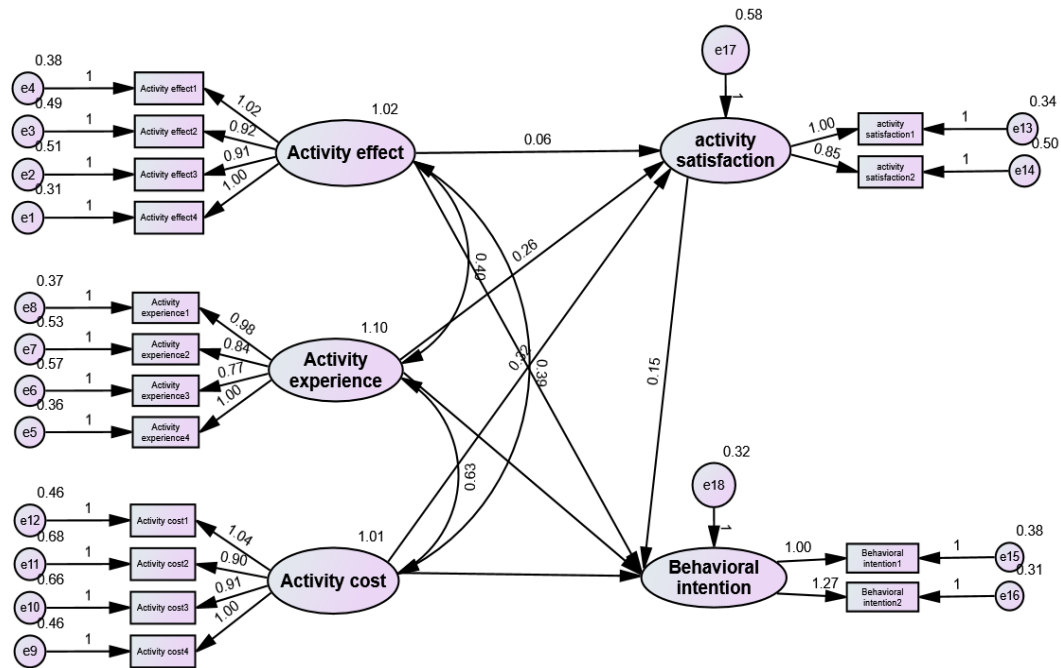
Figure 2. Structural equation model of tourist satisfaction and behavioral intention of ecological health tourism activities in Bama, Guangxi

Every hypothesis encapsulated within the intricate fabric of the Structural Equation Model (SEM) underwent meticulous verification through the utilization of the AMOS 22.0 software. With the exception of the hypothesis denoted as H1, where the P-value exceeds 0.1 and consequently does not surmount the threshold of the test, all other indicators successfully withstood scrutiny, as elucidated in Table 5.

Table 4. Structural equation model fitting test standards and actual test values

Reference indicators	Standard value	Model inspection
χ2/df	<3	1.241
GFI	>0.8	0.959
AGFI	>0.8	0.940
NFI	>0.9	0.962
TLI	>0.9	0.990
CFI	>0.9	0.992
RMSEA	<0.08	0.027

Table 5. Structural equation model hypothesis testing results

Hypothesis	Assumptions	Path coefficient	T	P
H1	H1: The effect of ecological health tourism activities felt by tourists is directly proportional to the individual satisfaction of tourists.	0.062	0.972	0.318
H2	H2: Tourists' individual experience of ecological health tourism activities itself is directly proportional to tourists' individual satisfaction.	0.288	3.768	0.000
H3	H3: The cost tourists spend on ecological health tourism activities is inversely proportional to tourists' individual satisfaction.	-0.337	4.314	0.000
H4	H4: The effect of tourists' experience of ecological health tourism activities is directly proportional to tourists' behavioral intentions.	0.212	3.376	0.000
H5	H5: Tourists' experience of ecological health tourism activities is directly proportional to tourists' behavioral intentions.	0.260	3.334	0.000
H6	H6: The cost of tourists participating in ecological health tourism activities is inversely proportional to tourists' behavioral intentions.	-0.160	2.029	0.044
H7	H7: Tourist satisfaction is directly proportional to behavioral intention.	0.195	2.540	0.011

Derived from the examination outcomes delineated in Table 4, it becomes apparent that:

(1) The standardized path coefficient extending from the impact of activity onto satisfaction stands at 0.062 (T=0.972, P=0.318>0.05). This observation suggests an absence of discernible correlation between the influence of activity and subsequent satisfaction. Consequently, the veracity of hypothesis H1 is not upheld.

(2) The standardized path coefficient emanating from the realm of activity experience unto satisfaction stands at 0.288 (T=3.768, P=0.000<0.05). This manifestation signifies a direct and affirmative influence of activity experience upon satisfaction, thereby substantiating the validity of hypothesis H2.

(3) The intrinsic cost associated with the activity manifests a direct adverse influence upon satisfaction, as evidenced by its standardized path coefficient of -0.337 (T=4.314, P=0.000<0.05). Consequently, hypothesis H3 stands validated.

(4) The impact of activity effect upon behavioral intention is distinctly positive, as delineated by its standardized path coefficient of 0.212 (T=3.376, P=0.000<0.05). Thus, hypothesis H4 stands substantiated.

(5) The influence of activity experience on behavioral intention is decidedly affirmative, as denoted by its standardized path coefficient of 0.260 (T=3.334, P=0.000<0.05). Consequently, hypothesis H5 stands validated.

(6) The pecuniary implications inherent in the activity wield a detrimental influence upon behavioral intention, as evidenced by its standardized path coefficient of -0.160 (T=2.029, P=0.044<0.05). Thus, hypothesis H6 stands affirmed.

(7) The state of contentment bears substantial positive sway upon behavioral intention, elucidated by its standardized path coefficient of 0.195 (T=2.54, P=0.011<0.05). Consequently, hypothesis H7 is affirmed.

Conclusions and suggestions
1. Conclusion

This study takes tourists participating in ecological health tourism in Bama, Guangxi as the research object, constructs a conceptual model of tourists' activity feelings, satisfaction and behavioral intentions, and puts forward relevant theoretical hypotheses. The findings elucidate that the participatory involvement of tourists in various tourism activities exerts a favorable influence on both their satisfaction levels and subsequent behavioral intentions. Conversely, the financial burden incurred by tourists in engaging in these activities demonstrates a converse effect, diminishing both their satisfaction and intentions. This underscores the nuanced interplay between tourists' experiential engagement and the financial implications of such activities. The results emphasize that an enriched activity experience not only elevates satisfaction but also augments behavioral intentions. Furthermore, a synergistic effect emerges when heightened experiential quality coincides with reduced costs, facilitating tourists in surpassing their travel expectations and, in turn, amplifying satisfaction levels. This intricate dynamic fosters an upward trajectory in tourists' behavioral intentions.

The influence of tourists' engagement in tourism activities bears a positive imprint on their behavioral intentions. The trajectory of ecological health tourism activities has been a recent developmental phenomenon, witnessing a heightened involvement of health-conscious elderly tourists. Presently, amidst the backdrop of the prevailing COVID-19 epidemic, the complexities surrounding inter-provincial travel procedures have intensified, rendering them cumbersome. Simultaneously, the costs associated with intra-provincial transportation remain relatively reasonable. Tourists may choose to participate in health activities nearby and projects, the scope of participation and acceptance is enhanced and inclusive. Tourist satisfaction is directly proportional to tourists' behavioral intentions. The better the overall experience of tourists participating in ecological health tourism activities, the more it can improve tourists' satisfaction in the activities, and it is more conducive to improving tourists' behavioral intentions. Visitors will be willing to participate in the activity again and recommend the activity to other friends and vice versa.

2. Recommendations
2.1. Strengthen the promotion of health care concepts and strengthen event experience design

The outcomes derived from the structural equation model unveil a narrative where the standardized path coefficient emanating from activity experience to satisfaction stands at 0.288 (T=3.768, P=0.000<0.05). This elucidates that the experiential facet of activities exerts a direct and affirmative influence on satisfaction, affirming the integral connection between the two elements. In essence, the tourists' engagement in activities directly shapes their satisfaction levels.

By further optimizing and strengthening the experience of ecological health tourism activities, tourist satisfaction can be improved (Pessot et al., 2021; Lin et al., 2021). For example, a series of physical and mental health activities are introduced, such as yoga, Tai Chi, meditation, etc., to meet tourists' health needs. These activities not only help relax the body and mind, but also conform to the cultural connotation of longevity. Create activities with rich cultural characteristics. Combined with Bama's longevity culture, activities with local characteristics are designed, such as traditional rehabilitation and health regimens, senior citizen orchestra performances, etc., so that tourists can experience the local longevity culture more deeply.

2.2. Optimize cost structure and improve resource utilization efficiency

The revelations gleaned from the structural equation model underscore that activity cost exerts a direct adverse influence on satisfaction, as evidenced by its standardized path coefficient of -0.337 (T=4.314, P=0.000<0.05). In light of these findings, a strategic imperative emerges to optimize the cost structure, enhance the efficiency of resource utilization, and implement alluring pricing strategies. These measures aim to mitigate the perceived cost associated with tourists' engagement in activities (Zhang et al., 2020; Kanyilmaz et al., 2022). For example, reasonable package price strategies or package discounts can be used to make tourists feel that the participation cost is more affordable. By carefully designing the activity process, we ensure close connection between various links and avoid the waste of resources. Reasonably plan the start and end times of activities to improve the efficiency of use of event venues and equipment. Implementing a digital management system (Wahyuningtyas et al., 2022; Hoang and Khoa, 2022), encompassing facets such as online reservations, electronic ticketing, and event information dissemination, serves to diminish labor expenditures and elevate operational efficacy. This not only diminishes reliance on paper materials but also refines the orchestration and oversight of events. Cultivating collaborative affiliations with local purveyors in the realms of catering, accommodations, transportation, and allied enterprises is pursued with a view to fostering mutual advantages. Through cooperation, more competitive prices and services can be obtained, reducing the operational burden of the event itself. Use environmentally friendly materials and promote waste classification and recycling. By promoting green environmental protection initiatives, it not only helps to reduce costs, but also enhances the sustainable development image of Bama longevity tourism.

2.3. Improve activity effects and guide behavioral intentions

The outcomes derived from the structural equation model elucidate a conspicuous positive influence of activity effects and behavioral intentions on overall satisfaction. To enhance the efficacy of longevity tourism endeavors in Bama and steer tourists toward affirmative behavioral inclinations, several measures may be instituted. Augmenting the substance of activities with indigenous attributes and longevity culture, encompassing traditional festivities, theatrical exhibitions, and the dissemination of longevity wisdom, can elevate the overall allure and interest of the activities (Sansyzbayeva et al., 2021; Demkova et al., 2022). Incorporating technological interactive elements is also recommended to infuse modernity and engagement into the experience. Leverage advanced technological modalities, such as virtual reality (VR) or augmented reality (AR) innovations, to furnish tourists with a more opulent and immersive interactive encounter (Teoh et al., 2021; Wang and Larimo, 2020; Engelland, 2014; Rawiński, 2016). Facilitate engagement in ecological conservation endeavors.

In conjunction with the tapestry of longevity culture, instill motivation in tourists to partake in local ecological preservation initiatives, fostering increased awareness and behavioral involvement through endeavors such as volunteer services and tree planting activities (Claude, 2020; Tretiakova et al., 2019). By implementing these enhancements, the allure and interactivity of Bama's longevity tourism activities can be heightened, concurrently encouraging tourists to engage more ardently and cultivate positive behavioral inclinations.

REFERENCES

Bai, C., & Lei, X. (2020). New trends in population aging and challenges for China's sustainable development. *China Economic Journal,* 13, 3-23. https://doi.org/10.1080/17538963.2019.1700608

Biswas, C., Deb, S.K., Hasan, A.A.T., Khandakar M.S.A. (2021). Mediating effect of tourists' emotional involvement on the relationship between destination attributes and tourist satisfaction. *Journal of Hospitality and Tourism Insights* 4, 490-510. https://doi.org/10.1108/JHTI-05-2020-0075

Bočkus, D., Vento, E., Tammi, T., Komppula,R., Kolesnikova, N. (2023). Comparing the motivations behind wellness tourism in three source markets. *European Journal of Tourism Research* , 33, 3303-3303. https://doi.org/10.54055/ejtr.v33i.2786

Claude, U. (2020). Predicting tourism demands by google trends: a hidden markov models based study. *Journal of System and Management Sciences* ,10, 106-120. https://doi.org/10.33168/JSMS.2020.0108

Demkova, M., Sharma, S., Mishra, P.K., Dahal, D.R., Pachura, A., Herman, G.V., Matlovicova, K.. (2022). Potential For Sustainable Development of Rural Communities By Community-Based Ecotourism A Case Study of Rural Village Pastanga, Sikkim Himalaya, India. *GeoJournal of Tourism and Geosites,* 43, 964-975. https://doi.org/10.30892/gtg.43316-910

Engelland, B.T. (2014). Religion, humanism, marketing, and the consumption of socially responsible products, services, and ideas: Introduction to a special topic section. *Journal of Business Research* , 67, 1-4. https://doi.org/10.1016/j.jbusres.2013.03.005

Fang, E.F., Xie, C., Schenkel, J.A., Wu, C., Long, Q., Cui, H.,Woo, J. (2020). A research agenda for ageing in China in the 21st century: Focusing on basic and translational research, long-term care, policy and social networks. *Ageing research reviews,* 64, 101174. https://doi.org/10. 1016/j.arr.2015.08.003

Hashemi, S., Mohammed, H.J., Kiumarsi, S., Kee, D.M.H., Anarestani, B.B.. (2023). Destinations food image and food neophobia on behavioral intentions: culinary tourist behavior in Malaysia. *Journal of international food & agribusiness marketing,* 35, 66-87. https://doi.org/ 10.1080/08974438.2021.1943101

Hjalager, A.M., & Flagestad, A. (2012). Innovations in well-being tourism in the Nordic countries. *Current Issues in Tourism,* 15, 725-740. https://doi.org/10.1080/13683500.2011.629720

Hoang, C.C., & Khoa, B.T. (2022). Impulse Buying Behavior of Generation Z customers in Social Commerce: Flow Theory Approach. *Journal of Logistics, Informatics and Service Science,* 9 (4), 197-208. https://doi.org/10.33168/LISS.2022.0413

Hong, B.V,, Zheng, J., & Zivkovic, A.M. (2023). HDL Function across the Lifespan: From Childhood, to Pregnancy, to Old Age. *International Journal of Molecular Sciences,* 24, 15305. https://doi.org/10.3390/ijms242015305

Huang, G., Li, D., Yu, L., Yang, D.,Wang, Y. (2022). Factors affecting sustainability of smart city services in China: From the perspective of citizens' sense of gain. *Habitat International,* 128, 102645. https://doi.org/10.1016/j.habitatint.2022.102645

Hui, B.P., Ng, J.C., Berzaghi, E., Cunningham-Amos, L.A., Kogan, A. (2020). Rewards of kindness? A meta-analysis of the link between prosociality and well-being. *Psychological Bulletin,* 146, 1084. https://doi.org/10.1037/bul0000298

Jeong, Y., & Kim, S. (2020). A study of event quality, destination image, perceived value, tourist satisfaction, and destination loyalty among sport tourists. *Asia Pacific Journal of Marketing and Logistics,* 32, 940-960. https://doi.org/10.1108/APJML-02-2019-0101

Jia, H., Zhu, L., & Du, J. (2022). Fuzzy comprehensive evaluation model of the farmers' sense of gain in the provision of rural infrastructures: The case of tourism-oriented rural areas of China. *Sustainability,* 14, 5831. https://doi.org/10.3390/su14105831

Kam, C.C.S. (2020). Expanded format shows better response consistency than Likert-scale format in the measurement of optimism. *Personality and Individual Differences,* 152, 109606. https://doi.org/10.1016/j.paid.2019.109606

Kanyilmaz, A., Demir, A.G, Chierici, M., Berto, F., Gardner, L., Kandukuri, S. Y., Razavi, N. (2022). Role of metal 3D printing to increase quality and resource-efficiency in the construction sector. *Additive Manufacturing, 50*, 102541.https://doi.org/10.1016/j.addma.2021.102541

Leong, L.Y., Hew, T.S., Ooi, K.B., Wei, J. (2020). Predicting mobile wallet resistance: A two-staged structural equation modeling-artificial neural network approach. *International Journal of Information Management, 51*, 102047. https://doi.org/10.1016/j.ijinfomgt.2019.102047

Li, F., Shang, Y., & Su, Q. (2023). The influence of immersion on tourists' satisfaction via perceived attractiveness and happiness. *Tourism Review, 78*, 122-141. https://doi.org/10.1108/TR-02-2022-0078

Liao, C., Zuo, Y., Xu, S., Law, R., Zhang, M. (2023). Dimensions of the health benefits of wellness tourism: A review. *Frontiers in psychology, 13*, 1071578. https://doi.org/10.3389/fpsyg.2022.1071578

Lin, H.H., Ling, Y., Lin, J.C., Liang, Z.F. (2021). Research on the development of religious tourism and the sustainable development of rural environment and health. *International journal of environmental research and public health, 18*, 2731. https://doi.org/10.3390/ijerph18052731

Lyulicheva, M., Yap, S.F., & Hyde, K.. (2023). Identity transition process: a study of the holistic wellness retreat experience. *Journal of Consumer Marketing, 40*, 506-520. https://doi.org/10.1108/JCM-11-2021-5027

Majeed, S., & Gon Kim, W. (2023). Emerging trends in wellness tourism: a scoping review. *Journal of Hospitality and Tourism Insights, 6*, 853-873. https://doi.org/10.1108/JHTI-02-2022-0046

Michael, A.O., Nwabuisi, N.A., & Trimisiu, S.T. (2022). Firm Attributes and Value of Pension Fund Administrators in Nigeria. *Journal of Finance and Accounting* 10: 96. https://doi.org/10.11648/j.jfa.20221002.12

Peng, J., Yang, X., Fu, S., Huan, T.C.T. (2023). Exploring the influence of tourists' happiness on revisit intention in the context of Traditional Chinese Medicine cultural tourism. *Tourism Management, 94*, 104647. https://doi.org/10.1016/j.tourman.2022.104647

Perschke, M.J., Harris, L.R,, Sink, K.J., Lombard, A.T. (2023). Using ecological infrastructure to comprehensively map ecosystem service demand, flow and capacity for spatial assessment and planning. *Ecosystem Services, 62*, 101536. https://doi.org/10.1016/j.ecoser.2023.101536

Pessot, E., Spoladore, D., Zangiacomi, A., Sacco, M. (2021). Natural resources in health tourism: a systematic literature review. *Sustainability, 13*:, 2661. https://doi.org/10.3390/su13052661

Phuthong, T., Anuntavoranich, P., Chandrachai, A., Piromsopa, K. (2023). A Framework for Assessing Wellness Tourism Destination Competitiveness: A Perspective from the Wellness Tourism Clusters in Thailand. *GeoJournal of Tourism & Geosites, 49*, https://doi.org/10.30892/gtg.49313-1097

Rachao, S., Breda, Z., Fernandes, C., Joukes, V. (2020). Cocreation of tourism experiences: are food-related activities being explored? *British Food Journal, 122*, 910-928. https://doi.org/10.1108/BFJ-10-2019-0769

Rawiński, M.M. (2016). Longevity and learning from the biographical perspective. Two Case Studies-Locally Rooted and Globally Oriented. *Andragoška spoznanja, 22*, 43-56. https://doi.org/10.4312/as.22.1.43-56

Sansyzbayeva, A., Saipov, A., Dunets. A., Mussagaliyeva, A., Ramazan, A. (2021). Geography of natural and recreational facilities in the development of economic integration of the border areas of Northern Kazakhstan and the Russian Federation. *GeoJournal of Tourism and Geosites, 35*, 499-506. https://doi.org/10.30892/gtg.35230-677

Sarstedt, M., Hair, J.F., Pick, M., Liengaard, B.D., Radomir, L., Ringle, C.M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. *Psychology & Marketing*, 39, 1035-1064.https://doi.org/10.1002/mar.21640

Shrestha, N. (2021). Factor analysis as a tool for survey analysis. *American Journal of Applied Mathematics and Statistics* 9: 4-11. https://doi.org/ 10.12691/ajams-9-1-2

Sthapit, E., Björk, P., & Coudounaris, D.N. (2023). Towards a better understanding of memorable wellness tourism experience. *International Journal of Spa and Wellness, 6*, 1-27. https://doi.org/10.1080/24721735.2022.2136120

Tan, H., & Zhou, G. (2022). Gentrifying rural community development: A case study of Bama Panyang River Basin in Guangxi, China. *Journal of Geographical Sciences, 32*, 1321-1342. https://doi.org/10.1007/s11442-022-1999-0

Teoh, M.W., Wang, Y., & Kwek, A. (2021). Conceptualising co-created transformative tourism experiences: A systematic narrative review. *Journal of Hospitality and Tourism Management, 47*, 176-189. https://doi.org/10.1016/j.jhtm.2021.03.013

Tran, V.D., & Le, N.M.T. (2020). Impact of service quality and perceived value on customer satisfaction and behavioral intentions: Evidence from convenience stores in Vietnam. *The Journal of Asian Finance, Economics and Business, 7*, 517-526. https://doi.org/10.13106/jafeb.2020.vol7.no9.517

Tretiakova, T.N., Brankov, J., Petrović, M.D., Syromiatnikova, Y.A., Radovanović, M.M., & Mikhailovich Yakovlev, A. (2019). Tourism and natural environment in the NP Taganay (Russia)-habits and perceptions of the visitors. *GeoJournal of Tourism and Geosites, 25*, 595-608. https://doi.org/10.30892/gtg.25225-383

Tuncer, I., Unusan, C., & Cobanoglu, C. (2021). Service quality, perceived value and customer satisfaction on behavioral intention in restaurants: An integrated structural model. *Journal of quality assurance in hospitality & tourism, 22*, 447-475. https://doi.org/10.1080/1528008X.2020.1802390

Wahyuningtyas, N., Yaniafari, R.P., Ratnawati, N., Megasari, R., Aini, D.N., Dewi, K., Rosita, F.A.D. (2022). Development E-Tourism As An Effort To Support Tourism Charm Programme In Indonesia. *GeoJournal of Tourism and Geosites, 42*, 759-766. https://doi.org/10.30892/gtg.422spl15-886

Wang, Y., Chen, H., Long, R., Wang, L., Yang, M., & Sun, Q. (2023). How does population aging affect urban green transition development in China? An empirical analysis based on spatial econometric model. *Environmental Impact Assessment Review, 99*, 107027. https://doi.org/ 10.1016/j.eiar.2022.107027

Wang, Y., & Larimo, J. (2020). Survival of full versus partial acquisitions: The moderating role of firm's internationalization experience, cultural distance, and host country context characteristics. *International Business Review* 29, 101605.

Zhang, W., Huang, Q., Kang, Y., Li, H., Tan, G. (2023). Which Factors Influence Healthy Aging? A Lesson from the Longevity Village of Bama in China. *Aging and Disease, 14*, 825.

Zhang, Y., Lan, X., Ren, J., Cai, L. (2020). Efficient computing resource sharing for mobile edge-cloud computing networks. *IEEE/ACM Transactions on Networking*, 28, 1227-1240. https://doi.org/10.1109/TNET.2020.2979807

Zhong, L., Li, X., Sun, S., Law, R., Qi, X., Dong, Y. (2022). Influencing Factors of Students' Learning Gains in Tourism Education: An Empirical Study on 28 Tourism Colleges in China. *Sustainability* , 14, 16601. https://doi.org/10.3390/su142416601

Zhou, M., Luo, H., Hong, J., Gao, D., Shen, Y., Liang, M. (2023). Establishment of a value evaluation system for health and wellness tourism resources: Reflections on China's official tourism resource evaluation criteria. *Plos one, 18*, e0288749. https://doi.org/10.1371/ journal.pone.0288749

ASPECTS OF TOURISM PERFORMANCE IN V4 COUNTRIES UNDER THE INFLUENCE OF THE COVID 19 PANDEMIC FOR FUTURE MANAGEMENT AND QUALITY

Tünde DZUROV VARGOVÁ

The University of Prešov, Faculty of Management and Business, Department of Tourism and Hotel Management, Konštantínova, Prešov, Slovakia, e-mail: tunde.dzurovvargova@unipo.sk

Daniela MATUŠÍKOVÁ[*]

The University of Prešov, Faculty of Management and Business, Department of Tourism and Hotel Management, Konštantínova, Prešov, Slovakia, e-mail: daniela.matusikova@unipo.sk

Ivana ŠAFFOVÁ

The University of Prešov, Faculty of Management and Business, Department of Tourism and Hotel Management, Konštantínova, Prešov, Slovakia, e-mail: ivana.saffova@smail.unipo.sk

Abstract: Tourism is a very dynamic industry and can change rapidly under the influence of various factors. This causes pressure for flexible solutions in terms of managing tourism at the national level and ensuring its quality, and thus its sustainable attractiveness for both domestic and foreign tourism. Tourism performance has changed significantly under the influence of the Covid-19 pandemic, and based on this, the aim of this paper was to analytically evaluate the development of tourism performance in the Visegrad Four countries. Based on the use of the approximation method and the regression method, it evaluates the performance in the period 2013-2021 (latest available data) with the TTCI and TTDI Indexes and predicts the possible performance for the next year 2023 under the influence of the aforementioned pandemic. The results of the study point to different performance within the four countries. The country with the most stable tourism management potential and potentially the best performance appears to be the Czech Republic, and the worst performing is the Slovak Republic.

Key words: Tourism, tourism management, V4 countries, tourism performance

* * * * * *

INTRODUCTION

Tourism is considered a sector with great potential worldwide (Kyrylov et al., 2023), and service quality is perceived as a key strategy for its sustainable development (Alhazmi, 2018). Published studies by authors De Bernardi and Arenas (2022) and Gburová et al., (2023) have demonstrated that countries in developing regions (Hronec et al., 2022), such as the Visegrad Group countries, need an effective business environment for the growth of their economies and achieving positive economic indicators (De Bernardi and Arenas, 2022; Gburová et al., 2023). According to research from the World Bank Group (2022), components of an effective business environment include stable political and legal conditions, a friendly business environment, and access to financing. Another study highlights the importance of investments in infrastructure, education, and innovation as key factors for economic growth in the V4 countries (Mátyás et al., 2020; Mura and Stehlikova, 2023). These studies indicate that successful economic development requires a comprehensive approach that includes not only internal reforms but also cooperation and integration at the regional and international levels (Gallo et al., 2019; Volchek et al., 2020). In this context, tourism becomes an important tool for economic development (Bazargani and Kiliç 2021) and is supported not only by the private sector but increasingly also by government initiatives and policies (Kozmenko et al., 2015).

Management of tourism in individual countries varies, with each country striving to develop its unique strategies and approaches (Kumar and Dhir, 2020; Ministry of Transport of the Slovak Republic, 2020; Beresecká and Svetlíková, 2022; Gburová and Lukáč 2023). Tourism requires a comprehensive and multidisciplinary approach (Banerjee et al., 2016; Bădulescu et al., 2018), which includes not only the support and development of infrastructure but also cultural and natural attractions (Czuczor et al., 2023). Within the V4 countries, there is significant development of tourism infrastructure, which increases their attractiveness and competitiveness in the international market (Zemanová, 2022). Competition in the field of tourism is high (Deb et al., 2023), and therefore it is essential for the V4 countries to continuously innovate and improve the quality of services provided (Kvitková and Petru, 2021). The V4 countries are characterized by a common history, culture, and geographical location, which allows them to cooperate and create joint tourist offers and strategies (Antošová et al., 2020). The tourism sector in these countries is a significant source of income, with its contribution to GDP and total employment ranging from 4.7% to 8.3%, and from 5% to 10%

---

[*] Corresponding author

respectively (World Travel & Tourism Council, 2022). Due to similarities in geography, climate, and economic focus, the V4 countries have the opportunity to utilize synergistic effects in tourism, with joint marketing and promotional campaigns further enhancing their attractiveness and visibility on the international stage (Štrba et al., 2022). The development of tourism in the V4 countries thus exemplifies successful regional cooperation, yielding positive economic and cultural impacts not only for the individual countries but for the entire region as well (ETC, 2021).

THEORETICAL BACKGROUND
Cooperation at the level of V4 countries
Countries of the Visegrad Group evaluate the development of tourism based on various indicators (Šambronská and Matušíková, 2020), such as total tourism expenditure, which results from a combination of the number of arrivals, daily expenses, length of stay, tourism revenues, occupancy rates of accommodation facilities, tourist satisfaction, the share of tourism in GDP, as well as the number of jobs in tourism and many others (Šenková et al., 2020; Zemanová, 2022). These factors form the basis for strategies and management of tourism policies, allowing various destinations to focus either on increasing the number of tourists or promoting a specific tourism profile (Shen et al., 2022; Stepchenkova and Li, 2014). The V4 countries are successful not only in economic development but also in international cooperation (Visegrad Cooperation, 2023a). This cooperation is also visible in the economic relations between the V4 countries, which are important trading partners to each other and invest mutually. The V4, as a regional alliance, is flexible and institutionalized, and complements the national policies and diplomatic efforts of its member states. It is a significant example of regional integration and cooperation that evolves and adapts to changing global conditions to provide support in areas most important to its citizens. V4 cooperation in the field of tourism dates back 18 years and includes joint promotional activities worldwide (Visegrad Cooperation, 2023b). Global tourism was severely limited due to COVID, but the reopening of borders allows residents of the grouping and other visitors to (re)discover the unique natural, cultural, and tourism treasures of this region in the heart of Europe, which attracts tourists from around the world (Hakseung et al., 2022; Gössling et al., 2021; Deb and Ahmed, 2022).

Tourism has successfully stabilized since the most significant economic crisis in the years 2008-2010, and its performance indicated the fulfillment of forecasts made by the World Tourism Organization (UNWTO, 2020). Already in 2018, forecasts expected to happen in 2020 were achieved, and the year 2019 further confirmed that the tourism industry has its significant justification in the global economy. Tourism performance has grown globally and even regions that previously showed the lowest performances have started to make significant progress thanks to their flexible response to the needs of tourism participants. However, with the arrival of the Covid-19 pandemic, the situation changed markedly. Global restrictions related to the intention to reduce the rate of infection have crippled the industry. This industry has become one of the most affected industries due to the spread of the pandemic. As a result, there have been many travel restrictions and the slow disappearance of international tourism, which has seriously affected not only the companies but also the tourism-driven economies themselves (Shin et al., 2022). The COVID-19 pandemic has undoubtedly been one of the biggest challenges the tourism sector has faced so far. The prosperity of businesses was shaken, as was the well-being of tens of millions of employees, local communities, and entire economies around the world. Fortunately, positive signs are visible, and the recovery of the industry is progressing, although not at the same pace or in the same market segments. This was also confirmed by the overall performance of tourism, which in each of the world's regions showed an unprecedented dimension. The countries of the Visegrad Four were no exception.

For this reason, the aim of the study was to find out through research questions:
RQ1 How did tourism performance in the V4 countries change over a 10-year horizon?
RQ2 Does the year 2023 have the potential to bring a change in tourism performance?
RQ3 Which of Visegrad countries have the potential for the greatest development?

MATERIALS AND METHODS
Knowledge of developments and potential forecasts is important for flexible preparation for managing tourism and its services. Therefore, the intention was to analyse the performances in the selected research sample of countries and to estimate the potential future development of their performances.

The aim of the paper is based of 10-year performance data predict the development of tourism performance in Visegrad four countries under the impact of Covid-19 pandemics for the purpose of the effective future management.

The main aim of the research based on the results of globally recognized TTDI index (Travel & Tourism Development Index) as well as TTCI (Travel and Tourism Competitiveness Report) is to evaluate each country progress, bring the development prediction, and compares them to each other within the group.

For the purpose of the research as well as for this study, several research methods were used:

- Scientific abstraction- oriented the abstraction of resources with a focus on tourism management in Visegrad four countries, TTDI index and TTCI index.
- Approximation method - was used to determine the index development forecast in the next evaluated year 2023 (the forecast for the following years is not suitable, as there is a relatively small amount of existing data). Among all five types of approximation a polynomial of the second degree was chosen.
- Regression model – was used to determine the coefficient of determination ($R2$) for the development of the value of the TTDI index, processed in the MS Excel program.

H0: We assume that there will be different prediction results for the Visegrad Four countries for performance in 2023 and for tourism management in the future period of the stagnant pandemic.

Data: Research sample consisted of Visegrad four countries, namely: Czech Republic, Poland, Hungary and Slovak Republic. The analytical part of the study focuses on evaluating the position of V4 over the last decade based on the internationally recognized TTCI index and its revised version TTDI.

The analyzes are aimed at evaluating the position of the V4 countries precisely on the basis of the TTCI and TTDI index for the last decade (2013-2021). In this way, the intention was to gain an overview of the level of tourism in the given countries, their strengths, and weaknesses, and subsequently proceed to a more detailed analysis of the countries' statistical data, their national strategies, action plans, etc. in the context of the needs of tourism management and its quality.

In this way, the intention was to obtain an initial overview of the level and quality of tourism in the given countries, their strengths, and weaknesses, and could subsequently proceed to a more detailed analysis of the countries' statistical data, their national strategies, action plans, etc. In the following text, the structure of this index was briefly summarized and described the method of its calculation. All the data information is provided in the annual reports of the TTDI index, where the one from 2022 was the latest yet, describing the performance of the year 2021.

We consider the revised and globally recognized TTDI index, which is a modification of the originally used TTCI index, to be a suitable tool for comparing (not only) V4 countries. The structure of the index is based on generally comparable and unified indicators that are monitored on a regular basis in the V4 member countries. The index also serves as a platform for dialogue between interested parties and country representatives with the aim of understanding and anticipating emerging trends and risks in the field of tourism on a global level, modifying direct policies, procedures, investment decisions or accelerating new models ensuring the longevity of this important sector. It is important for countries to learn from recent and current crises, take steps to embed long-term inclusiveness, sustainability and resilience in the tourism sector and learn to face globally changing challenges and risks. The TTDI index consists of 5 sub-indices, 17 pillars and 112 individual indicators categorized into individual pillars. However, newly created sub-indexes (compared to TTCI) are not taken into account when calculating the index and are used only for presentation and categorization purposes:
- Subindex no. 1 (Enabling Environment)
- Subindex no. 2 (Travel and Tourism Policy and Enabling Conditions)
- Subindex no. 3 (Infrastructure)
- Subindex no. 4 (Travel and Tourism Demand Drivers)
- Subindex no. 5 (Travel and Tourism Sustainability).

As Gomez Pensado states in the TTDI Index Annual Report (2021), the tourism sector has changed permanently. Customers have become more demanding (especially in terms of health and hygiene conditions in potential destinations) and more cautious (impact of future variants of COVID-19, border closures, travel interruptions, etc.). However, the stagnation of international travel has largely given people the space to think about the impact of their decisions on the global climate and environment - this was the main reason for the revision of the original TTCI index to the TTDI, on which the World Economic Forum has based country rankings in the field of travel for the past 15 years traffic and travel. The creators of the index therefore decided to significantly expand and analyze the aspect of environmental, social and economic sustainability in the revised index due to the increase in demand volatility and the response to the changing expectations of customers (travelers, tourists). The TTDI index therefore serves as a strategic benchmarking tool for policy makers, companies, and complementary sectors to advance the future development of the travel and tourism sector by providing unique insights into the strengths and development areas of each country (economy).

The total score of the TTDI index is calculated as the average (arithmetic mean) of the averages of the 17 basic pillars (arithmetic mean). Each of the pillars is calculated as an unweighted average of individual component variables. Values for individual sub pillars are also reported in the annual reports, but they are used only for categorization and presentation purposes. Although the framework and methodology of the TTDI index has been updated and improved compared to the TTCI to reduce the deviation of the index and improve the flexibility of its use, the two indices remain very close (2019 results have been recalculated using the new framework, methodology and indicators).

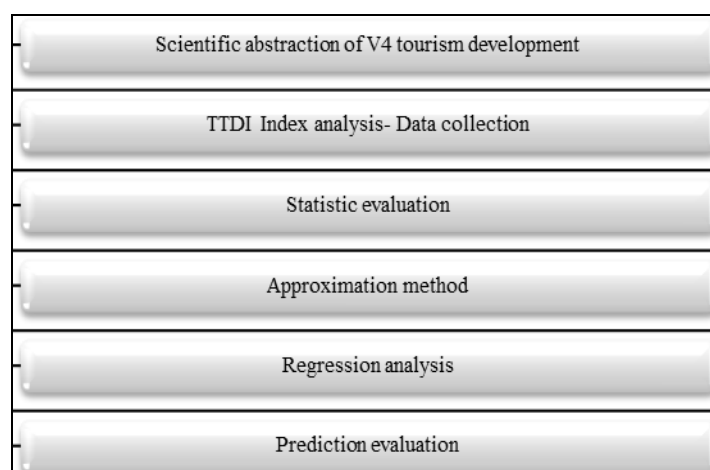Methodology steps of the paper are charted below (Figure 1):

Figure 1. Methodology step scheme

RESULTS AND DISCUSSION

The Visegrad Group (V4) reflects the efforts of the Central European region countries to work together in fields of common interest within pan-European integration. The Czech Republic, Hungary, Poland and Slovakia have always been part of a single civilization sharing cultural and intellectual values and common roots in diverse religious traditions, which they wish to preserve and further strengthen. V4 cooperation can currently be described as the most clearly profiled initiative in Central Europe. The backbone of this cooperation consists of contacts at all levels from political summits at the highest level to expert and diplomatic meetings, the work of non-governmental associations in the region, think-tanks and research bodies, cultural institutions, and numerous networks of individuals (Ministry of Regional Development CZ 2024). Tourism is no exception. For more than a decade, the V4 countries have been trying to address the international market together with integrated strategies at national levels. However, tourism performance varies over the long term. Table 1 bring the overview of the international arrivals of V4 countries in in the monitored period 2013-2021.

Table 1. Overview of International arrivals performance in V4 countries (in thousands) in 2013-2021
Source: own processing based on TTCI and TTDI annual reports from 2013 to 2021

Country	2013	2015	2017	2019	2021
Czech Republic	8 775.00	9 004.00	11 148.00	13 665.34	14 651.09
Poland	13 350.00	15 800.00	16 728.00	19 622.00	8 418.00
Hungary	10 250.00	10 675.00	14 316.00	17 152.00	7 418.00
Slovak Republic	1 460.40	6 235.00	6 816.00	5 734.11	5 453.29
Total	33 835.40	41 714.00	49 008.00	56 173.46	35 940.38

Table 2. Comparison of the latest status of V4 countries of the latest Travel & Tourism Development Index from 2022 report
Source: own processing based on Travel & Tourism Development Index 2022

			Change since 2019		Diff. from
Country	Rank	Score	Rank	Score	TTDI Avg. (%)
Czech Republic	26	4.5	1	0.3%	13.3%
Poland	30	4.4	3	0.8%	10.6%
Hungary	37	4.3	0	0.3%	8.7%
Slovak Republic	56	4.1	-3	0.2%	2.9%

According to the data of the latest Report of Travel & Tourism Development Index z from 2022 which measures the set of factors and policies that enable the sustainable and resilient development of the Travel and Tourism (T&T) sector, which in turn contributes to the development of a country, the position of V4 countries differs. Table 2 shows the position of individual countries as well as their index of change compared to the last observed period from the last available report from 2022. Newer data are not yet available yet. The results show that the Czech Republic has the strongest position among the V4 countries, which ranked 26th out of 117 monitored countries in the latest statistics. The Slovak Republic has the lowest performance among the monitored countries with 56th place.

Evaluation of the position of the V4 countries based on the TTCI and TTDI index

In the following preliminary analyses, there was a focus on evaluating position of V4 countries precisely on the basis of the TTCI and TTDI index for the last decade (2013-2021). In this way, it was aimed to gain an overview of the level of tourism in the given countries, their strengths and weaknesses, and could subsequently proceed to a more detailed analysis of the countries' statistical data, their national strategies, action plans, etc. Based on the *latest available data*, or score of the TTCI index (2013-2017) and TTDI (2019-2021), an approximation method was used in the MS Excel program, through which the intention was to determine the forecast of the development of the index in the next evaluated year 2023 (*the forecast for the following years is not suitable, as there is a relatively small amount of existing data*).
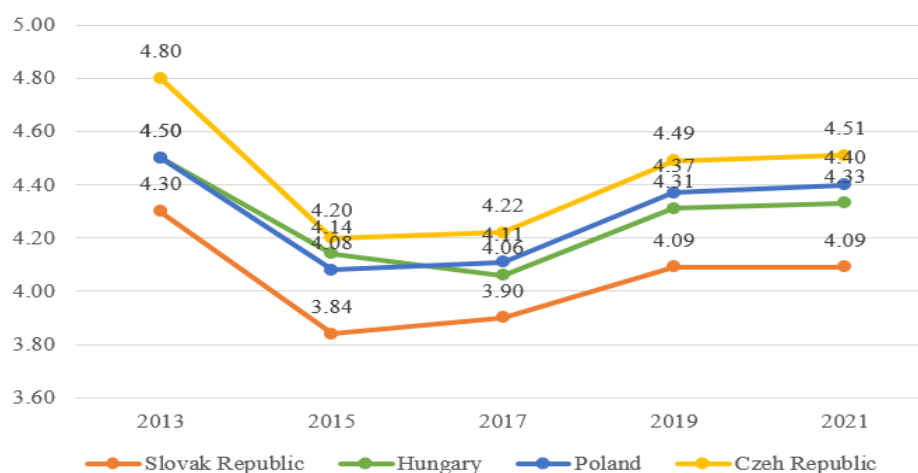

Figure 2. Development of TTCI (2013-2017) and TTDI (2019-2021) index scores of V4 countries
Source: own processing based on TTCI and TTDI annual reports from 2013 to 2021

Among all five types of approximation, a polynomial of the second degree was chosen. This type is best used in the case of variable data, which the authors consider to be the most appropriate choice given the current unstable geopolitical situation and the COVID-19 pandemic. Based on the values of the TTCI index (2013-2017) and TTDI (2019-2021) (Figure 2), the Czech Republic achieved the best results in each year (Figure 2).

Compared to 2013, however, the value of the index fell from 4.8 to 4.51, which represents the most significant drop over the last decade among the V4 countries. Nevertheless, the country has maintained a stable average index value of 4.50 in the last two evaluation periods and has improved by 5th places in the world rankings (from 31st place in 2013 to 26th place in 2021). The Czech Republic is the unequivocal leader among the V4 countries in the field of tourism and travel, so other countries should take it as an example when building national strategies, policies and plans, or inspiration. Figure 2 shows the average ratings of sets of factors and country policies that enable the sustainability and flexible development of the Travel and Tourism sector of the V4 countries, which was calculated through the rating of individual sub-indexes (described above) on a point scale from 1-7. The obtained scores in individual categories were subsequently averaged and the result is around the value of 4 for the V4 countries.

Evaluation of the total score of the TTCI index (2013-2017) and TTDI (2019-2021)

Based on the regression model processed in the MS Excel program (Figure 3), it can be seen that the coefficient of determination (R^2) for the development of the TTDI index value is at the level of 0.6794 in the case of the Czech Republic. This value indicates that the created regression model explains 67.94% of the data, the remaining 32.06% is caused by deterministic factors and random influences not included in the model. The regression model (Maryati et al. 2021) in the form of $y = 0.1058x2 − 0.6637x + 5.272$ makes it possible to create a forecast of the value of the TTDI index in the next analyzed year of 2023, the expected level of which will be 5.10.

The value on the x-axis (Figure 3) shows the average ratings of the sets of factors and policies of the countries that enable the sustainability and flexible development of the Travel and Tourism sector of the V4 countries, which was calculated through the rating of a specific sub-index (described above) on a point scale from 1-7. The obtained score in the subindex category was subsequently averaged and the result is around the value of 4 for the V4 countries.

In order, the second best rated V4 country is Poland, which, although in 2015, saw a significant decrease in the index, in the last two evaluated years, it improved its position and maintained a stable index value at an average level of 4.39. During the analyzed decade, Poland recorded the most significant positive development in the global ranking, as it advanced from 42nd place in 2013 to 30th place in 2021. With more progressive growth in recent years, this country is becoming the biggest rival of the Czech Republic, and not only in the field of travel traffic and tourism.
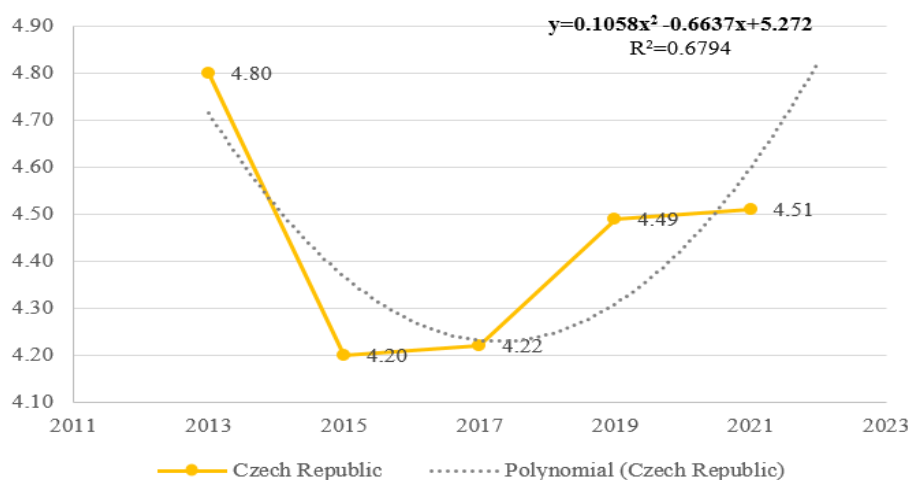

Figure 3. Prediction of the development of the TTDI index for Czech Republic
Source: own processing based on TTCI and TTDI annual reports from 2013 to 2021

The value on the x-axis (Figure 4) shows the average ratings of the sets of factors and policies of the countries that enable the sustainability and flexible development of the Travel and Tourism sector of the V4 countries, which was calculated through the rating of a specific sub-index (described above) on a point scale from 1-7. The obtained score in the subindex category was subsequently averaged and the result is around the value of 4 for the V4 countries.

Based on the regression model processed in the MS Excel program (Figure 4), it was found that the coefficient of determination (R^2) for the development of the value of the TTDI index is at the level of 0.6668 in the case of Poland. This value indicates that the created regression model explains 66.68% of the data, the remaining 33.32% is caused by deterministic factors and random influences not included in the model. The regression model (Maryati et al., 2021) in the form of $y = 0.081x2 − 0.477x + 4.8318$ will allow to create a forecast of the value of the TTDI index in the next analysed year of 2023, the expected level of which will be 4.89. The third best rated V4 country is Hungary, with the least significant fall in the value of the index during the analysed decade. Its stable development is also visible in the global ranking, where the country improved by 2 places (from 39th place in 2013 to 37th place in 2021). Hungary is thus slightly behind Poland, which is also confirmed by the slight difference between the average score of the index (4.29 Poland and 4.27 Hungary).
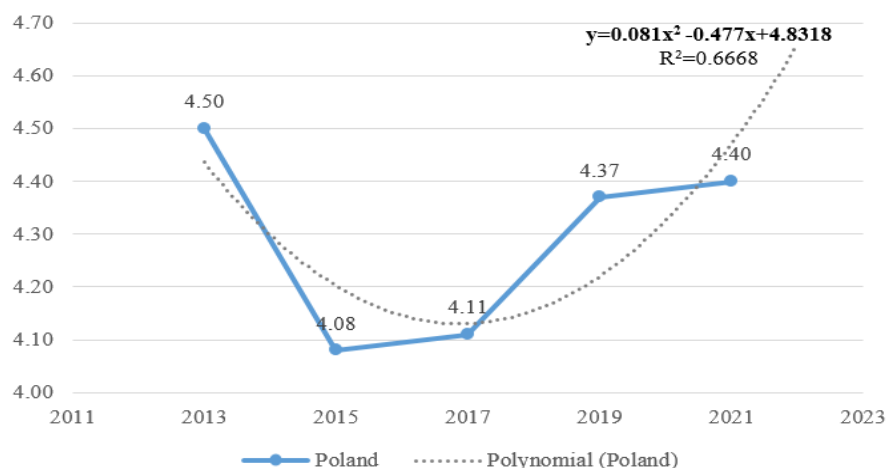
Figure 4. Prediction of the development of the TTDI index for Poland
Source: own processing based on TTCI and TTDI annual reports from 2013 to 2021

The value on the x-axis (Figure 5) shows the average ratings of the sets of factors and policies of the countries that enable the sustainability and flexible development of the Travel and Tourism sector of the V4 countries, which was calculated through the rating of a specific sub-index (described above) on a point scale from 1-7. The obtained score in the subindex category was subsequently averaged and the result is around the value of 4 for the V4 countries.
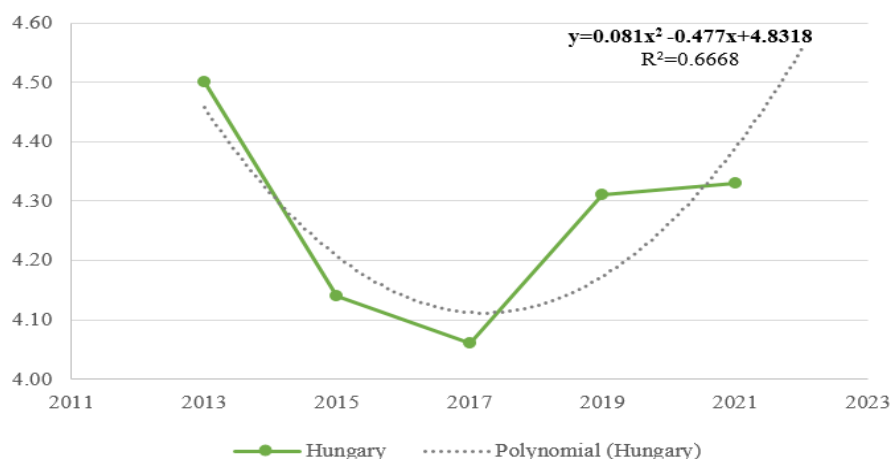

Figure 5. Prediction of the development of the TTDI index for Hungary
Source: own processing based on TTCI and TTDI annual reports from 2013 to 2021

Based on the regression model processed in the MS Excel program (Figure 5), it was found that the coefficient of determination (R^2) for the development of the value of the TTDI index is at the level of 0.7269 in the case of Hungary. This value indicates that the created regression model explains 72.69% of the data, the remaining 27.31% is caused by deterministic factors and random influences not included in the model. A regression model (Maryati et al., 2021) in the form of $y = 0.0772x^2 - 0.4805x + 4.8604$ will allow to create a forecast of the value of the TTDI index in the next analyzed year of 2023, the expected level of which will be 4.76. The Slovak Republic is the worst rated V4 country in terms of the value of the TTCI index (up to 2017) and TTDI (2019-2021). It was the only one to worsen its position in the global ranking during the analyzed decade, as it fell from 54th to 56th place. The most significant drop (as in the case of other countries) was recorded in 2015. The value of the index dropped from the original 4.30 in 2013 to 4.09 and remained identical for the last 2 evaluated years (other countries improved their scores at least slightly). Looking at the score of the TTDI index, the Slovak Republic lags most significantly behind the other V4 countries, so it should look for some inspiration in their tourism development strategies and plans and try to improve its position. The value on the x-axis (Figure 6) shows the average ratings of the sets of factors and policies of the countries that enable the sustainability and flexible development of the Travel and Tourism sector of the V4 countries, which was calculated through the rating of a specific sub-index (described above) on a point scale from 1-7. The obtained score in the subindex category was subsequently averaged and the result is around the value of 4 for the V4 countries.

Based on the regression model processed in the MS Excel program (Figure 6), it was found that the coefficient of determination (R^2) for the development of the value of the TTDI index is at the level of 0.6288 in the case of the Slovak Republic. This value indicates that the created regression model explains 62.88% of the data, the remaining 37.12% is caused by deterministic factors and random influences not included in the model. A regression model (Maryati et al., 2021) in the form of $y = 0.0759x^2 - 0.4715x + 4.6244$ will allow to create a prediction/prediction of the value of the TTDI index in the next analyzed year of 2023, the expected level of which will be 4.53.
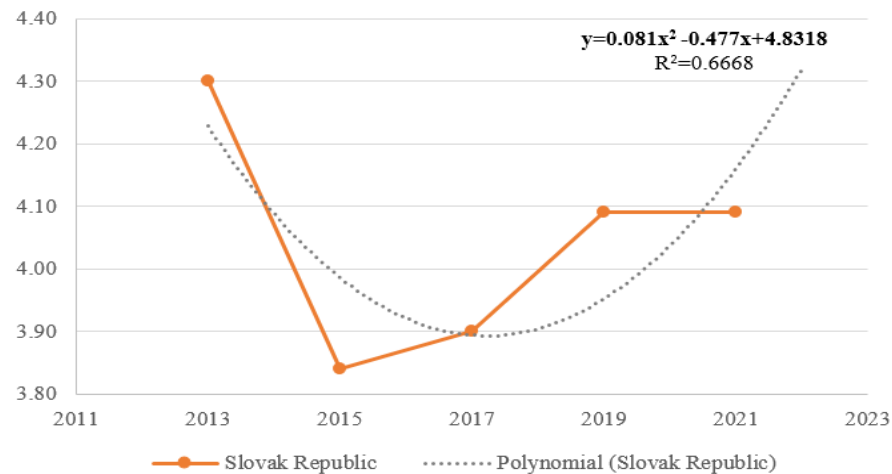
Figure 6. Prediction of the development of the TTDI index for the Slovak Republic
Source: own processing based on TTCI and TTDI annual reports from 2013 to 2021

Limitation of the study

The study is fully aware that at first glance the data may appear quite older but given the fact that the index updates are carried out on a two-year horizon, when they are published in 2024, it will be possible to compare how reliable the calculations of predictions in the industry can be tourism. In 2024, data from the following biennium for 2023 will be added. Based on them, it will be possible to verify whether the given prediction for development was conceived correctly, or whether consumer behaviour has changed so significantly that it does not correspond to the prediction model, and it will confirm that the tourism industry is so specific that it is difficult to rely on common calculation models. Among other things, the important fact is that the current period is already considered to be the period of the waning of the Covid-19 pandemic, and thus the market has also been significantly modified. From the point of view of service providers, there have been changes in the number of operating establishments, but also in the way services are provided. The focus on ensuring the maximum possible level of services in digital form is significant. In addition to these, touchless technologies have also become popular under the influence of the pandemic. On the part of the participants of the tourism industry, it was possible to continuously monitor the lengthening of the distance to the final destinations and the reduction of fears about travel and infection due to the mentioned pandemic disease. All the mentioned contributed to the gradual restart of the tourism industry.

CONCLUSIONS

Based on the information provided in this article, we can conclude that tourism in the Visegrad countries has undergone significant development and is facing new challenges and opportunities. The study covers various aspects such as tourism management strategies, economic impacts, and regional cooperation within the V4.

Differences in assessment and performance among individual V4 countries highlight the need for an individualized and tailored approach to tourism management and development. Despite the challenges posed by the COVID-19 pandemic and global economic changes, tourism maintains its important position as a key driver of economic and social development. The results from the TTDI and TTCI indices provide valuable insights and analyses that can assist policymakers and tourism industry professionals in formulating strategies and plans for achieving sustainable and inclusive growth. This article underscores the importance of continuous assessment and adaptation to the changing environment to effectively develop tourism in the V4 countries in the future.

REFERENCES

Alhazmi, N. (2018). Impact of Total Quality Management on Marketing of Tourism Services: An Applied Study on Hotels Located in Al-Kharj, Saudi Arabia. *International Journal of Management and Economics Invention*, 4(1), 1595-1605. https://doi.org/10.18535/ijmei/v4i1.06

Antošová, G., Vogl, M., & Schraud, M. (2020). Challenges for the Visegrad Group – the coronavirus crises and its impact on tourism. *Visegrad Journal on Bioeconomy and Sustainable Development*, 9(1), 28–32. https://doi.org/10.2478/vjbsd-2020-0006

Bazargani, R.H.Z., & Kiliç, H. (2021). Tourism competitiveness and tourism sector performance: Empirical insights from new data. *Journal of Hospitality and Tourism Management*, 46, 73-82. https://doi.org/10.1016/j.jhtm.2020.11.011

Beresecká, J., & Svetlíková, V. (2022). Performances, creativity and innovation of tourism in the post-pandemic period. *Aktuální problémy cestovního ruchu*. Jihlava: Vysoká škola polytechnická, 21-32. ISBN 978-80-88064-57-2.

Czuczor, K., Kozma, G., Dorogi, Z., Li, T., & Radics, Z. (2023). The Comprehensive Analysis of the Network of Superstructure Based on Territorial Characteristics of Accommodation and Food and Beverage Service Providers Considering the Financial Crisis and COVID-19: The Case of Bihor County, Romania. *Sustainability*, 15, 6759. https://doi.org/10.3390/su15086759

De Bernardi, C., & Arenas, D. (2022). How to avoid swinging: A social enterprise's quest for authenticity in tourism. *Tourism Management*, 89:104439. https://doi.org/10.1016/j.tourman.2021.104439

Deb, S.K., & Ahmed, S. (2022). Managing post Covid-19 crisis in the tourism and hospitality sector through sustainable recovery strategies. *GeoJournal of Tourism and Geosites*, 43(3), 993–1004. https://doi.org/10.30892/gtg.43319-913

Deb, S.K., Das, M.K., Voumik, L.C., Nafi, S.M., Rashid, M., & Esquivias, M.A. (2023). The environmental effects of tourism: analyzing the impact of tourism, global trade, consumption expenditure, electricity, and population on environment in leading global tourist destinations. *GeoJournal of Tourism and Geosites*, 51(4), 1703–1716. https://doi.org/10.30892/gtg.514spl11-1166

Gallo, P., Šenková, A., Mihalčová, B., Seifertová, V., Pružinský, M., & Nemec, J. (2019). relations of innovative management tool in Slovak hotel facilities. *GeoJournal of Tourism and Geosites*, 27(4), 1347–1356. https://doi.org/10.30892/gtg.27419-438

Gburová, J., & Lukáč, M. (2023). *Inovácie a udržateľná marketingová komunikácia múzeí* (Innovation and sustainable marketing communication of museums). Cestovný ruch: inovácie trendy a udržateľná budúcnosť. Scientific proceeding. 1st.ed. Prešov : Prešovská univerzita v Prešove, 2023. ISBN 978-80-555-3209-7, 34-4.1

Gössling, S., Scott, D., & Hall, C.M. (2021). Pandemics, tourism and global change: A rapid assessment of COVID-19. *Journal of Sustainable Tourism*, 29(1), 1–20. https://doi.org/10.1080/09669582.2020.1758708

Hakseung, S., Nicolau, J.L., Kang., J., Sharma, A., & Lee, H. (2022). Travel decision determinants during and after COVID-19: The role of tourist trust, travel constraints, and attitudinal factors. *Tourism Management*, 88, 104428. https://doi.org/10.1016/j.tourman.2021.104428

Hronec, M., Beresecká, J., & Hronec, Š. (2022). Social responsibility in local government. Praha: Wolters Kluwer ČR. ISBN 978-80-7676-579-5.

Kozmenko, O., Poluliakhova, O., & Iastremska, O. (2015). Analysis of countries' investment attractiveness in the field of tourism industry. *Investment Management and Financial*, 12(3), 56-63. https://doi.org/10.21511/imfi.12(3-1).2015.01

Kvitková, Z., & Petru, Z. (2021). *Domestic Tourism as a Factor of Survival and Recovery of Tourism in the V4 Countries (a comparative study)*. Conference: 21st International Joint Conference Central and Eastern Europe in the Changing Business Environment: Proceedings. https://doi.org/10.18267/pr.2021.krn.4816.13

Kyrylov, Y.Y., Hranovska, V.H., Krykunova, V.M., Svynous, I.V., & Nikitenko, K.S. (2023). Development of the sphere of hospitality in strategy recovery of the tourist industry of Ukraine. *GeoJournal of Tourism and Geosites*, 51(4), 1676–1691. https://doi.org/10.30892/gtg.514spl09-1164

Maryati, I., Sumartini, T.S., & Sofyan, D. (2021). Experiences of Pearson formula in analysis regression. *IOP Conference Series: Materials Science and Engineering*. IOP Publishing, 1098. https://doi:10.1088/1757-899X/1098/3/032088

Mátyás, Sz., Tokodi, P., Vince, V., & Tihanyi, M. (2021). Investigation of Certain Components of Tourism Safety in the Visegrád Countries. *Internal Security,* 13(1), 89-97. https://doi.org/10.5604/01.3001.0015.2902

Ministry of Regional Development CZ. (2024). Cooperation within the group of V4 countries. accessed 1th January of 2024. https://mmr.gov.cz/en/evropska-unie/spoluprace-v-ramci-eu-a-mezinarodni-spoluprace/spoluprace-v-ramci-skupiny-zemi-v4-(1),

Mura, L., & Stehlikova, B. (2023). Innovative Approaches: Using DEMATEL Method in the Research of SMEs Operating in Tourism Sector. In: Valeri, M. (eds) Family Businesses in Tourism and Hospitality. *Tourism, Hospitality & Event Management*. Springer, Cham. https://doi.org/10.1007/978-3-031-28053-5_10

Shen, Z., Fan D., & Buhalis, D. (2022). The Effect of Hotel Livestreaming on Viewers' Purchase Intention: Exploring the Role of Parasocial Interaction and Emotional Engagement. *International Journal of Hospitality Management*. 107. https://doi.org/10.1016/j.ijhm.2022.103348

Shin, H., Nicolau, J.L., Kang, J., Sharma, A., & Lee, H. (2022). Travel decision determinants during and after COVID-19: The role of tourist trust, travel constraints, and attitudinal factors. *Tourism Management*, 88:104428. https://doi.org/10.1016/J.TOURMAN.2021.104428

Stepchenkova, S., & Li, X.R. (2014). Destination image: Do top-of-mind associations say it all? *Annals of tourism research*, 45, 46-62. https://doi.org/10.1016/j.annals.2013.12.004.

Šambronská, K., & Matušíková, D. (2020). Analýza vybraných ukazovateľov stavu cestovného ruchu v krajinách vyšehradskej štvorky vo vybranom období. In Cestovný ruch v dvadsaťročnici od prelomu milénií –výkony, výzvy, trendy. Recenzovaný nekonferenčný zborník medzinárodných vedeckých štúdií. Prešovská univerzita v Prešove. 197-210. ISBN 978-80-555-2575-4.

Šenková, A., Vavrek, R., Molnárová, N., & Mitríková, J. (2020). Gender differences in perception on sustainable tourism – case study applied to the PU in Prešov. *GeoJournal of Tourism and Geosites*, 32(4),1216–1221. https://doi.org/10.30892/gtg.32404-560

Štrba, Ľ., Molokáč, M. (2022). Geotourism and geoparks - promoting geoheritage and geodiversity to people. *Landscapes and Landforms of Slovakia*, Springer Nature, World Geomorphological Landscapes, 437-449. https://link.springer.com/chapter/10.1007/978-3-030-89293-7_22

The World Bank. (2022). Tourism and Competitiveness. https://www.worldbank.org/en/topic/competitiveness/brief/tourism-and-competitiveness, accessed 31th of March, 2022.

UNWTO. (2020). International Tourism Highlights, 2020 Edition. https://www.e-unwto.org/doi/book/10.18111/9789284422456

Visegrad Cooperation (2023a). Visegrad Group. https://v4.mfa.gov.hu/page/visegrad-cooperation

Visegrad Cooperation (2023b). Public Events, Culture, Tourism. https://v4.mfa.gov.hu/page/public-events-culture-tourism

Volchek, K., Law, R., Buhalis, D., & Song, H. (2020). Exploring ways to improve personalisation: The influence of tourist context on service perception. *e-Review of Tourism Research*, 17(5), 737-752.

World travel & tourism council. (2022). Travel & Tourism Economic Impact 2022. Global Trends. https://wttc.org/Portals/0/Documents/Reports/2022/EIR2022-Global%20Trends.pdf

Zemanová, L. (2022). Comparison of state Policy of tourism in V4 countries. Studia turistica. 13(2), 39 – 51.

THE EVOLUTION OF ECOTOURISM ON GEOHERITAGE
IN SCIENTIFIC RESEARCH: A BIBLIOMETRIC ANALYSIS

Dian Utami SUTIKSNO
Ambon State Polytechnic, Business Administration Department, Ambon, Indonesia, e-mail: dsutiksno@gmail.com

Wendy SOUISA
Ambon State Polytechnic, Business Administration Study Program, Ambon, Indonesia, e-mail: souisawendy@gmail.com

Agung PURNOMO
Bina Nusantara University, Entrepreneurship Department, Jakarta, Indonesia, e-mail: agung.purnomo@binus.ac.id

Christy Gery BUYANG
Pattimura University, Faculty of Engineering, Ambon, Indonesia, e-mail: christ.gery@gmail.com

Evan LAU[*]
University Malaysia Sarawak, Faculty of Economics and Business, Sarawak, Malaysia, e-mail: lphevan@unimas.my

Abstract: Abstract: The objective of this study is to examine the evolution of Ecotourism on Geoheritage through bibliometric analysis. Total of 53 papers pertaining exclusively to the domain of Ecotourism on Geoheritage, spanning from 2008 to 2022, were gathered from the Scopus database. This study examines the core aspects and features of Ecotourism on Geoheritage in academic research. It employs topic analysis, concurrence analysis, and timeline analysis of author keywords to investigate factors such as annual publication contribution, popularity, and focus. Furthermore, the analysis incorporates many productive entities, including journals, authors, institutions, countries, regions, and the mapping of significant collaboration links. These elements are utilized to determine the level of attention received by different entities in the field of Ecotourism on Geoheritage research. Furthermore, this study examines the citation structure of authors and journals and provides a detailed analysis of burst detection in cited authors, journals, and references. Ultimately, the study findings will be integrated with the present financial circumstances to delve further into future development obstacles and prospects. This bibliometric analysis reveals a consistent rise in yearly publications, a notable shift in emphasis towards financial inclusion, a prevailing presence of authors from Australia, and a growing number of international collaborations and publications from diverse sources. These findings indicate that the field of Ecotourism on Geoheritage is dynamic and holds promise for future scientific advancement. Hence, this exhaustive analysis of the Ecotourism on Geoheritage document not only examines the features and course of existing research but also assists researchers in identifying the appropriate research starting point and conducting thorough investigations.

Key words: Ecotourism, Geoheritage, Research, Bibliometric Analysis, Scopus,

* * * * * *

INTRODUCTION

Geoheritage refers to geological characteristics and processes that influence the development of the earth throughout millions of years (Németh, 2023). Combining ecotourism principles with the understanding and conservation of geoheritage offers a great opportunity to promote sustainable tourism practices while protecting our geological wealth (Chandel et al., 2023; Zhang et al., 2023). Investigation of geoheritage sites is a recent undertaking in the field of tourist research (Drinia et al., 2023). Ecotourism is primarily focused on more than just admiring the visual appeal of the natural surroundings (Carrascosa-López et al., 2021). The concept of "geotourism" is well established in tourism science, as evidenced by a large number of scientific and mass market works published internationally every year (Štrba et al., 2023). Geotourism has emerged as a solution to mitigate the negative effects of mass tourism in environmentally and geographically delicate and important destinations within tourist settings (Rohaendi & Herlinawati, 2024; Zabielska, 2023). The urgency of studying value chains in marketing channels is underscored by the dynamic and continuously evolving nature of global markets. Therefore, a multidimensional need for the evolution of this field can be recognized.

Progress in this particular research domain continues to be dispersed, despite its distinct nature (Lewis, 2023), especially due to the field's dependence on different domains related to ecotourism and tourism development (Abioui et al., 2021; Anokhin et al., 2021; Chlachula et al., 2021; Román and Umaña, 2020). Both the research's dependence on qualitative evaluations and the possible necessity for a more thorough quantitative analysis to fully comprehend the region's tourist

---

[*] Corresponding author

potential are limitations of the study. This study only looked at one place, thus its results might not apply to other parts of the world. Moreover, the broadening of the field's horizons due to the rapid progress of cultural tourism (Herrera-Franco et al., 2022; Mirari et al., 2020; Xu et al., 2023) has resulted in inharmonious perspectives on Ecotourism on Geoheritage among researchers (Ellegaard & Wallin, 2015), which complicates the synchronized development of the field. Each uses a variety of geographic and environmental assessment techniques, such as mapping with geographic information systems (GIS) and conducting field research, to assess the tourism potential of a particular location. This research emphasizes the need to maintain the integrity of cultural and environmental landmarks while expanding tourist attractions.

However, every research effort must have inherent obstacles (Herrera-Franco et al., 2022). An inherent obstacle is the limited applicability of their findings due to their focus on specific geographic areas (Mirari et al., 2020). Additionally, this method relies heavily on subjective evaluation and could potentially benefit from including more objective data. Issues of accessibility and infrastructure development in these places are emphasized, which have the potential to affect the feasibility of tourism development (Tičar et al., 2018). In summary, these studies provide valuable insights into the geotourism and ecotourism potential of specific places. However, its usefulness is limited due to its concentration in certain regions and the need for broader data. This research acknowledges the lack of conceptual uniformity and unanimity in this field, as noted by Németh's and Procter (2021), this paper discusses the challenges in decision-making due to the complexity of value interests and how this often neglects geo-education. Researchers used automated landform classification and crowdsourcing through platforms such as Flickr to analyze visitation rates and identify key geoeducational sites. This study emphasizes the integration of geoscience data and public interest for urban planning and conservation strategies.

However, this study did not explicitly address potential temporal variability in visitation rates. Tourism trends and visitor preferences may change over time, thereby influencing the relevance of identified geoeducational sites. This study attempts to address this issue by showing recent advances, as well as prominent authors whose contributions have been essential in leading scientific work in this area, as well as current trends and possible future research directions.

The questions that are addressed in this study include inquiries regarding the current state of advancement, the primary individuals who have made significant contributions, the sources that have had the most influence, including countries and journals, the patterns in publications on the subject, as well as the extent and prevalence of these trends, the distribution of current knowledge, and the prospective paths for study in the scientific domain of ecotourism on geoheritage. To address these problems, this study employs bibliometric analysis as well as citation and co-citation analysis on previously published scientific publications. This research has numerous benefits. The publication trends provide insights into the current advancements and stages of growth in the sector. These findings could enable other researchers to assess the suitability of their research objectives. Furthermore, through the process of identifying the most significant papers and writers on the subject, together with the often-utilized keywords, researchers may effectively recognize the prominent people in the field and construct a conceptual framework that aims to facilitate peaceful advancement. Furthermore, the cluster analysis performed in this work unveiled the magnitude of existing information and the potential range of future investigation. Furthermore, this research aids future researchers in comprehending the extent of international collaboration that can promote the transfer of information and contextualization of such adoption, hence expediting funding. Through ecotourism on geoheritage, inclusiveness and sustainability in the global financial sector can be achieved. This can be accomplished by identifying the nations that have contributed the most, which provides an indication of the current status of the adoption of ecotourism on geoheritage in their respective regions. Further research is structured as follows. In the second part, the methodology adapted from this research has been explained. Subsequently, the findings of the analysis are presented and deliberated upon in sections four and five. Ultimately, the paper finishes by discussing the practical and theoretical consequences of this research while also acknowledging its limits.

METHODOLOGY

A bibliometric analysis, including citation and co-citation analysis, has been conducted on published scientific publications to examine the evolving trends and characteristics in the scientific field of Ecotourism on Geoheritage. Bibliometric analysis has demonstrated its efficacy in identifying prevalent terms and evolving concepts, as well as predicting future trends (Donthu et al., 2021; Ellegaard & Wallin, 2015). This method employs quantitative measurements and investigative procedures to analyze textual documents, adhering to an objectivist worldview (Rialti et al., 2019). Citation and co-citation analysis aims to reveal emerging patterns and assess the influence of various journals, authors, related keywords, and common concepts. Furthermore, it discerns the trajectory of the establishment and advancement of scientific disciplines, which is linked to specific authors and collaborative efforts (Bu et al., 2018).

Bibliometric studies, such as citation and co-citation analysis, have the ability to derive patterns and attributes from written sources. Bibliometric studies aid in the examination, arrangement, and expression of the research conducted in a specific topic within a specific timeframe by measuring its expansion, institutional scientific prowess, and potential intellectual movements (Hasana et al., 2022; Herrera-Franco et al., 2020). Citation and co-citation analysis is a method used by researchers to analyze written materials published in academic sources, such as journals, books, and articles. It involves using analytical skills, strategies, and tools to study and observe a specific research field or a section of a scientific discipline (Chang et al., 2015; Zupic & Čater, 2015). Bibliometric studies offer a thorough overview of the historical, current, and future trajectory of an area or subfield under investigation.

The utilization of bibliometric research techniques enables researchers to apply quantitative tools and analyze published written documents in an effective and unbiased manner. This approach aligns with the objectivist research philosophy and facilitates the understanding and presentation of findings in quantitative terms (Chang et al., 2015; Donthu et al., 2021;

Khasseh et al., 2018; Linnenluecke et al., 2020). Figure 1 displays a concise overview of the methodological procedure. The researchers extracted the written documents for the bibliometric study from the Scopus Database, specifically using the keywords "ecotourism AND geoheritage," which are commonly found in articles within the selected scientific topic. The study's limitations can be attributed solely to the application of these keywords. Furthermore, the authors did not choose or utilize databases other than Scopus because they did not have official access to them. The authors exclusively granted access to the Scopus Database, so enabling the utilization of additional pertinent keywords, including those from other reputable databases such as Web of Science, ScienceDirect, DOAJ, and JSTOR, for future research purposes.
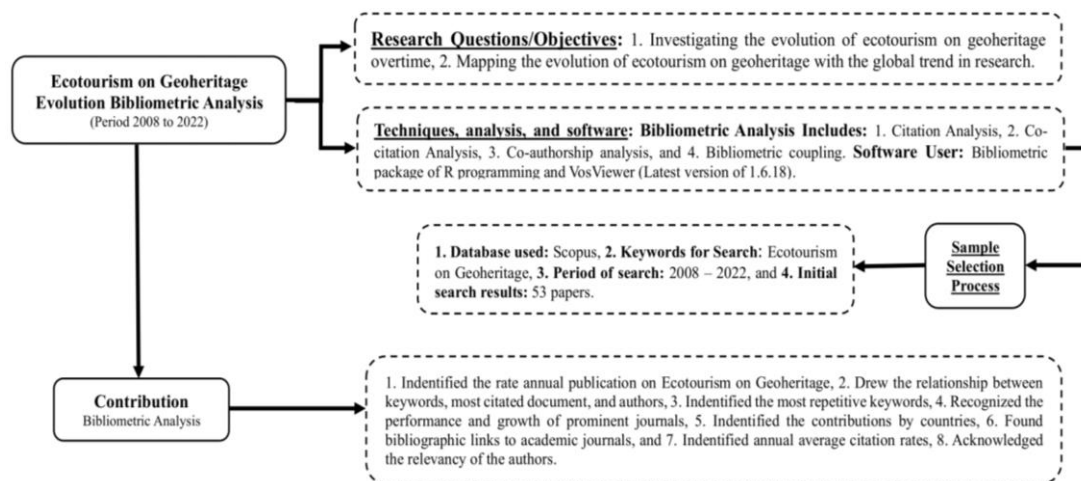

Figure 1. Outline of the methodology

Upon completing the database loading process, the authors implemented a periodic filtering technique to selectively retrieve documents spanning from 2008 to 2022. As an emerging academic discipline, the database comprises a total of 53 documents, commencing from 2008. The period between 2008 and 2022 was chosen because the development of this field began after 2008, and 2023 was not included, as the total number of published documents was unknown at the peak of this research. The authors have not applied the "Document Type" filter, as they have considered all document types (e.g. articles, books, book chapters, conference papers, short surveys, and note previews) that are applicable and relevant to bibliometric analysis. The author did not exclude certain types of documents, because applying the keywords "ecotourism AND geoheritage", and other related documents, only obtained 53 results. Other studies conducted in recent years applied similar strategies to shape the overall Ecotourism on Geoheritage research (Hasana et al., 2022; Herrera-Franco et al., 2020, 2022). To calculate the "average citations per document" the researchers considered both highly cited and low-cited papers, which facilitated the process of identifying good and mediocre research. In addition, all sources of scientific work are considered to maximize the total number of papers. Using this filtration technique, the author took 53 documents. The R programming bibliometric package has been used on these documents from the Scopus Database for analysis. VOS Viewer (latest version 1.6.18) has also been used to present network analysis.

RESULTS
1. Summary Statistics

This chapter presents the results of a bibliometric study carried out on 53 publications focused on the research subject of ecotourism on geoheritage. These documents were published between 2008 and 2022. Table 1 presents a concise overview of the results obtained from the analysis. The average number of citations per document obtained from the Scopus Database was 24.87. A higher average citation count indicates a significant increase in the number of research papers that have contributed to the scientific field of ecotourism on geoheritage during a specific time frame. The results also provide the count of distinct authors contributing to the field. In total, there were 176 authors who contributed by publishing a combined total of 53 papers.

Out of them, 7 authors submitted 8 documents individually. The average number of authors involved in the completion of each document is 3.58, with each author contributing to a minimum of 8 papers. To clarify, there are 8 papers per author on average, and each document has an average of 3.58 co-authors. Furthermore, these findings demonstrate the significant prevalence of author partnerships within the ecotourism area, specifically pertaining to geoheritage. The findings of this study additionally demonstrate the presence of a substantial number of global partnerships, facilitated by 20.75% of foreign co-authorships.

Table 1. Summary Statistics

Description	Results
Main Information About Data	
Timespan	2008:2022
Sources (Journals, Books, Etc)	26
Documents	53
Annual Growth Rate %	16,99
Document Average Age	6,06
Average Citations Per Doc	24,87
References	2618
Document Contents	
Keywords Plus (ID)	280
Author's Keywords (DE)	175
Authors	
Authors	176
Authors Of Single-Authored Docs	7
Authors Collaboration	
Single-Authored Docs	8
Co-Authors Per Doc	3,58
International Co-Authorships %	20,75
Document Types	
Article	48
Conference Paper	1
Review	4

2. Performance Analysis

Figure 2 displays the yearly changes in scientific productivity from 2008 to 2022. This shows the novelty of the scientific field of ecotourism on geoheritage. The development of annual publications in this field has experienced less stable development. This growth continues to be seen in 2020. The increasing implications of ecotourism on geoheritage globally can justify the annual growth rate in research figures depicted in Figure 2. By obtaining a Pareto's Law perspective to observe this growth, publications account for 99% of the total number of documents (53) in the scientific field of ecotourism on geoheritage can be attributed to contributions made in just 8 years (2014 to 2022), although this study experienced ups and downs. These studies, taken from the Scopus database, mostly focus on ecotourism, tourism development, geotourism, heritage conservation, and heritage tourism.
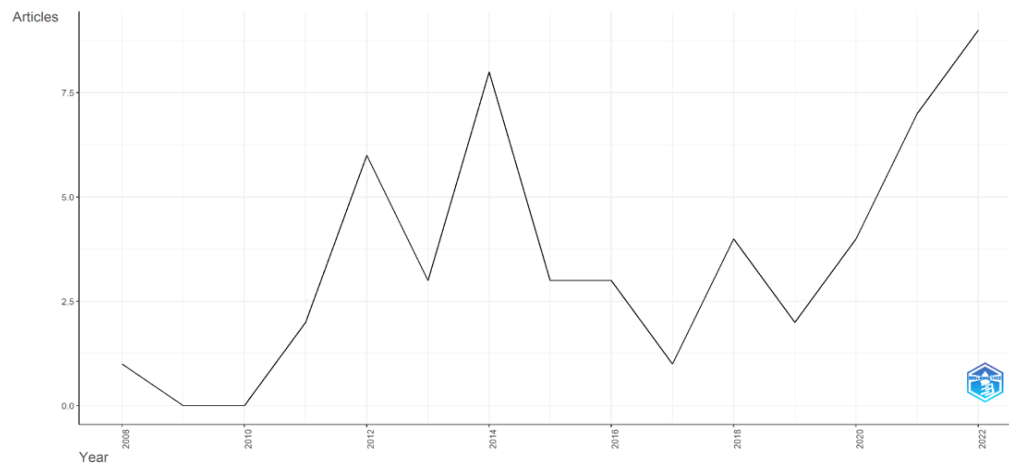

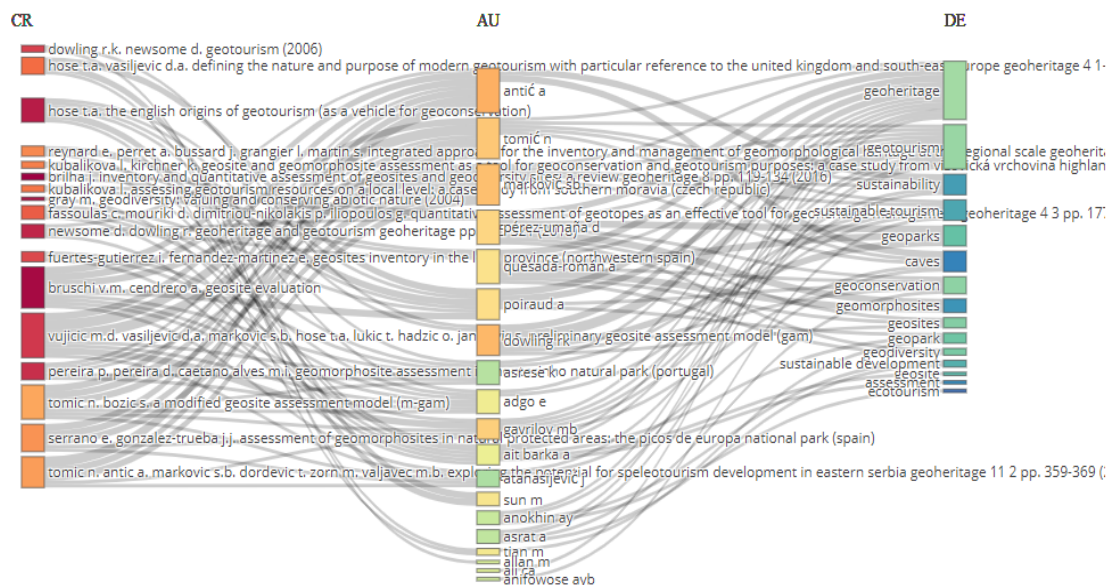Figure 2. Annual Scientific Production on Ecotourism on Geoheritage

Figure 3. Three field analyses in Ecotourism on Geoheritage

3. The correlation between Keywords, Highly Cited Documents, and Authors

Figure 3 illustrates a comprehensive study conducted on keywords, highly referenced publications, and prominent authors of documents published in the Scopus database within the domain of ecotourism on geoheritage from 2008 to 2022. The diagram illustrates the correlation between the variables of the articles with the highest number of citations (left column), the authors with the highest number of citations (middle column), and the keywords (right column). The image illustrates that CR denotes the title of the article with the highest number of citations, AU signifies the author who is being cited, and DE represents the keywords employed by both the author and the article. The analysis confirms that Ecotourism on Geoheritage is the keyword that appears most frequently and is chosen by authors in this field. However, "geoheritage", "geotourism", "sustainability", "sustainable tourism", "geoparks", "caves", and "geoconservation" are used repeatedly with terms closely related to Ecotourism on Geoheritage. Commonly appearing keywords are also presented in Figure 4, using word power Cloud Analysis. New trends in ecotourism and tourism development clearly emerge through this analysis. This also shows the increasing interest in ecotourism and tourism development to the wider community. The implications of this field usually cover a wide range of topics regarding environmental conservation, sustainable tourism practices, and socio-economic development in tourist destination areas. Nevertheless, a greater emphasis has been placed on investigating the relationship between Ecotourism and Geoheritage in a more

comprehensive manner compared to the keywords. Several researchers have made contributions to this topic, including Antić (2020), Dowling (2011), Marković (2022), Tomić (2018), Gavrilov (2022), and Poiraud (2017) are equally important in developing the keywords "Ecotourism AND Geoheritage". The use of peripheral keywords related to ecotourism and geoheritage implies that this area is still in its infancy. Therefore, future researchers can work on ecotourism and geoheritage to expand and develop ecotourism on geoheritage as an academic research field.

Figure 4. Word Cloud Analysis in Ecotourism on Geoheritage

4. Academic Journal Performance

Figure 5 shows the contribution of various journals based on the number of documents published in the field of ecotourism on geoheritage. The international journal "Geoheritage" based in Germany has the highest contribution in this domain. This journal only published 19 research papers from 2008 to 2022. "Sustainability (Switzerland)" which has published 5 papers and "International Journal of Geoheritage and Parks" published 3 papers. "GeoJournal of Tourism and Geosites", "Geosciences (Switzerland)" and "Annales De Geographie" have each published 2 papers. Despite having strong editorial boards, the journals "Anuario do Instituto de Geociencias", "Applied Geography", "Arabian Journal of Geosciences", and "Baltic Region" have not made significant contributions to the field of ecotourism on geoheritage.
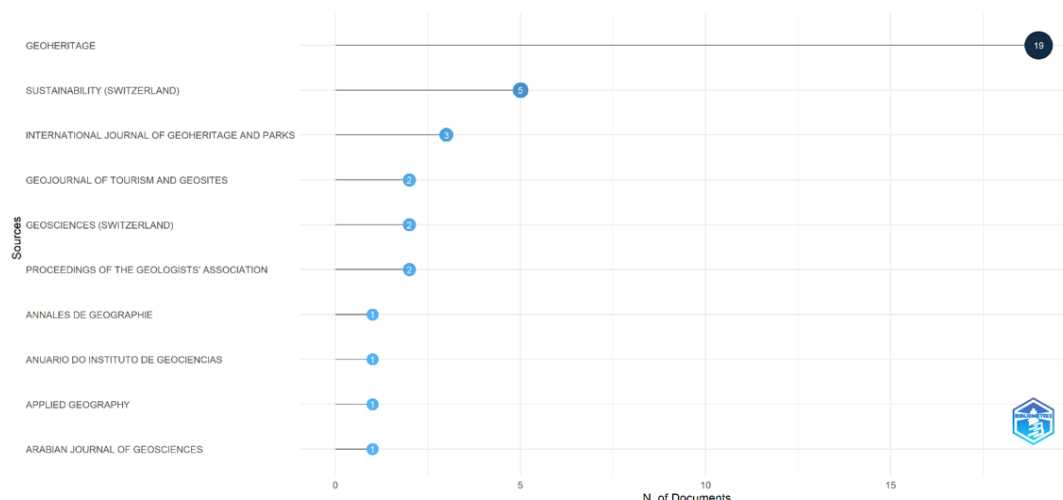

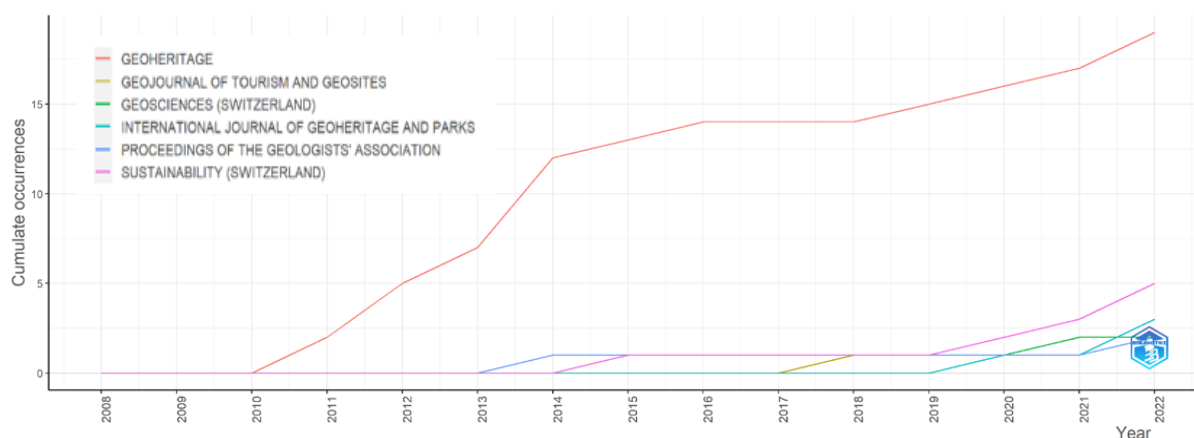Figure 5. Most Contributing Journal in Ecotourism on Geoheritage

Figure 6. Sources' Dynamics Over Time

243

5. Sources of Growth in Ecotourism on Geoheritage over Time

As previously said in this paper, "Geoheritage" plays a significant role in the field of ecotourism, specifically in relation to geoheritage. Nevertheless, funding from this source did not commence until 2009. This source commenced its expansion in the field of academic study in 2010. Figure 6 illustrates a consistent and rapid increase in the number of articles from this source between 2010 and 2022, following an exponential growth pattern. The journals "Sustainability (Switzerland)" and "Applied Geography" commenced publishing articles in 2015 and 2016, respectively. However, their growth rates up until 2022 have been fluctuating and unpredictable. The "International Journal of Geoheritage and Parks" only published papers in this field in 2020. "Geojournal of Tourism and Geosites" has been a journal that has been published stably in this field since 2014. Although "Geosciences (Switzerland)" is a journal that has a special theme related to this field, but publication of new papers began in 2020.

6. Impact by Country

Figure 7 illustrates the hierarchy of different nations according to their influence on the scientific domain of ecotourism on geoheritage from 2008 to 2022. According to bibliometric data, authors from Australia have the most influence. The American author has amassed a grand total of 414 citations. The substantial volume of citations, despite the relative novelty of the academic field, indicates the swift progress of banking services in the region towards incorporating financial technology. As expected, Greek writers played a crucial role in shaping the advancement of this discipline, advocating for a profound alteration in Greece's monetary system and methods of conducting transactions. At the conclusion of the specified research period, Greek authors had amassed a total of 172 citations, ranking as the second greatest number of citations among all countries. Nevertheless, the significant influence of Turkish authors has also been recognized. The researchers have garnered 56 citations, positioning them in third place on the list. The impact of other countries (e.g. Italy, Slovenia, Ethiopia, Serbia, Morocco, Costa Rica, and Ecuador) is also visible.
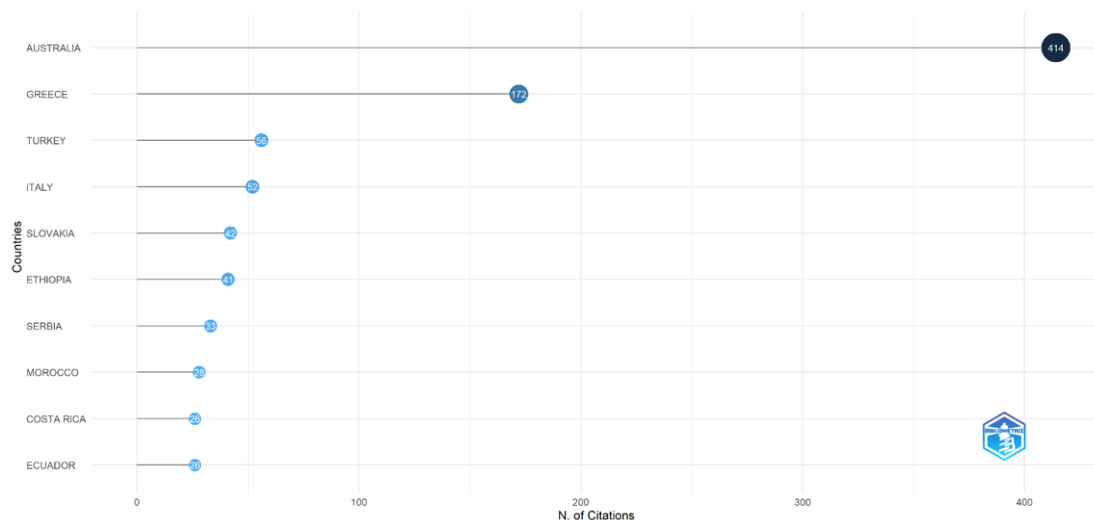

Figure 7. Most Cited Countries in Ecotourism on Geoheritage

The bibliometric investigation also revealed partnerships among authors from diverse nations. The data in Figure 8 illustrate the degree of collaboration, highlighting the prevalent pattern of cross-national co-authorship between academics from the Czech Republic and Kazakhstan. Australia, the country of authors or co-authors with the largest number of scientific papers, tends not to be found on the collaboration map. Iran and Poland collaborate both domestically and with other countries, even with countries on other continents. Belgium, Ethiopia, and Austria also receive significant collaboration traffic from countries such as Poland and Iran.

Figure 8. Country Collaboration Mapping

7. Bibliographic Links to Academic Journals

Figure 9 shows the two groups of studies identified through bibliometric analysis. All clusters in the image are red, this cluster contains keywords such as ecotourism, tourism.development, geotourism, heritage.conservation, heritage.tourism, cultural.heritage, geodiversity, sustainability, education, and environmental.protection. Because there are no significant differences that occur, the author describes the focus area of the cluster in the same area, namely ecotourism.
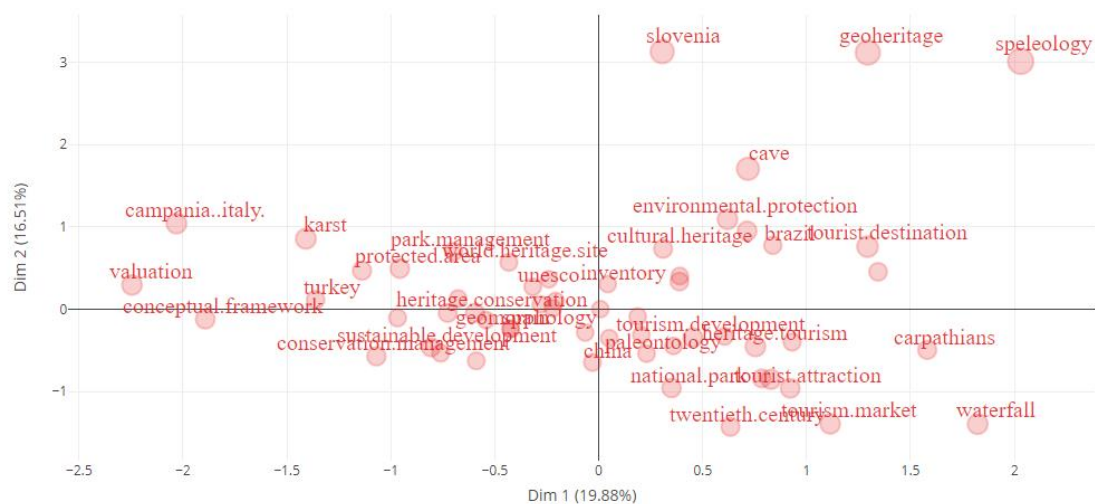
Figure 9. Cluster Analysis in Ecotourism Research on Geoheritage

8. Average Quotes over Time

Figure 10 presents the total number of annual citations in Ecotourism on Geoheritage, from 2008 to 2022. As explained earlier in this paper, scientific research in the field of ecotourism on geoheritage started on a large scale since 2008, which is once again confirmed by the bibliometric analysis of ecotourism on geoheritage annual citation number. The development of citations to papers written with the keywords "Ecotourism AND Geoheritage", and other related papers, began after 2008. Since 2014, the growth rate has started to trend towards negative. The annual number of citations also decreased from 2015 to 2019.
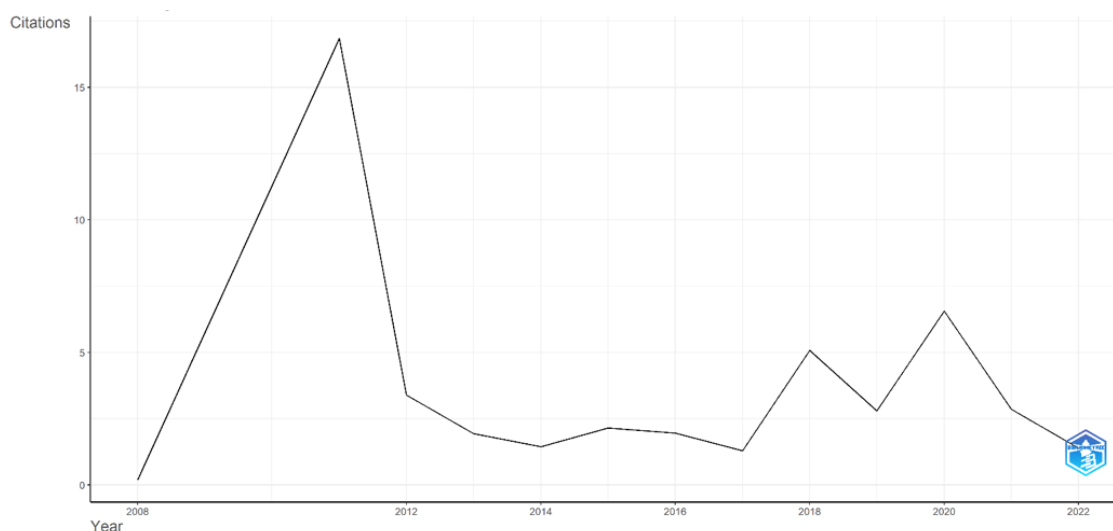
Figure 10. Annual citations on Ecotourism on Geoheritage

Figure 11. Most Relevant Authors in Ecotourism on Geoheritage

9. Author Relevance in Ecotourism on Geoheritage

Figure 11 depicts the contributions made by different authors that were identified using bibliometric analysis. From 2008 to 2022, Antić A. Dowling R.K., Marković S.B., and Tomić N. contributed equally to the field of Ecotourism on Geoheritage by each authoring or co-authoring 3 papers. Gavrilov M.B., Poiraud A., Pérez-Umaña D., Quesada-Román A., Sun M. and Tian M. wrote about 2 scientific papers. The contributions of these authors are also visible in the Three Field Analysis discussed at the beginning of this paper.
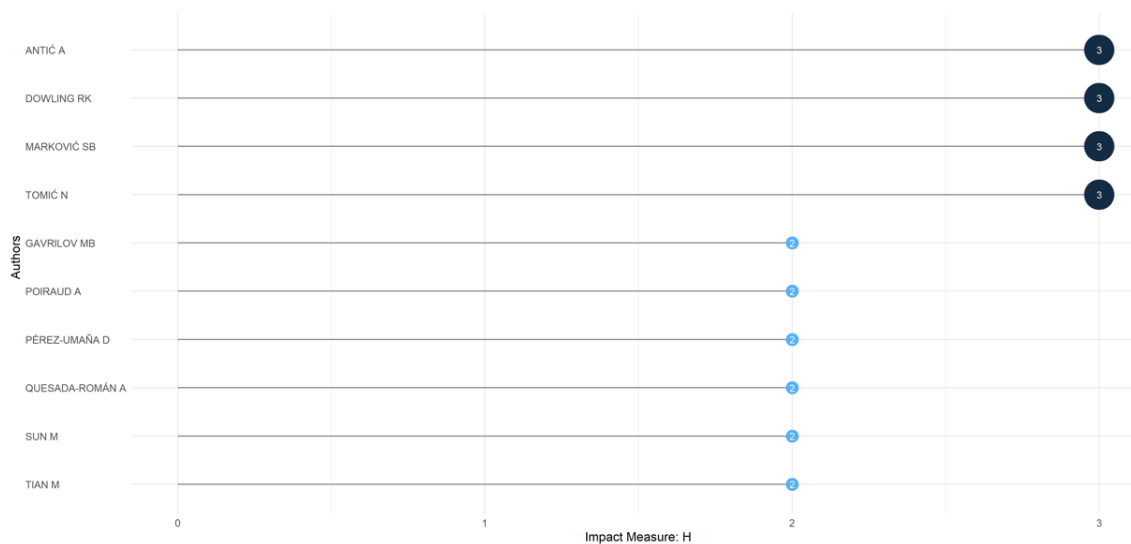
DISCUSSION

This study presents a bibliometric analysis conducted on publications published in the field of Ecotourism on Geoheritage from 2008 to 2022. A total of 53 scientific papers were retrieved from the Scopus Database. The investigation revealed that the phrase "geoheritage" in tourism development was first introduced in 2008 with the publication of a paper. This term was proposed by Bujdosó et al. (2015), demonstrating its recent emergence in the sector. The number of annual publications will increase gradually until 2022 although there will still be several declines. Since 2020, this field has attracted enormous research interest, resulting in an increase in the number of annual publications (Figure 2). In the same period, the adoption rate of ecotourism on geoheritage in geotourism globally also increased rapidly (Hasana et al., 2022; Herrera-Franco et al., 2022). Román and Umaña (2020), Cheablam et al. (2021) argue that after the COVID-19 pandemic the opening of tourist attractions began to be implemented. This analysis reveals a potential explanation for the rise of publications in this subject and beyond starting in 2021. This paper examines publications on this topic using bibliometric analysis and provides its conclusions using graphical figures and tables.

First of all, terms such as Ecotourism and Geoheritage appear most frequently (Figure 3 and Figure 4), indicating the one-way dependence of ecotourism on geoheritage on various environmental factors and cultural heritage. Dependence on other environmental and cultural heritage domains is also suggested by (Anokhin et al., 2021; Gordon, 2018; Heshmati et al., 2022; Štrba et al., 2020). In addition, geoheritage is the second most frequently used keyword (Figure 3), which implies the possibility of a strategic shift in the goals of banking and government businesses to integrate the wider community into natural tourism and geographical heritage. A recent study conducted by Anokhin, Kropinova, and Spiriajevas (Anokhin et al., 2021), demonstrates that ecotourism, when seen as a disruptive technology, has the capacity to expedite geotourism in diverse economic settings. The bibliometric analysis undertaken for this research reveals that geotourism is well recognized and frequently studied by researchers worldwide, indicating a strong interest in exploring its possibilities. Additionally, the bibliometric study demonstrates the influence of authors from various nations on the area, as depicted in Figure 7. Authors from Australia have collected the largest number of citations, highlighting the environment and cultural heritage of the region. Furthermore, the presence of international collaboration was detected (Figure 8). Authors hailing from Poland, Iran, Czech Republic, and Kazakhstan have engaged in many collaborations with various countries within the designated study period. The individual authors, namely Antić (2020), Dowling (2011), Marković (2022), and Tomić (2018), received the highest marks in terms of measuring individual impact. Nevertheless, the yearly count of citations declined after 2015. The bibliometric study also identified publications originating from 26 distinct sources (Figure 5). Out of all these sources, the journal "Geoheritage," which is located in Germany, publishes the highest quantity of scholarly publications. Figure 6 illustrates the rapid increase in the number of papers in these journals and other sources that made major contributions.

With regard to the subject of research, the conceptual structure map illustrates two distinct research directions (Figure 9). Apart from that, these three fields and the word CloudAnalysis show that the keywords ecotourism, tourism development, geotourism, heritage conservation, heritage tourism, and cultural heritage are gradually gaining momentum to become mainstream research sub-fields. Irrespective of the manner and location, the quantity of yearly publications consistently rises (Figure 2), indicating the high level of activity in the field and the potential for further scholars to make contributions. Prior bibliometric studies undertaken by Hasana, Swain, and George (Hasana et al., 2022) have also uncovered similar research issues in the discipline.

This report proposes potential research avenues that could greatly promote scientific advancement in the academic discipline of Ecotourism on Geoheritage. Nevertheless, this work conducts an analysis of publications recorded in the Scopus Database and obtained through certain keywords, restricting the scope of the research. In the future, scientific research will have the capacity to incorporate more approaches to investigate the dynamics of field development.

CONCLUSION

The purpose of this study is to conduct a bibliometric analysis of the subject of ecotourism on geoheritage in order to determine its present development, important authors, publishing trends, and potential future research directions. Research findings show that Ecotourism on Geoheritage is a dynamic and rapidly developing field, with significant growth in the number of annual publications in recent years. The analysis also reveals that this field relies heavily on various ecotourism domains and tourism development is the most frequently used keyword. Geotourism is another important aspect that has received great attention in recent years. This research identifies the authors, countries and sources with the highest contributions, which can facilitate the identification of the most relevant scientific production, international collaboration and knowledge transfer in the field. The conceptual structure map shows two different research directions in the field, and the word Cloud Analysis shows the increasing mainstreaming of sub-fields such as ecotourism, tourism development, geotourism and heritage conservation. This research contributes to the field by providing insight into current developments, key contributors, and possible future research directions. Future research

could expand this research by considering more comprehensive databases and integrating other research methods to improve understanding of the dynamic development of the field. Overall, this research provides valuable insights and contributes to the harmonious development of the field of ecotourism on geoheritage.

1. Implications for Practitioners and Academics
a. Managerial Implications

The study's conclusions on the evolution of Ecotourism on Geoheritage have significant implications for management. This study can offer significant information to tourist institutions, regulators, and policy makers for making strategic decisions about adopting and regulating Ecotourism on Geoheritage.

Understanding developing trends in Ecotourism on Geoheritage research can assist institutions in identifying locations with potential for growth and investment. Second, this study highlights productive objects, such as journals, authors, institutions, countries and regions, as well as mapping related collaborative relationships. This information can be used by tourism agencies and other stakeholders to identify key players in the Ecotourism on Geoheritage industry, understand their areas of expertise, and forge mutually beneficial partnerships. Third, this research can provide information for the development of innovative Ecotourism on Geoheritage products and services by identifying emerging technologies and themes in Ecotourism on Geoheritage research. Institutions can use this information to develop new products and services that meet evolving customer needs. Fourth, this study can help tourism institutions to identify and manage potential risks associated with implementing Ecotourism on Geoheritage. For example, this research highlights the ethical considerations associated with the use of Ecotourism on Geoheritage. Institutions can use this information to develop appropriate risk management strategies. Fifth, this study can provide valuable information for talent management in tourism institutions, including identifying key researchers and institutions in the field of Ecotourism on Geoheritage, which can help in recruiting and retaining talented employees. Ultimately, the findings of this research can be used by tourism institutions, regulators, policy makers and other stakeholders to make strategic decisions regarding the adoption, regulation and development of ecotourism on geoheritage.

b. Theoretical Implications

Theoretical consequences of this bibliometric research could have substantial ramifications in multiple aspects. Initially, it can offer a more comprehensive comprehension of the development of the Ecotourism on Geoheritage research domain, encompassing its underlying issues, distinctive features, and prevailing patterns. This can assist researchers in identifying novel research domains and orientations, as well as providing guidance for future investigations in the field of Ecotourism on Geoheritage. Furthermore, this research aims to identify the most prolific journals, authors, institutions, countries, and regions in the field of Ecotourism on Geoheritage research.

By doing so, it can assist researchers in discovering potential collaborators and networks, while also providing insights into the prevailing research paradigms and communities within this domain. Furthermore, an examination of citation structure might yield valuable information regarding the preeminent authors, journals, and references in the respective discipline. This can assist researchers in discerning the most pertinent and influential studies and comprehending the progression of Ecotourism on Geoheritage research throughout time. This bibliometric research has the potential to enhance the theoretical advancement of the Ecotourism on Geoheritage research field. It achieves this by offering a thorough examination of the current literature and pinpointing potential avenues for future research.

c. Practical Implications

The practical ramifications of this bibliometric research on Ecotourism on Geoheritage are really substantial. This paper offers significant information for professionals and decision-makers in the financial sector, such as policymakers, regulators, tourism agencies, and ecotourism start-ups, specifically focusing on the intersection of geoheritage and ecotourism. Analyzing publishing patterns can assist stakeholders in keeping up with the most recent research and advancements in ecotourism on geoheritage. This information can guide their strategic decision-making and investment selection in the realm of ecotourism focused on geoheritage. Second, identifying productive journals, authors, institutions, countries and regions in ecotourism on geoheritage research can help practitioners and decision makers identify potential collaboration opportunities and build partnerships with relevant stakeholders.

Third, citation structure analysis can help identify the most influential authors, journals and references in the field of ecotourism on geoheritage. This can help practitioners and decision makers identify and learn from best practices and success cases. Finally, discussing the challenges and opportunities for developing ecotourism on geoheritage in the future can provide input for strategic planning and innovation strategies for tourism institutions and ecotourism on geoheritage startups. It can also provide insight for policymakers and regulators to develop regulatory frameworks that encourage innovation while maintaining financial stability and consumer protection.

Limitations and Future Research Directions

Research on the evolution of ecotourism on geoheritage utilizing the Scopus database has numerous possible drawbacks. The Scopus database is a comprehensive and trustworthy bibliographic resource, although it may not encompass all pertinent papers in the domain of ecotourism on geoheritage. Certain publications may be disseminated in other databases or non-indexed journals, hence potentially excluding them from our study. Furthermore, this analysis solely focused on articles written in English, thus disregarding significant research conducted in other languages.

Furthermore, there is a possibility of publishing bias favoring esteemed authors or institutions, perhaps leading to distortion of the research findings. Furthermore, it is important to note that while bibliometric analysis can offer a broad perspective on the subject, it may not accurately gauge the caliber of the publications encompassed.

The analysis may not account for variations in the quality of different publications. Furthermore, bibliometric analysis is a quantitative methodology that disregards the contextual and substantive aspects of the publication. The analysis may fail to detect significant subtleties or patterns in the field that are not evident in the keywords or quotations employed. Furthermore, this study exclusively examined papers spanning from 2008 to 2022, perhaps limiting its representation of the complete progression of research on the relationship between Ecotourism and Geoheritage. Not all significant advancements in the discipline may be accounted for in the analysis if they occur outside of this time span.

Several prospective future study fields might be studied based on bibliometric research findings about the evolution of ecotourism on geoheritage. Ecotourism focused on Geoheritage is a fast-growing area that connects with various scientific fields, including ecotourism, tourism development, and geotourism. Potential future studies may delve into the interdisciplinary aspects of ecotourism on geoheritage and examine the many contributions made by different fields towards its advancement. The driving force behind this is the progress made in the heritage sector, specifically in areas such as heritage conservation, heritage tourism, and cultural heritage. Potential future studies may investigate the implementation of these emerging technologies in the field of ecotourism on geoheritage, as well as their influence on the ecotourism sector. The regulatory framework governing ecotourism on geoheritage is intricate and constantly developing. Further research might explore the extent to which legal frameworks are adjusting to the rise of ecotourism on geoheritage, and the potential consequences for the ecotourism industry. The primary objective of ecotourism on geoheritage is to cater to the requirements of users, and the effective execution and conduct of users play a vital role in determining its success. Future research could investigate how users adopt and use ecotourism on geoheritage products and services, and how their behavior changes. Ecotourism on geoheritage raises important ethical considerations, such as sustainability, education and environmental protection. Future research could explore how these ethical considerations are addressed in ecotourism on geoheritage, and their potential impact on the tourism industry.

REFERENCES

Abioui, M., Axini, M. M., Popoviciu, D. R., & Dubey, A. K. (2021). Review of Environmental education and ecotourism by Fernando Ramírez and Josefina Santana. *Journal of Outdoor and Environmental Education*, 24(1), 105–108. https://doi.org/10.1007/s42322-020-00068-1

Anokhin, A. Y., Kropinova, E. G., & Spiriajevas, E. (2021). Developing geotourism with a focus on geoheritage in a transboundary region: the case of the Curonian Spit, a UNESCO site. *Baltic Region*, 13(2), 112–128. https://doi.org/10.5922/2079-8555-2021-2-6

Antić, A., Marković, S. B., Marković, R. S., Cai, B., Nešić, D., Tomić, N., Mihailović, D., Plavšić, S., Radakovic, M. G., Radivojević, A., Sotirovski, D., Ćalić, J., Atanasijević, J., Gavrilov, M. B., Vukojević, D., & Hao, Q. (2022). Towards Sustainable Karst-Based Geotourism of the Mount Kalafat in Southeastern Serbia. *Geoheritage*, 14(1), 16. https://doi.org/10.1007/s12371-022-00651-6

Antić, A., Peppoloni, S., & Di Capua, G. (2020). Applying the Values of Geoethics for Sustainable Speleotourism Development. *Geoheritage*, 12(3), 73. https://doi.org/10.1007/s12371-020-00504-0

Bu, Y., Wang, B., Huang, W., Che, S., & Huang, Y. (2018). Using the appearance of citations in full text on author co-citation analysis. *Scientometrics*, 116(1), 275–289. https://doi.org/10.1007/s11192-018-2757-z

Bujdosó, Z., Dávid, L., Wéber, Z., & Tenk, A. (2015). Utilization of Geoheritage in Tourism Development. *Procedia - Social and Behavioral Sciences*, 188, 316–324. https://doi.org/10.1016/j.sbspro.2015.03.400

Carrascosa-López, C., Carvache-Franco, M., Mondéjar-Jiménez, J., & Carvache-Franco, W. (2021). Understanding Motivations and Segmentation in Ecotourism Destinations. Application to Natural Parks in Spanish Mediterranean Area. *Sustainability*, 13(9), 4802. https://doi.org/10.3390/su13094802

Chandel, R. S., Kanga, S., Singh, S. K., Đurin, B., Oršulić, O. B., Dogančić, D., & Hunt, J. D. (2023). Assessing Sustainable Ecotourism Opportunities in Western Rajasthan, India, through Advanced Geospatial Technologies. *Sustainability*, 15(14), 11473. https://doi.org/10.3390/su151411473

Chang, Y.-W., Huang, M.-H., & Lin, C.-W. (2015). Evolution of research subjects in library and information science based on keyword, bibliographical coupling, and co-citation analyses. *Scientometrics*, 105(3), 2071–2087. https://doi.org/10.1007/s11192-015-1762-8

Cheablam, O., Tansakul, P., Nantakat, B., & Pantaruk, S. (2021). Assessment of the Geotourism Resource Potential of the Satun UNESCO Global Geopark, Thailand. *Geoheritage*, *13*(4), 87. https://doi.org/10.1007/s12371-021-00609-0

Chlachula, J., Zhensikbayeva, N. Z., Yegorina, A. V., Kabdrakhmanova, N. K., Czerniawska, J., & Kumarbekuly, S. (2021). Territorial Assessment of the East Kazakhstan Geo/Ecotourism: Sustainable Travel Prospects in the Southern Altai Area. *Geosciences*, *11*(4), 156. https://doi.org/10.3390/geosciences11040156

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Dowling, R. K. (2011). Geotourism's Global Growth. *Geoheritage*, *3*(1), 1–13. https://doi.org/10.1007/s12371-010-0024-7

Drinia, H., Voudouris, P., & Antonarakou, A. (2023). Geoheritage and Geotourism Resources: Education, Recreation, Sustainability II. *Geosciences*, *13*(11), 350. https://doi.org/10.3390/geosciences13110350

Ellegaard, O., & Wallin, J. A. (2015). The bibliometric analysis of scholarly production: How great is the impact? *Scientometrics*, *105*(3), 1809–1831. https://doi.org/10.1007/s11192-015-1645-z

Gordon, J. (2018). Geoheritage, Geotourism and the Cultural Landscape: Enhancing the Visitor Experience and Promoting Geoconservation. *Geosciences*, *8*(4), 136. https://doi.org/10.3390/geosciences8040136

Hasana, U., Swain, S. K., & George, B. (2022). A bibliometric analysis of ecotourism: A safeguard strategy in protected areas. *Regional Sustainability*, *3*(1), 27–40. https://doi.org/10.1016/j.regsus.2022.03.001

Herrera-Franco, G., Carrión-Mero, P., Montalván-Burbano, N., Caicedo-Potosí, J., & Berrezueta, E. (2022). Geoheritage and Geosites: A Bibliometric Analysis and Literature Review. *Geosciences*, *12*(4), 169. https://doi.org/10.3390/geosciences12040169

Herrera-Franco, G., Montalván-Burbano, N., Carrión-Mero, P., Apolo-Masache, B., & Jaya-Montalvo, M. (2020). Research Trends in Geotourism: A Bibliometric Analysis Using the Scopus Database. *Geosciences*, *10*(10), 379. https://doi.org/10.3390/geosciences10100379

Heshmati, M., Gheitury, M., & Shadfar, S. (2022). Factors affecting possibility of ecotourism development and sustaining natural resources using SWOT approach in west Iran. *International Journal of Geoheritage and Parks*, *10*(2), 173–183. https://doi.org/10.1016/j.ijgeop.2022.03.004

Khasseh, A. A., Soheili, F., & Mousavi Chelak, A. (2018). An author co-citation analysis of 37 years of iMetrics. *The Electronic Library*, *36*(2), 319–337. https://doi.org/10.1108/EL-09-2016-0191

Lewis, I. D. (2023). Evolution of Geotourism in Australia from Kanawinka Global Geopark and Australian National Landscapes to GeoRegions and Geotrails: A Review and Lessons Learned. *Land*, *12*(6), 1190. https://doi.org/10.3390/land12061190

Linnenluecke, M. K., Marrone, M., & Singh, A. K. (2020). Conducting systematic literature reviews and bibliometric analyses. *Australian Journal of Management*, *45*(2), 175–194. https://doi.org/10.1177/0312896219877678

Mirari, S., Aoulad-Sidi-Mhend, A., & Benmlih, A. (2020). Geosites for Geotourism, Geoheritage, and Geoconservation of the Khnefiss National Park, Southern Morocco. *Sustainability*, *12*(17), 7109. https://doi.org/10.3390/su12177109

Németh, B., Németh, K., & Procter, J. N. (2021). Visitation Rate Analysis of Geoheritage Features from Earth Science Education Perspective Using Automated Landform Classification and Crowdsourcing: A Geoeducation Capacity Map of the Auckland Volcanic Field, New Zealand. *Geosciences*, *11*(11), 480. https://doi.org/10.3390/geosciences11110480

Németh, K. (2023). Volcanic Geoheritage in the Light of Volcano Geology. In *Geoheritage, Geoparks and Geotourism* (pp. 1–24). https://doi.org/10.1007/978-3-031-07289-5_1

Poiraud, A., & Dandurand, G. (2017). De la géoconservation au géotourisme : un glissement de paradigme. *Annales de Géographie*, *N° 717*(5), 625–653. https://doi.org/10.3917/ag.717.0625

Quesada-Román, A., & Pérez-Umaña, D. (2020). State of the Art of Geodiversity, Geoconservation, and Geotourism in Costa Rica. *Geosciences*, *10*(6), 211. https://doi.org/10.3390/geosciences10060211

Rialti, R., Marzi, G., Ciappei, C., & Busso, D. (2019). Big data and dynamic capabilities: a bibliometric analysis and systematic literature review. *Management Decision*, *57*(8), 2052–2068. https://doi.org/10.1108/MD-07-2018-0821

Rohaendi, N., & Herlinawati, H. (2024). Developing sustainable geotourism as post-mining land use programs in Indonesia. *Journal of Degraded and Mining Lands Management*, *11*(2), 5181–5193. https://doi.org/10.15243/jdmlm.2024.112.5181

Štrba, Ľ., Kolačkovská, J., Kudelas, D., Kršák, B., & Sidor, C. (2020). Geoheritage and Geotourism Contribution to Tourism Development in Protected Areas of Slovakia—Theoretical Considerations. *Sustainability*, *12*(7), 2979. https://doi.org/10.3390/su12072979

Štrba, Ľ., Vravcová, A., Podoláková, M., Varcholová, L., & Kršák, B. (2023). Linking Geoheritage or Geosite Assessment Results with Geotourism Potential and Development: A Literature Review. *Sustainability*, *15*(12), 9539. https://doi.org/10.3390/su15129539

Tičar, J., Tomić, N., Breg Valjavec, M., Zorn, M., Marković, S. B., & Gavrilov, M. B. (2018). Speleotourism in Slovenia: balancing between mass tourism and geoheritage protection. *Open Geosciences*, *10*(1), 344–357. https://doi.org/10.1515/geo-2018-0027

Xu, L., Ao, C., Liu, B., & Cai, Z. (2023). Ecotourism and sustainable development: a scientometric review of global research trends. *Environment, Development and Sustainability*, *25*(4), 2977–3003. https://doi.org/10.1007/s10668-022-02190-0

Zabielska, M. G. (2023). A New Geosite as a Contribution to the Sustainable Development of Urban Geotourism in a Tourist Peripheral Region—Central Poland. *Resources*, *12*(6), 71. https://doi.org/10.3390/resources12060071

Zhang, S., Xiong, K., Fei, G., Zhang, H., & Chen, Y. (2023). Aesthetic value protection and tourism development of the world natural heritage sites: a literature review and implications for the world heritage karst sites. *Heritage Science*, *11*(1), 30. https://doi.org/10.1186/s40494-023-00872-0

Zupic, I., & Čater, T. (2015). Bibliometric Methods in Management and Organization. *Organizational Research Methods*, *18*(3), 429–472. https://doi.org/10.1177/1094428114562629

ASSESSMENT OF THE IMPACT OF RECREATIONAL ACTIVITIES ON THE NATURAL ENVIRONMENT OF THE KARKARALY STATE NATIONAL NATURE PARK OF THE REPUBLIC OF KAZAKHSTAN

Gaukhar OSPAN
L.N. Gumilyev Eurasian National University, Departament of Physical and Economical Geography,
Astana, Kazakhstan, e-mail: gauhara_ast@mail.ru

Altyn ZHANGUZHINA[*]
L.N. Gumilyev Eurasian National University, Departament of Physical and Economical Geography,
Astana, Kazakhstan, e-mail: altyn8828@mail.ru

Zaure AUYEZOVA
Esil University, Departament of Social Work and Tourism, Astana, Kazakhstan, e-mail: zaure58@mail.ru

Nurgul RAMAZANOVA
L.N. Gumilyev Eurasian National University, Departament of Physical and Economical Geography,
Astana, Kazakhstan, e-mail: nurgulram@gmail.com

Mariash ARALBEKOVA
L.N. Gumilyev Eurasian National University, Departament of Physical and Economical Geography,
Astana, Kazakhstan, e-mail: aralbekova_ma@enu.kz

Abstract: The article considers the results of assessment of recreational impact on the natural environment within Karkaraly SNNP (State National Nature Park). The purpose of this study is to assess the impact of recreational activities on the natural environment of Karkaraly SNNP using remote sensing data. The proposed methodology for assessing the impact of recreational activities on the natural environment using remote sensing data includes several steps from the selection of indicators for assessing recreational load to obtaining the integral value of recreational load on the natural environment. The most visited recreational sites were selected as objects of the study. The study showed that the natural environment near the sanatorium "Sosnovy Bor" in the area with high attendance of vacationers is in a relatively disturbed state. The key site has a dense network of paths, the stand of trees is weakly closed, groups of trees are limited by paths, roads and glades.

Key words: recreational activity, recreational load, natural environment, integral assessment, Karkaraly State National Nature Park

* * * * * *

INTRODUCTION

In society, it is commonly believed that recreation has a positive impact on nature, however, like all human activities it has its negative consequences. As a result of recreational activities, anthropogenic transformation of the natural environment occurs. This contributes to the degradation of natural complexes due to the direct human impact on nature. Uncontrolled flows of vacationers visiting natural objects, its pollution due to vehicles are the main causes of degradation of nature. Accumulation of recreational waste on the coasts of reservoirs, rivers, seas leads to degradation of drive complexes. As a result of dirty waste water discharge from recreation sites into water bodies, the quality of rivers, lakes, etc. deteriorates. Trampling of ground cover and plants in protected areas leads to impoverishment of the species composition and reduction of the number of individuals of the species. Soil compaction leads to disruption of soil structure, air permeability and water holding capacity, water and wind erosion. This negatively affects forest phytocenoses. Atmospheric pollution by exhaust gases of transport in parking areas worsens the ecological situation in places where recreationists congregate (Canteiro et al., 2018; Çakir et al., 2016; Benson et al., 2022).

Construction of tourist and recreational facilities leads to changes in the composition of vegetation and ground cover. Natural vegetation cover is destroyed in the immediate vicinity of recreational facilities. The degree of transformation depends primarily on the intensity of use. Evaluation of the impact of recreation activities on the natural environment is a worldwide concern, and there are many works devoted to this topic (Kuwabe and Ohashi, 2023; Hnaung et al., 2023). Therefore, the organization of regulated recreation is very important, it can become a means of preserving elements of the

---

* Corresponding author

cultural landscape, large ecosystems, despite the damage caused to the natural environment by tourists and recreationists (Baloch et al., 2023; Schafft et al., 2021). The integrated system of environmental monitoring in the tourist-recreational zone allows to obtain information about the state of the environment: assessment of changes occurring in it; forecasting of phenomena and processes; providing information support and management decision-making. Thus, the conducted studies on recreational areas allow scientists to conclude that, such factors as the ratio of involved landscapes in recreational use and part of the unchanged area of landscapes, are different for different landscapes (Wolf and Green Ronda, 2019). The recreational actions of a single person can lead to irreversible effects on the environment. The strength of a recreational impact depends on the vector of influence it has. Thus, direct impact entails a decrease in species diversity of flora and fauna of the territory, especially when the latter is included in the economic activity; the emergence of diseases by contamination of flora and fauna with wastes of recreational and economic life activity of people; disruption of the course of natural processes of development of flora and fauna of the territory subjected to recreation (disruption of regenerative succession, destruction of species habitats, noise pollution, etc.) (Hermes, 2018; Arif et al., 2023; Ozgeldinova et al., 2022; Keukenov et al., 2022). The presence of even one person does not pass without a trace for the environment. There are direct environmental impacts of tourism and indirect impacts of tourism (Papiryan, 2000). Direct impacts include:

1) extermination of representatives of flora and fauna in the process of hunting, fishing; destruction of natural habitats by including territories in economic activities, etc;

2) introduction and spread of infections, diseases through products of human activity (excrement, organic food waste); economic activities (deforestation, soil disturbance, etc.);

3) interference in natural processes of life activity of plants and animals by feeding them, breeding them in artificially created conditions; observation of them; noise impact; destruction of nests, dens, etc.

Indirect impacts include:

1) anthropogenic impact on the components of the geographic environment (soil and surface water pollution, deforestation and erosion development, global climate change, atmospheric pollution, etc.);

2) alteration of natural habitat;

3) artificial breeding of animals, creation by man of animals and plants with specified properties (genetically modified, mutants), the impact of which on natural nature and on man himself has not yet been studied.

The purpose of this study is to assess the impact of recreational activities on the natural environment of the Karkaraly State National Nature Park. The territory of the national natural park belongs to the second category of specially protected natural territories. This place has the status of a nature protection and scientific institution of Republican significance, intended for the preservation of biological and landscape diversity, as well as use for nature protection, ecological-educational, scientific, tourist and recreational purposes. The Karkaralinsk-Kent Mountain junction consists of five relatively isolated mountain groups: Buguly, Shankoz, Maten, Airtau and Kent. The landscape of the Karkaraly Mountains and the Kent massif is characterized by marked asymmetry. The northern slopes of these mountains are steeper and greener due to numerous springs and diverse vegetation, while the southern and western slopes of the mountains are much less pronounced in this respect. The ridges form rocky crests and peaks separated by deep gorges, intermountain valleys and gently rolling plains.
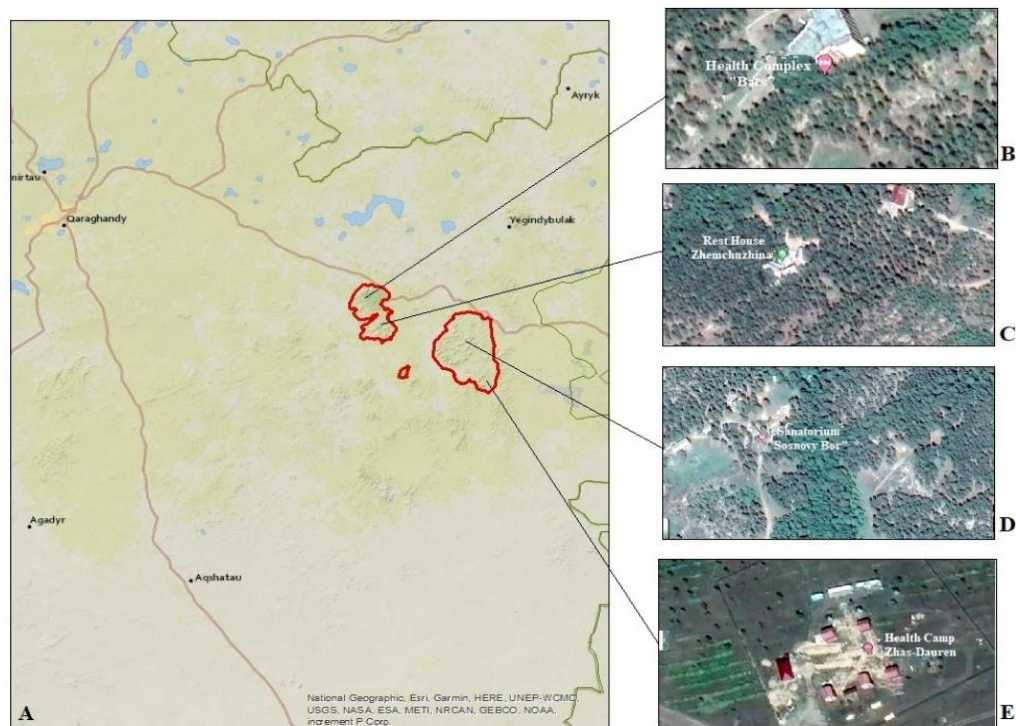

Figure 1. Recreational complexes of the Karkaraly State National Nature Park (Source: Google Earth, 2023;
Created by the authors in ArcGIS.10.8 program using "National Geographic World Map") A) Territory of Karkaraly SNPP; B) Tourist and Sports Health Complex "Bars"; C) Rest House "Zhemchuzhina"; D) Sanatorium "Sosnovy Bor"; E) Health Camp "Zhas-Dauren")

The flora of Karkaraly National Park includes more than 200 species of covered plants, 3 species of holosemum plants, 2 species of ferns, 27 species of mosses and 14 species of lichens that have been recorded so far. According to literature sources, the number of plant species in the park can reach about 800 species. This is significantly higher than the number of species in the adjacent steppe zone. Of all these species, 5 are listed in the Red Book of the Republic of Kazakhstan,

including *Karkaraly barberry*, *smooth* s*phagnum*, *Kyrgyz birch*, *slender poppy* and *spring adonis*. The Karkaraly and Kent mountain-forest massifs are home to many endemic and boreal plants. Within the territory of Karkaraly State National Nature Park there are 18 recreation centers and children's camps. One of the main reasons for the decline in the quality of recreational resources in the use of natural landscapes for recreation is a significant excess of the actual number of vacationers over the maximum permissible. The following most visited recreational facilities of various purposes were selected as objects of the study (Figure 1):

Tourist and sports recreation complex "Bars" with an area of 7.9471 ha and a capacity of 80 people per day, operates only in summer.

Rest house "Zhemchuzhina" with the area of 0.3793 hectares and a capacity of 70 people per day, operates all year round.

Sanatorium "Sosnovy Bor" with the area of 18.2569 hectares with the capacity of 200 people per day, operates all year round (Figure 2).

Health camp "Zhas-Dauren" with the area of 10.1021 hectares with a capacity of 250 people per day, operates all year round.

Figure 2. Sosnovy Bor Sanatorium (Source: the study
was conducted by the authors in Sosnovy Bor, fall 2023)

MATERIALS AND METHODS

Using the scheme of the impact of recreational activities on the natural environment (Figure 3), we determined the main indicators for assessing the impact of recreational activities on the natural environment. In addition to the types of impact listed in the scheme, there are also behavioral (damage to tree bark, breaking of branches, etc.), noise, and others. But even despite the large degree of generalization of the scheme data, it is clear how complex and multifactorial the problem of preserving natural nature in recreation areas is (Chizhova, 2011).
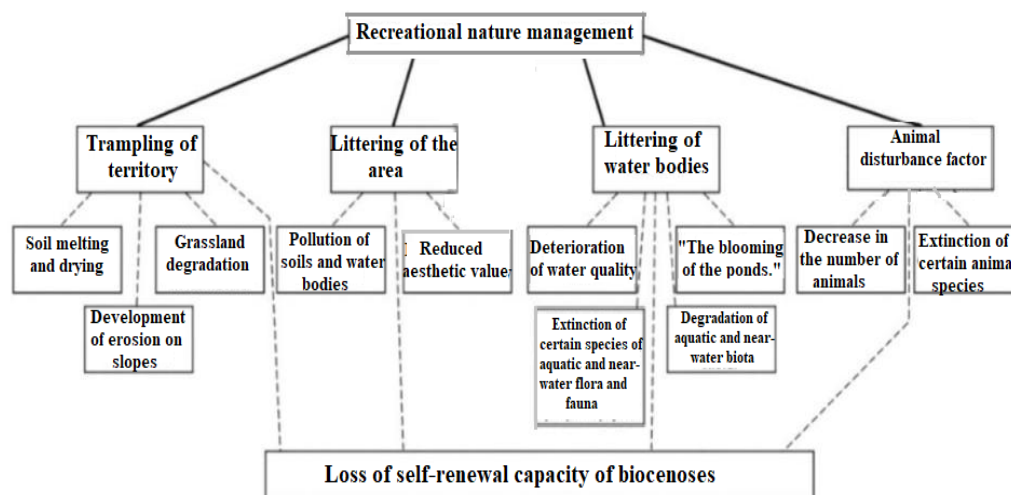
Figure 3. Scheme of influence of recreational activities on the natural environment:
1 - impact on the natural environment; 2 - reaction of the natural environment (according to Chizhova V.P,2011)

Assessment of the impact of recreational activities on the natural environment consists of the following steps:
- selection of assessment indicators and key areas of recreational pressure;
- determination of the values of the selected indicators using remote sensing data and field studies;
- development of gradations of the selected indicators taking into account local peculiarities of the study region (maximum and minimum values of the indicators);
- integral assessment of the recreational load on the natural environment of the study region;
- analyzing the results obtained, reflecting the influence of each indicator of recreation in different types of natural complexes (Figure 4).

To assess recreational pressure at each key site, the following indicators were recorded:

1. Soil compaction (density, soil resistance when Wile SOIL was introduced into the soil, kg/cm²);
2. Degree of erodibility (NDVI index value);
3. Littering of the area (total amount of litter in kg/ha);
4. Share of the area (%) occupied by secondary vegetation groups with predominance of trampling-resistant, mainly ruderal herbaceous species (dandelion (*Taraxacum officinale Wigg. s. l.*), plantain (*Plantago major L.*), creeping clover (*Trifolium repens L.*), common glade (*Agrostis capillaris L.*), annual bluegrass (*Poa annua L.*), fragrant lepidotheca (*Lepidotheca suaveolens (Pursh) Nutt.*), slender grass (*Juncus tenuis Willd*);
5. Damage to woody vegetation (% of damaged trees out of their total number);
6. Number of stumps of cut and felled trees (pcs./ha);
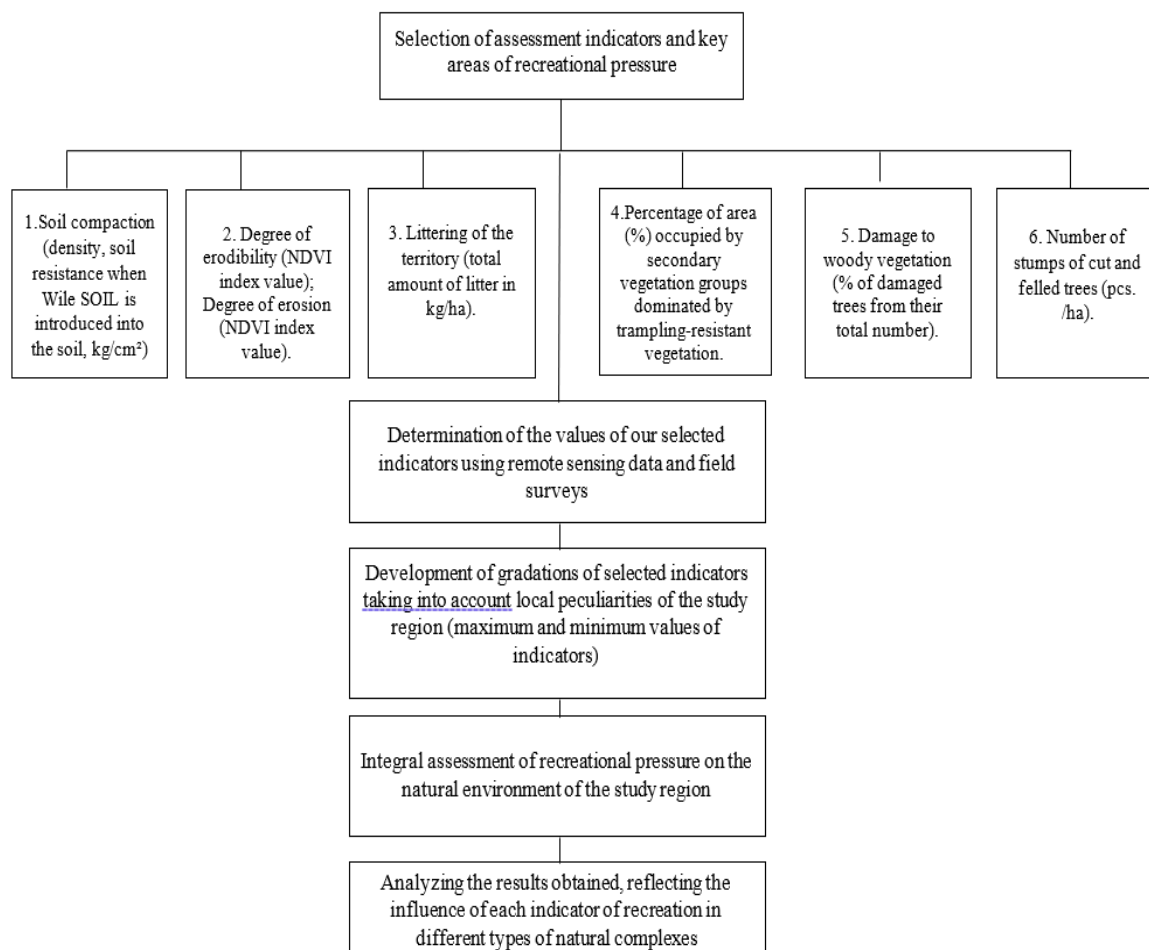
Figure 4. Block diagram "Assessment of the impact of recreational activities on the natural environment" (Source: Authors)

The most used spectral indices in determining soil erodibility are NDVI (Normalized Difference Vegetation Index) and GNDVI (Green Normalized Difference Vegetation Index). In our research we used NDVI index using nonparametric Mann-Whitney criterion. NDVI is calculated according to the formula:

$$NDVI = \frac{(NIR - Red)}{(NIR + Red)}$$

Where: NIR - reflection in the near infrared region of the spectrum.
RED - reflection in the red region of the spectrum.

For each group, average index values were calculated for the whole series of images. Comparison using the Mann-Whitney criterion showed that there is no significant difference between highly eroded and moderately eroded, as well as between slightly eroded and non-eroded soils. Significant differences ($p<0.01$) are observed in case of grouping key sites into 3 categories: no soils (open soils); strongly and moderately eroded -0 soils; weakly eroded and non-eroded soils.

In the course of the work, each NDVI index value was assigned to classes of eroded soils according to Table 1. NDVI index calculations were carried out using Landsat-9 data for 2023.

Table 1. Classification of soils by NDVI index value

Soil classification	NDVI index value
Very highly washed out soils	0,0 – 0,2
Highly washed out soils	0,2 – 0,5
Medium washed out soils	0,5 – 0,7
Weakly washed out soils	0,7 – 0,9

When assessing the impact of recreational activities on the natural environment, quantitative indicators for each parameter were converted into scores (from 0 to 4), which were then summarized. The result of summation is the integral indicator (U) proposed by K.M. Petrov (1998), formula (1):

$$U = \frac{1}{n} \sum x_i k_i, \quad (1)$$

where: n - number of factors;
xi - score of i factor;
ki - weight coefficient of i factor.

The weighting coefficients are established by the expert method based on the ranking of indicators by the degree of recreational impact on the natural environment. In the formula for calculating the integral indicator the most stable and significant characteristics of digression - compaction index and the share of secondary vegetation groupings - were introduced with a weighting factor of 2. Indicators characterizing these factors formed the basis for ranking the territory of Karkaraly SNNPP on the degree of recreational load. According to the obtained integral indicator (U), were defined the following gradations of the degree of recreational pressure on the natural environment: <1 - little disturbed; 1-2 - disturbed; 2-3 - heavily disturbed, 3-4 - degraded.

Low-disturbed condition: trampling is not observed even in the form of a weakly expressed trail network; recreational impact is limited to felling of trees, whose diameter (meaning diameter at the level of cutting or felling) rarely exceeds 10-15 cm; secondary vegetation is practically absent; soil density is characterized by favorable conditions for growth (2-9 kg/cm2), slightly eroded soils (NDVI index value 0.7-0.9).

Disturbed condition: there is a distinct trail network with an area not exceeding 10%; ruderal plant species are present on trails and old fire pits; soil density is characterized by acceptable conditions for growth (14-19 kg/cm2), moderately erodible soils (NDVI index value 0.5-0.7).

Highly disturbed condition: stand is poorly closed, groups of trees are limited to paths, roads and glades; higher proportion of damaged trees (up to 50%); secondary groupings of plants occupy a noticeable area; soil density is characterized by unfavorable conditions for growth (21 kg/cm^2 and more), highly eroded soils (NDVI index value 0.2-0.5).

Degraded condition: area of secondary vegetation groupings is often more than 50 %; undergrowth is almost completely absent; undergrowth is preserved in a small number of clumps; number of damaged trees reaches 100 %, tree roots are often exposed; soil density is characterized by extreme conditions for growth (24 kg/cm2 and more), very strongly eroded soils (NDVI index value 0.0-0.2).

RESULTS AND DISCUSSION

The research was conducted in 2023 in the territory of Karkaraly SNNP. For each key site 3-4 sampling points were identified and the recreational load was calculated. Taking into account the objectives of the study and the peculiarities of the territory, calculations were made and indicators for each key site were determined. All these indicators were taken into account and then recorded. Thus, a set of indicators of recreational load for each key site was obtained (Table 2).

Table 2. Recreational pressure indicators for key sites (Source: Authors)

Key area	Tourist and sports health complex "Bars"			Holiday home " Zhemchuzhina"			Sanatorium "Sosnovy Bor "			" Zhas-Dauren" recreational camp			
Selection points	1	2	3	1	2	3	1	2	3	1	2	3	4
Soil compaction (density, kg/cm²)	9	7	2	8	6	9	20	19	24	14	15	19	18
Degree of erosion (NDVI index value)	0,7	0,8	0,8	0,7	0,7	0,8	0,2	0,8	0,7	0,7	0,6	0,6	0,5
Littering of the territory (kg/ha)	-	-	-	-	-	5	7	-	6	-	7	-	-
Area occupied by secondary vegetation groups (%)	2	3	2	8	9	17	50	54	52	40	35	42	38
Damage to woody vegetation (%)	5	7	4	15	11	10	51	45	20	16	-	18	35
Number of days (pcs/ha)	2	6	3	-	5	1	15	23	15	-	13	11	10

Recreational activities have a multifaceted impact on the natural environment of the SNNP and are reaching such a scale that they are beginning to threaten the condition and preservation of protected green areas. According to the assessment results, no key sites belonging to the fourth group "degraded state" were identified. The pine forests of the "Sosnovy Bor" sanatorium we studied are located in an area with high visitor traffic and are characterized by a highly disturbed state. The key site "Sosnovy Bor" has a dense network of paths, the stand is weakly interlocked, groups of trees are limited by paths, roads and glades; a large proportion of damaged trees (20-51%). The structure of vegetation cover is represented by various herbaceous groupings with a significant share of secondary vegetation groupings. Soil density is characterized by unfavorable conditions for growth (19-24 kg/cm2 and more), in terms of erodibility soils vary from slightly to strongly eroded soils (NDVI index value 0.2-0.8) (Figure 5). Exposure to recreational pressure significantly alters the natural mosaic of living ground cover. The study revealed that the horizontal structure of this cover is an alternation of areas with different degrees of disturbance. It was also found that the total area of trails and trampled areas in pine plantations directly depends on the number of visitors to these forests.

At present, the key site of the health camp "Zhas-Dauren" is less exposed to recreational loads and according to the results of our research is characterized by disturbed condition. The key site has a very moderately dense network of trails; the proportion of damaged trees ranges from 16 to 35%. Secondary plant groupings occupy up to 40% of the area at individual observation points. Soil density is characterized by acceptable conditions for growth (14-19 kg/cm2); in terms of erodibility, soils belong to the group of moderately eroded soils (NDVI index value 0.5-0.7) (Figure 5).
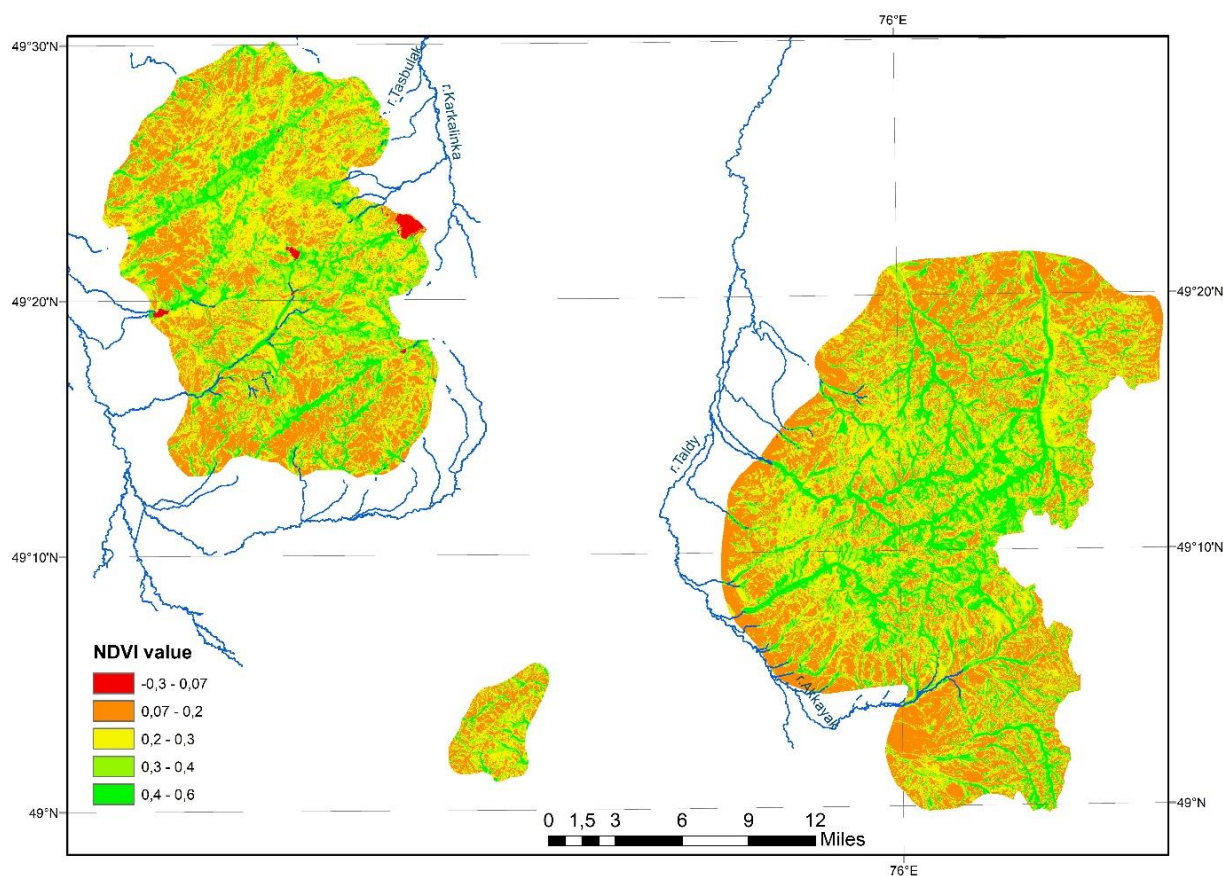
Figure 5. NDVI index value for the territory of Karkaraly SNNP (Source: Created by the authors in ArcGIS program.10.8)

As a result of the survey, the key sites of the recreation center "Zhemchuzhina" and tourist and sports recreation complex "Bars" are characterized by intact condition. Trampling is not observed even in the form of a weakly expressed trail network; recreational impact is reduced to cutting down trees, the diameter of which (meaning the diameter at the level of cutting or felling) rarely exceeds 10-15 cm; secondary vegetation is practically absent; soil density is characterized by favorable conditions for growth (2-9 kg/cm^2), slightly eroded soils (NDVI index value 0.7-0.9).

CONCLUSION

In general, the analysis of recreational loads and the response of plants of living ground cover to their various impacts in the studied plantations showed: under the influence of recreation in areas with recreational load index from 1 to 2 the grass cover is strongly changed; with recreational load index from 2 to 3 and more the grass cover is completely changed, its structure is destroyed, some forest and forest-meadow species are preserved only at the bases of trees. The grass cover in these areas should be considered degraded. Given the above, we can conclude that the natural environment in Karkaraly SNNP is under the influence of recreational activities, which every year becomes more active and leads to the transformation of the natural environment. The increase in recreational load affects the species diversity of pine and birch forests, and this negatively affects both the overall productivity of the grass-shrub layer and the productivity of individual grass species. The recreational impact leads not only to changes in the composition of the vegetation cover, but also to changes in its coverage and productivity of the lower tiers. In pine forests under high recreational load, mainly mosses experience degradation, which allows using them as indicators of the state of the cover of areas disturbed by recreation.

Increased impact without a set of environmental protection measures can lead to weakening of environment-forming and protective functions of plantations and their degradation. Exceeding the allowable norm of recreational load per unit area can lead to excessive soil compaction, disturbance of water-air regime and forest pollution, which in turn leads to the depletion of the natural environment in the study region. Increased recreational pressure also affects natural regeneration, intensifying the process of recreational degradation. Under such conditions, information on the state of the natural environment and its components under different recreational loads, necessary for predicting the dynamics of recreational facilities and choosing the optimal management, becomes especially important and requires a comprehensive approach.

1. the indicators of the impact of recreational activity on the natural environment (soil compaction; degree of erosion, littering of the territory; the proportion of the area (%) occupied by secondary vegetation groups with a predominance of resistant to trampling; damage to woody vegetation; the number of stumps of cut and felled trees) were determined;

2. Within the objects of study the stages of influence of recreational activities on the natural environment are defined for individual key areas under study. Weighting coefficients are established by the expert method based on the ranking of indicators by the degree of recreational impact on the natural environment. According to the results of the assessment, no key sites were identified as belonging to the fourth group "degraded state".

3. Of the four key sites, two are characterized by low-disturbed condition (recreation center "Zhemchuzhina" and tourist and sports recreation complex "Bars"). The study showed that the natural environment in the vicinity of the Sosnovy Bor sanatorium in the area with high visitation is in a relatively disturbed state. The key area has a dense network of paths, the stand of trees is weakly interlocked, groups of trees are limited to paths, roads and glades; there is a high proportion of damaged trees. Studies have established that the total area of trails and trampled areas in pine plantations directly depends on the attendance of these massifs.

4. The results of this study can be used to develop recommendations for restoration of damaged recreational areas.

REFERENCES

Arif, M., Jie, Z., Behzad, H., & Changxiao, L. (2023). Assessing the impacts of ecotourism activities on riparian health indicators along the Three Gorges Reservoir in China. *Ecological Indicators*, 1158-1162. https://doi.org/10.1016/j.ecolind.2023.111065

Benson, G., Munayi, S., & Wanjira, J. (2022). Impact of recreation activities in the national parks on vegetation, soil, water and wild game in the central Kenya region. *Journal of environment,* 1 – 18. https://doi.org/10.47941/je.766

Baloch, Q., Shah, S., Iqbal, N., Sheeraz, M., Asadullah, M., Mahar, S., & Umar Khan, A. (2023). Impact of tourism development upon environmental sustainability: a suggested framework for sustainable ecotourism. *Environmental Science and Pollution Research*, 5917–5930. https://doi.org/10.1007/s11356-022-22496-w

Canteiro, M., Córdova-Tapia, F., & Brazeiro, A. (2018). Tourism impact assessment: A tool to evaluate the environmental impacts of touristic activities in Natural Protected Areas. *Tourism Management Perspectives*, 220-227. https://doi.org/10.1016/j.tmp.2018.09.007

Chizhova, V.P. (2011). Рекреационные ландшафты: устойчивость, нормализация, управление. [Recreational landscapes: sustainability, normalization, management]. Smolensk, Oikumena, 176-182, (In Russian)

Çakir, G., Müderrisoğlu, H., & Kaya, L. (2016). Assessing the effects of long-term recreational activities on landscape changes in Abant Natural Park, Turkey. *Journal of Forestry Research*, 453–461. https://doi.org/10.1007/s11676-015-0141-x

Hermes, J., VanBerkel, D., Burkhard, B., Plieninger, T., Fagerholm, N., Haaren, C., & Albert, C. (2018). Assessment and valuation of recreational ecosystem services of landscapes. *Ecosystem Services.* 289-295. https://doi.org/10.1016/j.ecoser.2018.04.011

Hnaung Aye, T., & Shibata, S. (2023). Land-cover changes and deforestation drivers in the forest landscape of Banmauk township in the Sagaing Region of upper Myanmar. *Journal of Forest Research,* 28:2, 87-91. https://doi.org/10.1080/13416979.2023.2185185

Keukenov, Y., Dzhanaleeva, K., Ataeva, G., Ozgeldinova, Z., & Orazymbetova, K. (2022). Prospects of ecotourism development in Central Kazakhstan. *Geojournal of Tourism and Geosites*, 664–670. doi.10.30892/gtg.422spl04-875

Kuwabe, N., & Ohashi, M. (2023). Evaluation of spatial and temporal variation in fine root dynamics in a temperate mixed forest using a scanner method. *Journal of Forest Research,* 28:2, 99-103. https://doi.org/10.1080/13416979.2023.2186208

Ozgeldinova, Z., Bektemirova, A., Mukayev, Z., Tursynova, T., & Yerzhanova, Z. (2022). Natural and recreational potential of landscapes of the Tobol river basin within the Kostanay region. *GeoJournal of Tourism and Geosites,* 43(3), 907–911. https://doi.org/10.30892/gtg.43309-903

Petrov, K.M. (1998). Общая экология: взаимодействие общества и природы [General Ecology: Interaction of Society and Nature]. Textbook for universities, SPb, Chemistry, 352-355, (In Russian)

Papiryan, G.A. (2000). Международные экономические отношения. Экономика туризма [International economic relations. Tourism economics]. Moscow, Finance and Statistics, 149-154, (In Russian)

Schafft, M., Wegner, B., Meyer, M., Wolter, C., & Arlinghaus, R. (2021). Ecological impacts of water-based recreational activities on freshwater ecosystems: a global meta-analysis. *Proceedings of the royal society*, 118-126. https://doi.org/10.1098/rspb.2021.1623

Wolf, I., & Green Ronda., J. (2019). *Nature Conservation and Nature-Based Tourism: A Paradox.* Environmental Impact of Nature-Based Tourism. 102-104. https://doi.org/10.3390/environments6090104

Google Earth (2023). https://earth.google.com/web/@45.23711164,29.4906294,6.29761955a,113153.76099044d,34.99999975y,-4.45564744h,37.09967454t,0.00000001r/data=OgMKATA

TOURIST SATISFACTION AND REVISIT INTENTION: THE ROLE OF ATTRACTION, ACCESSIBILITY, AND FACILITIES OF WATER PARK TOURISM

Aceng Gima SUGIAMA[*]
Commerce Departement, Politeknik Negeri Bandung, Bandung, Indonesia, e-mail: gima.sugiama@polban.ac.id

Dwi SUHARTANTO
Commerce Departement, Politeknik Negeri Bandung, Bandung, Indonesia, e-mail: dwi.suhartanto@polban.ac.id

Carol Yirong LU
Department of International Business, Chung Yuan Christian University, ChungLi District, Taoyuan City, Taiwan, e-mail: nuu.edu.tw

I Wayan REDIYASA
Tourism Departement, Politeknik Omna Trisakti Chandra, Bali, Indonesia, e-mail: direktur@poltekotc.ac.id

Reggy Pramudya SULAEMAN
Commerce Departement, Politeknik Negeri Bandung, Bandung, Indonesia, e-mail: reggy.pramudya.mas19@polban.ac.id

Flora Maria RENALDA
Commerce Departement, Politeknik Negeri Bandung, Bandung, Indonesia, e-mail: flora.maria.mas19@polban.ac.id

Abstract: Although it is crucial to investigate the effect of tourism components on satisfaction and revisit intention, there has not been any similar study that specifically explores the perception of young tourists visiting water parks. This study aims to investigate the effect of attraction, accessibility, and facilities on satisfaction and revisit intention. Using quantitative research methods with 269 young water park tourists, the data were analyzed by using SEM-PLS modeling. The results reveal that attraction, accessibility, and main facilities are significant predictors of satisfaction and revisit intention of young water park tourists. Meanwhile, the role of supporting facilities is not as important as the main ones. Support facilities do not impact revisit intention through young tourist satisfaction, even though tourists are satisfied with the support facilities, these supporting facilities do not make them intend to revisit. This study also discovers an interesting finding, that support facilities, both directly and indirectly, had no effect on revisit intention, and satisfaction does not mediate the effect of support facilities on revisit intention. These findings provide a meaningful insight for water park managers to provide tourism components that satisfy visitors so they have a strong intention to revisit.

Key words: water park attraction, accessibility, facilities, satisfaction, revisit intention

* * * * * *

INTRODUCTION

Water is undoubtedly a very important resource for life (Lee et al., 2023). In addition to providing the basic needs of humans, water can be managed as a tourism resource (Folgado-Fernández et al., 2018). Water park is one of the tourism sectors that utilizes water as the main attraction (Ghorbanzade et al., 2019; Jin et al., 2015; Sangmook, 2016). However, studies on water park attractions are still scarce to find (Jin et al., 2015; Lee et al., 2014).

Young tourists have recently become the actual and most potential segment for tourism; thus, it is imperative to comprehend their attitudes toward a tourist attraction (Buffa, 2015). These young people seem to have distinct characteristics from other tourist generations (Cavagnaro et al., 2018). Although a number of previous scholars have researched the attitudes of young tourists (Dai et al., 2022; Van Aalst and Brands, 2021), none of them have focused on the assessment of the water park service sector. Whereas, further studies show that there are significant differences between preferred holiday styles and differences in education and age (Bichler and Peters, 2021).

The components of attractions, accessibility, and facilities, have lately grown to be an interesting debatable topic to discuss (Ginting and Sasmita, 2018; Mandić et al., 2018; Vengesayi et al., 2009) since they are the pillars of destination competitiveness to increase public demand (Porto et al., 2018). However, tourist attractions, accessibility, and facilities have not received in-depth attention (Robustin et al., 2018; Sugiama and Nufi, 2021).

Whereas, previous studies affirmed that these components can extend visitors' length of stay (Mandić et al., 2018), determine their satisfaction (Biswas et al., 2020), include the dimensions of tourist satisfaction, and strengthen their

---

[*] Corresponding author

revisit intention (Ariesta et al., 2020; Çevik, 2020). Satisfaction is a determinant of revisit intention (Sangmook, 2016), and it is important for sustainable tourism development (Kawuryan et al., 2022). However, tourist attractions often experience various problems that cause tourists reluctant to revisit (Som and Badarneh, 2011). Therefore, it is imperative to investigate the components of tourist attractions (Sugiama and Nufi, 2021), accessibility (Rubio-Escuderos et al., 2021), and facilities (Xiao-Ting and Bi-Hu, 2012) and their impacts on tourists' satisfaction and revisit intention.

Both main and supporting facilities affect tourist satisfaction and revisit intention (Marzuki et al., 2017; Vengesayi et al., 2009). Some studies have examined tourism components based on attraction, accessibility, amenity, and ancillary (Andrianto and Sugiama, 2016) and their effects on satisfaction and loyalty (Biswas et al., 2020; Sugiama et al., 2023). This present study, on the other hand, integrates the variables of main facilities and supporting facilities of water parks in addition to attraction and accessibility. Besides, this study explores the young water park tourist segment; this differs from other previous studies which do not focus on such segment (Biswas et al., 2020; Chenini and Touaiti, 2018; Nguyen et al., 2020; Nguyen Viet et al., 2020; Sugiama et al., 2022, 2023). Therefore, this research aims to investigate (1) the direct effect of attraction to satisfaction and revisit intention, accessibility to satisfaction and revisit intention, main facility to satisfaction and revisit intention, support facility to revisit intention, satisfaction on revisit intention; and (2) the indirect effect of attraction on revisit intention through satisfaction, accessibility on revisit intention through satisfaction, main facility on revisit intention through satisfaction, and support facility on revisit intention through satisfaction.

LITERATURE REVIEW
Water Parks and Young Tourists
Water parks belong to the category of amusement parks that utilize water as their core attraction (Ghorbanzade et al., 2019; Jin et al., 2015; Lee et al., 2014). Tourist attraction, accessibility, main facilities, and supporting facilities are interesting to study since these components are the basic needs of services to create satisfaction and revisit intention (Baquero, 2023; He et al., 2022; Liu et al., 2017; Mandić et al., 2018). The limitation of research so far is that it still rarely focuses on the behavior of young water park visitors, especially regarding the role of attraction, accessibility, and facilities of water park tourism.

In addition to being used as a recreational place (Ghorbanzade et al., 2019; Kusdibyo, 2022; Lee et al., 2014), water parks also function as a leisure destination (Ghorbanzade et al., 2019). Tourists visit water parks to play, have fun, and get entertained (Ghorbanzade et al., 2019; Jin et al., 2015; Lee et al., 2014). They will create a certain experience in water parks (Jin et al., 2015) shape a particular perception regarding the service provided, and respond emotionally as a result of the experience and information (Ghorbanzade et al., 2019). Although a theme park influences visitor experience and satisfaction, little research has attempted to understand visitor behavior (Lee et al., 2020).

Young tourists have become a very interesting segment to explore since they are going to determine the future of tourism (Buffa, 2015). Previous studies have explored the behavior, attitudes, and assessment tendencies of young tourists (Buffa, 2015; van Aalst and Brands, 2021) and city parks (Dai et al., 2022; van Aalst and Brands, 2021). Other researchers point out that young tourists are only looking for simple pleasures, having a diverse and increasingly heterogeneous preference for young tourists and low-budget backpackers (Cavagnaro et al., 2018; Martins and Costa, 2023). However, there is no one has focused on criticizing water parks for young tourists, regarding tourist attraction, accessibility, main facilities, and supporting facilities, even though these components are the basic needs of water park services.

The Relationship between Water Park Components and Satisfaction and Revisit Intention
Water is the core attraction and basic component of water parks (Ghorbanzade et al., 2019; Sangmook, 2016). Therefore, the quality of water in the pools must always be maintained (Teo et al., 2015). The quality of water, along with other aspects, can affect tourists' experience (Daniels and Melstrom, 2017; Ferguson et al., 2018), influence future behavior (Kutlu and Ayyildiz, 2021), and determine future decisions (Kim, 2018). These all, in turn, will affect satisfaction and revisit intention (Abou-Shouk et al., 2018; Torabi et al., 2022).

The quality of tourism components has a direct effect on tourist satisfaction (Vengesayi et al., 2009). The attraction has a positive impact on tourist satisfaction and loyalty (Biswas et al., 2020; Robustin et al., 2018), and on revisit intention (Abou-Shouk et al., 2018; Ariesta et al., 2020; Markus et al., 2019). This can surely happen in the context of water park tourism (Xiao-Ting and Bi-Hu, 2012). There are differences in terms of behavior, values, and attitudes of today's younger tourists compared to previous generations (Buffa, 2015). Hence, it is engaging to examine the hypothesis:

H1a: Attraction has a significant positive impact on the satisfaction.

Previous studies have shown that memorable experiences significantly affect tourist satisfaction and revisit intention (Torabi et al., 2022). Similar research shows that the educational and aesthetic experience of theme park visitors significantly influences satisfaction, while escapism is the only experience that drives the revisit intention (Lee et al., 2020). However, research on marine attractions, discovered that attraction has no significant impact on revisit intention (Ariesta et al., 2020). In the context of water parks, perceived value, and water park image have a direct effect on customer satisfaction, which then leads to a positive influence on revisit intention (Ghorbanzade et al., 2019). The tourism destination depends on recreational activities and infrastructure factors (Hai et al., 2023). Other studies confirmed that recreational attraction has a significant impact on revisit intention (Mahdzar et al., 2015; Markus et al., 2019). In the case of young tourists, with their unique behaviors (Buffa, 2015; Dai et al., 2022) and low travel budgets (Cavagnaro et al., 2018; Martins and Costa, 2023), their perception of water park services are potentially different. Although previous research examined the influence of factors on satisfaction and revisit intention, but did not focus on the influence of attractions on water park visitors' revisit intention. Therefore, the hypothesis proposed:

H1b: Attraction has a significant positive impact on the revisit intention.

Good accessibility is reflected by the ease of reaching the destination using various means of transportation, transportation modes, and travel route options (Edwards et al., 2008; Sugiama et al., 2023; Sugiama and Nufi, 2021; Tóth and Dávid, 2010). The accessibility component plays a very important role in the tourism sector and can increase international tourism demand (Porto et al., 2018). Access to a tourist destination needs to be equipped with transportation networks so that it is easily reached by tourists (Kuklina et al., 2022; Tverijonaite et al., 2018).

Accessibility affects tourist satisfaction (Biswas et al., 2020) and loyalty (Robustin et al., 2018), and revisit intention (Sugiama et al., 2023) especially for young tourists who have distinct attitudes, and behaviors (Cavagnaro et al., 2018; van Aalst and Brands, 2021). Also, research findings prove that accessibility has a positive direct effect on marine tourist revisit intention (Ariesta et al., 2020). Referring to previous studies stating that accessibility affects tourist satisfaction (Biswas et al., 2020; Robustin et al., 2018, 2019), a hypothesis is proposed:

H2a: Accessibility has a significant positive impact on satisfaction.

H2b: Accessibility has a significant positive impact on the revisit intention.

Recreational Facilities, Satisfaction, and Revisit Intention

Recreational facilities and clean areas are basic needs for every tourism object (Kurar and Kavack, 2023; Mandić et al., 2018), but in many places, they are still neglected and do not get full attention, and still scarce studies (Marzuki et al., 2017). Whereas, this factor is an integral part of basic tourism components (Andrianto and Sugiama, 2016). The main facility of water parks, for example, is the swimming pool along with other various attractive recreational features (Jin et al., 2015). Facilities can determine the degree of performance of a tourist destination (Achmad et al., 2023). The need and demand for tourism facilities continue to increase, and facilities in each destination continue to develop in line with the increase in tourism (Mandić et al., 2018). Main facilities and supporting facilities are fundamental in fulfilling tourism service needs (Mandić et al., 2018; Marzuki et al., 2017). Recreational facilities play an important role in every tourist spot (Mandić et al., 2018) since they are the dominant factor of tourism services (Vengesayi et al., 2009). In every tourist destination, tourism facilities are divided into main facilities and supporting facilities (Ginting and Sasmita, 2018; Marzuki et al., 2017). The main facilities cover lodging accommodation, restaurants or cafes, and toilets (Mi et al., 2019). Meanwhile, the supporting facilities include information centers, gazebos, shelters, parking lots, cleaning and security facilities, places of worship, and souvenir shops (Ginting and Sasmita, 2018). To fulfill visitors' needs, every tourist destination should provide recreational facilities (Mandić et al., 2018) that can satisfy tourists (Jin et al., 2015), increase loyalty, and strengthen revisit intention (Lim et al., 2019; Nguyen, 2021; Sugiama et al., 2023).

The provision of recreational facilities is able to increase satisfaction and revisit intention (Baquero, 2023; Markus et al., 2019; Som and Badarneh, 2011). Next, it is also believed that main facilities and supporting facilities have a positive impact on tourist satisfaction (Marzuki et al., 2017; Vengesayi et al., 2009). In the context of young tourists with their distinct characteristics (Buffa, 2015; Cavagnaro et al., 2018), it is appealing to investigate their assessment of water park facilities and the impact of the facilities on their satisfaction and revisit intention. Thus, the hypotheses proposed are:

H3a: Main facilities have a positive impact on satisfaction.

H3b: Main facilities have a positive impact on the revisit intention.

H4a: Supporting facilities have a positive impact on the satisfaction.

H4b: Supporting facilities have a positive impact on the revisit intention.

Satisfaction and Revisit Intention

The discussion about the relationship between satisfaction and revisit intention is still interesting and imperative to study (Liu et al., 2017). Previous studies affirmed that tourist satisfaction determines destination performance (Kim, 2018). Satisfaction and revisit intention are impacted by the level of experience felt by visitors (Rasoolimanesh et al., 2022). In the context of young tourists, their satisfaction can be achieved when they can reach a tourist destination easily, enjoy simple services, pay low cost, and receive a warm and friendly welcome from the destination staff (Rahman and Shil, 2012). In addition to positively and significantly affecting loyalty (Leo et al., 2021; Suhartanto et al., 2016), satisfaction also has a significant impact on revisit intention (Abou-Shouk et al., 2018; Kanwel et al., 2019). When satisfaction is higher, revisit intention also increases (Liu et al., 2017). Tourists who repeatedly visit the same place show that they are more satisfied and have a higher intention to revisit (Abou-Shouk et al., 2018; Torabi et al., 2022). Thus, tourist satisfaction is a key predictor of tourists' intention and has a direct positive effect on revisit intention (Kanwel et al., 2019; Torabi et al., 2022). It is imperative to investigate how young tourists' satisfaction influences their revisit intention to a particular tourist destination; thus, a hypothesis is proposed:

H5: Satisfaction has a significant positive impact on the revisit intention.

Tourists who visit a particular destination will gain pleasure and memories of the attraction (Kutlu and Ayyildiz, 2021; Raimkulov et al., 2021), and these memories indirectly affect their behavioral intention through satisfaction (Ghorbanzade et al., 2019). The quality of tourist attractions indirectly affects revisit intention through satisfaction (Lu et al., 2022). Tourist attractions, as a component of tourism (Andrianto and Sugiama, 2016), directly affect tourist satisfaction (Biswas et al., 2020; Lu et al., 2022; Robustin et al., 2019), and the satisfaction variable mediates the causal relationship between experience quality and revisit intention (Ghorbanzade et al., 2019). In other words, tourist satisfaction can mediate the effect of attractions and accessibility on revisit intention (Abou-Shouk et al., 2018; Ariesta et al., 2020; Ghorbanzade et al., 2019; Markus et al., 2019). The provision of main facilities and support facilities at tourist destinations is believed to

influence tourist experience and satisfaction (Crilley et al., 2012; Marzuki et al., 2017). Later, higher satisfaction can lead to a higher intention to revisit (Abou-Shouk et al., 2018; Seetanah et al., 2020; Sugiama et al., 2023; Torabi et al., 2022). This condition is also expected to occur in the context of young water park tourists; therefore, the hypothesis:

H6: Satisfaction positively mediates the impact of attraction on the revisit intention.

H7: Satisfaction positively mediates the impact of accessibility on the revisit intention.

H8: Satisfaction positively mediates the impact of the main facility on the revisit intention.

H9: Satisfaction positively mediates the impact of the support facility on the revisit intention.

All constructs in this study are derived from previous studies presented in Table 1. The conceptual model is depicted in Figure 1.

Table 1. Construct variable and its sources

No.	Constructs	Sources
1	Attraction	Biswas et al., 2020; Robustin et al., 2018; Sugiama and Nufi, 2021; Vengesayi et al., 2009
2	Accessibility	Biswas et al., 2020; Kuklina et al., 2022; Robustin et al., 2018; Rubio-Escuderos et al., 2021; Sugiama and Nufi, 2021
3	Main facilities	He et al., 2022; Mandić et al., 2018; Vengesayi et al., 2009
4	Supporting facilities	He et al., 2022; Mandić et al., 2018; Vengesayi et al., 2009
5	Satisfaction	Biswas et al., 2020; Jin et al., 2015; Liu et al., 2017; Marzuki et al., 2017; Nguyen Viet et al., 2020; Sugiama et al., 2022
6	Revisit intention	Mahdzar et al., 2015; Nguyen Viet et al., 2020

METHOD

This study investigated the relationship between attraction, accessibility, main facilities, and supporting facilities with the satisfaction and revisit intention of young tourists of four water parks (Pesona Nirwana, Tasmania, Karang Setra, and Sabda Alam) in West Java Province, Indonesia which have similar service characteristics. Water parks that provide amusement parks being used as recreational and leisure places include water play areas, not swimming only but also water slides, water boom, splash pads, playgrounds, lazy rivers, or other bathing, and barefoot recreation environments. Figure 2 shows the study process, which includes the measurements of the construct variables, the questionnaire distributed, the three stages of the analysis process, the conclusion, and future research. The process of developing the measuring instrument began with designing a questionnaire that was adapted and modified from previous research (Table 1). The items of each construct were measured using a 5-point Likert scale ranging from '1' for 'strongly disagree' to '5' for 'strongly agree'. The questionnaire draft was pilot-tested on 33 respondents to obtain initial responses and find the flaws to be evaluated. Some inappropriate items were corrected. The final questionnaire was distributed online to young water park tourists in five regions (Bandung, Cimahi, Bandung Regency, West Bandung Regency, and Garut Regency), West Java Province, Indonesia. This process gathered 291
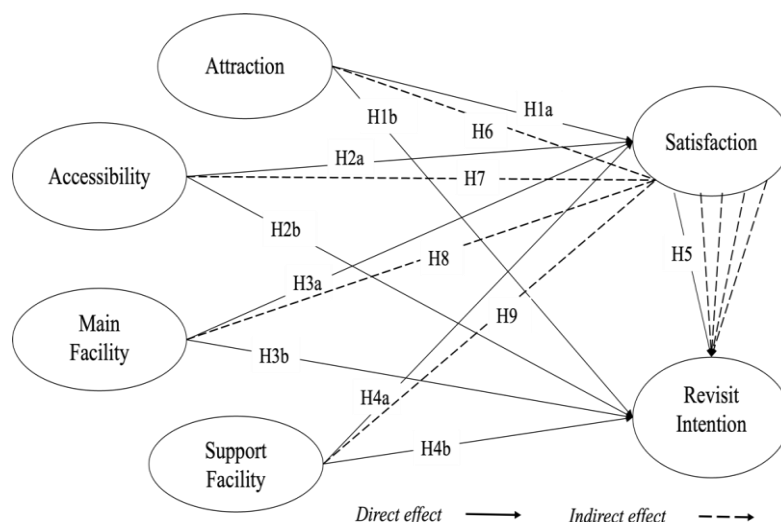
Figure 1. Propose Model (Source: personal original data)
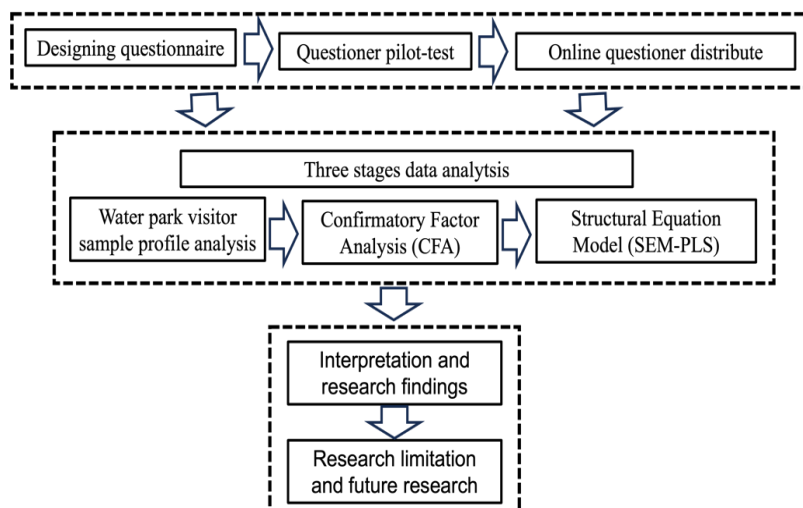
Figure 2. Flowchart of the study methodology (Source: personal original data)

participants, but only 269 were suitable for further processing and the remaining 22 were eliminated. The research analysis included three stages: sample profile analysis, Confirmatory Factor Analysis (CFA) for validity and reliability tests, and Structural Equation Model (SEM) to evaluate the model and hypotheses, which uses one-way hypothesis testing. The structural analysis operations were conducted using SEM with SmartPLS application (Ringle et al., 2015) as also applied by previous researchers (Leo et al., 2021; Liu et al., 2017; Sugiama et al., 2023; Suhartanto et al., 2021).

RESULTS AND DISCUSSION
Sample Profile

The first step of the analysis was to observe the sample profile. Table 2 and Figure 3 shows the demographic characteristics of the 269 respondents in the sample (n=269). Most of them were from Bandung city (37.55%) while the rest came from the other four cities. Out of four water parks, the most visited one was Pesona Nirwana (36.88%), but the percentage of visitors to other places was approximately the same. The majority of respondents were between 15 to 25 years old (79.18%), and the rest were aged 26 to 35 years (20.82%). Women made up more respondents (62.08%) than men (37.92). The average monthly expenditure was USD.330 (72.45%), which is in line with the age and status of the respondents who were mostly students (70.63%).
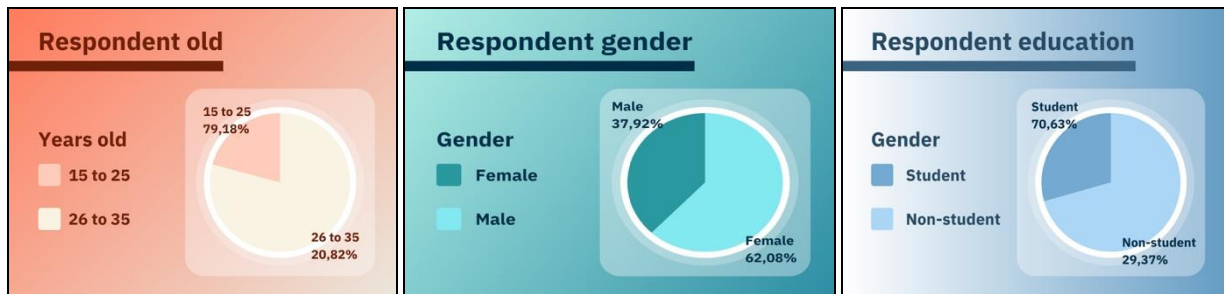
Figure 3. Sample profile (Source: personal original data)

The respondents affirmed that all water parks are suitable and family-friendly, safe for adults and children, have adrenaline-pumping water booms with a wide selection of water slides, and are convenient for spending leisure time. From the sample characteristics data, water park visitors were dominated by domestic and local repetitive tourists. It implies that water parks are more attractive to domestic tourists, and they generally become repetitive because swimming is a routine activity. Besides, they repetitively visit the water park since it is close to where they live, and the prices are affordable.

Confirmatory Factor Analysis (CFA)

The second stage of the analysis was the loading factor for validity and reliability tests using CFA (Table 3). CFA is suitable to analyze the validity and reliability as also applied by previous researchers (Jin et al., 2015; Marzuki et al., 2017). The analysis results show the SRMR value of 0.054, implying that the model is fit because 0.054<1.00 (Hair et al., 2017). All items on the *attraction* variables (ATC1, ATC2, ATC3) show reliable loading factor values (the lowest = 0.744 and the highest = 0.908) and have met the required validity because Average Variance Extracted (AVE)=0.805>0.5, with Cronbach Alpha (CA)=0.885 and CR=0.721. In the *accessibility* variable, all items pass the test (ACS1, ACS2, ACS3, ACS4) with loading factor values>0.7, the AVE value is >0.5=0.737. In the *main facilities* variable, the loading factor values of MAF1, MAF2, MAF8, and MAF9 do not meet the required validity and reliability, but the other items have loading factor values between 0.768 and 0.840 with AVE=0.860, CR=0.899, and CA=0.641. In the *supporting facilities* variable, there are also two invalid items (SUF1, SUF2, and SUF10), while the others (SUF3, SUF4, SUF5, SUF6, SUF7, SUF8, SUF9) have values of CA=0.904, CR=0.924, and AVE=0.635 which have met the required level of validity and reliability. The test results on tourist satisfaction that TOS5 invalid items, while TOS1, TOS2, TOS3, and TOS4 are valid and reliable, reflected by loading factor values between 0.753 and 0.860, with CA=0.840, CR=0.839, and AVE=0.677. Similarly, in the *revisit intention* variable, the items of REI2, REI3, REI4, and REI6 are valid and reliable

Table 2. Respondent Profile

Characteristics	Total (N)	%
Origin		
Bandung city	101	37.55
Garut Regency	64	23.79
Bandung Regency	43	15.99
Cimahi city	37	13.75
West Bandung Regency	24	8.92
Visited Water park		
Pesona Nirwana Water park	99	36.88
Karang Setra Water park	59	22.19
Sabda Alam Water park	57	21.25
Tasmania Water park	54	20.07
Age		
15-25 years old	213	79.18
26-35 years old	56	20.82
Gender		
Female	167	62.08
Male	102	37.92
Educational status		
Student	190	70.63
Non-student	79	29.37
Monthly expenditure		
Less than USD 330	195	72.45
More than USD 330	74	27.55

because loading factor values are between 0.758 and 0.840, with CA=0.825, CR=0.884, and AVE=0.656. Based on the discriminant validity analysis, all items have good validity, which is reflected by the AVE root value that is greater than the correlation coefficient. This is according to the requirements for the degree of validity of the measuring instruments and refers to the requirements for validity and reliability based on the heterotrait-monotrait ratio (Hair et al., 2017; Henseler et al., 2015). The results of the discriminant validity test show that all variables have met the validity requirements, as all values are less than the recommended level (<0.9). The average full collinearity VIF=1.711, indicating that the data does not show any problems related to the variance of the general method (Hair et al., 2017).

Structural Model and the Effect of Variables

The third stage was the PLS-SEM analysis (Table 4), as also conducted by previous researchers (Ghorbanzade et al., 2019; Hair et al., 2014). The results show that the SRMR value is 0.054, with an NFI of 0.834 (saturated model), indicating

that the model is fit because 0.054 < 1.00 (Hair et al., 2016). The value of the goodness of fit is 0.668, also implying that the proposed model is fit. Furthermore, in the outer VIF values, all manifest variables have a VIF value <10, meaning that there is no multicollinearity symptoms occur. Table 4 reveals significant results of the path coefficients test for the direct effect (H1, …, H9) of predictor variables on satisfaction and revisit intention (β=0.211, p<0.01; β=0.188, p<0.01; β=0.114, p<0.01; β=0.299, p<0.01; β=0.107, p<0.01; β=0.177, p<0.01; β=0.021, p>0.01; β=0.524, p<0.01).

Table 3. CFA Results

	Indicator	Factor loading	CA	CR	AVE
	Attraction (ATC):		0.805	0.885	0.721
ATC1	Adult swimming pool attractions	.744			
ATC2	Kid swimming pool attractions	.886			
ATC3	Variety of attractions	.908			
	Accessibility (ACS):		0.880	0.918	0.737
ACS1	Accessibility level	.885			
ACS2	Proximity to other tourist attractions	.892			
ACS3	Convenience of transportation facilities and infrastructure	.886			
ACS4	Ease of getting transportation services	.797			
	Main Facilities (MAF):		0.880	0.918	0.737
MAF3	Availability of food and beverage facilities	.840			
MAF4	Adequate toilet availability	.768			
MAF5	Toilet hygiene	.804			
MAF6	Comfort and safety of adult swimming pools	.768			
MAF7	Comfort and safety of kid swimming pools	.821			
	Support Facilities (SUF):		0.904	0.924	0.635
SUF3	Availability of cleaning facilities	.791			
SUF4	Availability of locker & storage space facilities	.805			
SUF5	Locker and storage space facilities security	.774			
SUF6	Security of locker/storage	.774			
SUF7	Availability of changing rooms	.786			
SUF8	Availability of parking facility	.879			
SUF9	Security of parking lot	.760			
	Satisfaction (TOS):		0.840	0.838	0.667
TOS1	Satisfied with the availability of recreational facilities	.753			
TOS2	Satisfied with the access to the water park	.848			
TOS3	Satisfied with the comfort of accommodation	.860			
TOS4	Satisfied with the welcome of officers and local residents	.825			
	Revisit intention (REI):		0.825	0.884	0.656
REI2	Community openness encourages you to revisit	.840			
REI3	Accommodation facilities encourage you to revisit	.825			
REI4	Attractions encourage you to revisit	.815			
REI6	The intention to return to enjoy food and drink	.758			

This implies that H1a, H1b, H2a, H2b, H3a, H3b, H4a and H5 are accepted/supported. However, the direct effect (H4b) of support facilities on revisit intention is unsupported. The results also show that there are (H6, H7, and H8) positive indirect effects of attraction on revisit intention through satisfaction, accessibilities on revisit intention through satisfaction, and main facilities on revisit intention through satisfaction (β=0.111, p<0.01; β=0.176, p>0.01; β=0.157, p<0.01), meaning H6 is accepted/supported. While the support facilities are not affect revisit intention through satisfaction (β=0.093, p>0.01), meaning H9 is unsupported. The causality values between variables are depicted in Figure 2.

Table 4. Hypotheses test results Notes: *Significant at p < 0.05; **significant at p < 0.01

| Relationship	Direct effect		Indirect effect		Total effect		Hypothesis
	β	T-value	β	T-value	β	T-Value	
Direct effect:							
Attraction → Satisfaction (H1a)	0.211	4.992*	-	-	0.211	4.992*	Supported
Attraction → Revisit Int. (H1b)	0.188	2.658*	0.111	3.934*	0.298	4.463*	Supported
Access. → Satisfaction (H2a)	0.335	5.650*	--	-	0.335	5.650*	Supported
Access. →Revisit Int. (H2b)	0.114	1.812*	0.176	4.017*	0.290	4.124*	Supported
Main Fac. →Satisfaction (H3a)	0.299	5.241*	-	-	0.299	5.341*	Supported
Main Fac. → Revisit Int. (H3b)	0.107	1.444*	0.157	3.405*	0.264	3.590*	Supported
Support Fac. → Satisfaction (H4a)	0.177	5.160*	-	-	0.177	5.160*	Supported
Support Fac. → Revisit Int. (H4b)	0.021	0.429*	0.092	4.042*	0.144	2.227*	Unsupported
Satisfaction → Revisit Int. (H5)	0.524	5.422*	-	-	0.525	5.422*	Suported
Specific indirect effect:							
Attraction → Satisfaction → Rev.intention (H6)	-	-	0.111	3.934*	-	-	Supported
Accessibility → Satisfaction →Rev. intention (H7)	-	-	0.176	4.017*	-	-	Supported
Main facilities → Satisfaction →Rev. intention (H8)	-	-	0.157	3.405*	-	-	Supported
Support Fac. → Satisfaction →Rev. intention (H9)	-	-	0.093	4.042*	-	-	Unsupported
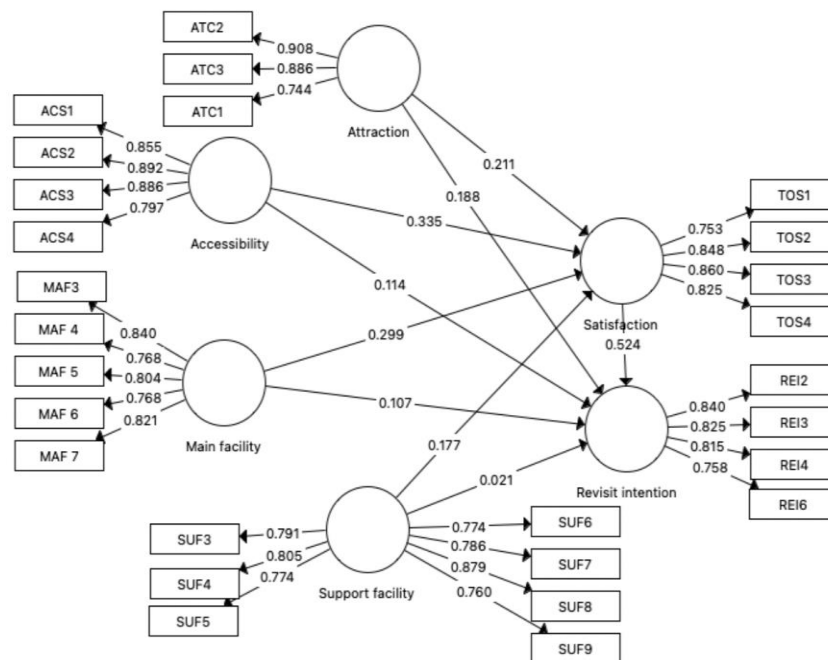
Figure 4. The linkage between the variables

Discussion and Theoretical Implication

First, this study intends to investigate the effect of attraction, accessibility, main facilities, and support facilities on satisfaction and revisit intention. The results reveal that the model's fitness highlights the importance of attraction, accessibility, main facilities, and support facilities are able to create and increase young tourist satisfaction. Young tourists affirm that both adult and kid swimming pools as well as other various recreational attractions at the water park can increase their satisfaction, in line with previous studies (Biswas et al., 2020; Som and Badarneh, 2011; Xiao-Ting and Bi-Hu, 2012). Also, water park attractions necessarily increase tourists' intention to revisit. Tourists acknowledge that the addition of kinds and numbers of water park attractions provided are now sufficient for their needs. Furthermore, satisfied tourists have a strong intention to revisit. This finding strengthens the previous water park research (Ghorbanzade et al., 2019; Jin et al., 2015; Lee et al., 2014; Sangmook, 2016), also this study reveals that tourists who are satisfied with the attractions have the intention to revisit. It is indicated by the satisfaction variable which does mediate the effect of attraction on revisit intention. This finding is in line with several previous studies (Abou-Shouk et al., 2018; Ghorbanzade et al., 2019; Hersanti et al., 2014; Markus et al., 2019; Sangmook, 2016). It is worth emphasizing that, based on the direct effect analysis, young tourists who are satisfied with their visit have a strong intention to come again; thus, this finding supports the previous studies (Kanwel et al., 2019).

Second, the results show that accessibility can increase the satisfaction and revisit intention of young water park tourists. This finding follows previous studies on water parks, and some others observing different objects (Biswas et al., 2020; Robustin et al., 2019). Accessibility is reflected by the ease of water parks to reach, proximity to other tourist attractions, convenience of facilities and infrastructure, ease of obtaining transportation services, and feasibility of public transportation facilities.

Third, the main facilities can increase satisfaction and revisit the intention of young water park tourists. They have a significant impact on satisfaction and revisit intention. The main facilities of water parks include convenient accommodations, clean and healthy places to eat, availability of toilets, clean and healthy toilets, safe and comfortable swimming pools for adults and children, and various recreational facilities available in water parks. This finding follows previous studies on other research objects (Baquero, 2023; Çevik, 2020; Marzuki et al., 2017), but it differs from Marzuki et al.'s study (Marzuki et al., 2017). This study also discovers an interesting finding, that satisfaction positively mediates the effect of main facilities on revisit intention. It implies that tourists who are satisfied with the main facilities in the water parks have a strong intention to revisit.

Finally, the supporting facilities have a positive impact on satisfaction. While this study discovers that support facilities in the water park do not necessarily increase tourists' intention to revisit. Also, this study result shows that water park support facilities do not impact revisit intention through young tourist satisfaction. This finding is important, even though tourists are satisfied with the support facilities, these supporting facilities do not make them intend to revisit. The supporting facilities of water parks include the availability of picnic tables and chairs, clean facilities, luggage or clothing storage, and changing rooms. Young water park tourists affirm that the higher the provision of supporting facilities at the water park, the more it increases satisfaction. Several reasons potentially contribute to the increase in this variable since supporting facilities have the urgency of complementing additional services for tourists. This finding is in line with the results of Marzuki et al. which stated that supporting facilities affect tourist satisfaction (Marzuki et al., 2017).

These interesting findings can contribute to enriching the repertoire of understanding and become the theoretical implication for water park services. *First*, it is important to provide tourist attractions, accessibility, and main facilities that can satisfy tourists, so that they will have a strong intention to return. *Second*, tourists who are satisfied with the support facilities of water parks do not have a tendency to revisit. The important theoretical implication of this study is for the integration of three theories, namely tourism services (Chatzigeorgiou and Simeli, 2017; Kerdpitak and Heuer, 2016),

tourist satisfaction, and revisit intention (Abou-Shouk et al., 2018; Seetanah et al., 2020; Sugiama et al., 2023; Torabi et al., 2022). *First*, the amenities components can be studied more specifically with a focus on main facilities and support facilities. The result findings of this research, both directly and indirectly, are that main facilities influence satisfaction, and satisfaction positively mediates the influence of main facilities on revisit intention. *Finally,* although supporting facilities have a direct effect on satisfaction, these supporting facilities do not tend to be revisited.

CONCLUSION AND STRATEGIC IMPLICATIONS
The results of this study highlight crucial services for young water park tourists. Tourism components such as attraction, accessibility, and main facilities are the important determinants of satisfaction and revisit intention. Meanwhile, the supporting facilities can be provided as a complementary service. The unique and interesting findings of this study can enrich the repertoire of understanding, especially for water park service providers. *First*, attraction, accessibility, main facilities, and support facilities directly have a positive and significant effect on young tourist satisfaction. Also, young tourist water park satisfaction has a positive and significant effect on young tourist revisit intention. *Second*, support facilities directly have a positive and significant effect on tourist satisfaction, but young tourist satisfaction does not mediate the impact of support facilities on revisit intention.

It is essential and fundamental for water park managers to consider strategic services for young tourists. It is important to provide attractions, accessibility, and main facilities, that satisfy young tourists so that they have a strong intention to revisit. *Second*, it is imperative to prioritize and enhance the quality of the main facilities (rather than support facilities) since young tourists who are satisfied with the main facilities have a strong tendency and intention to make a return visit.

LIMITATIONS AND FUTURE RESEARCH
This research has succeeded in expanding the knowledge and discovering new insights into water park tourism services, but it still bears some limitations. *First*, the places observed were limited to only five cities in West Java, Indonesia, and the population was only young tourists. Future research is encouraged to observe the same variables applied in other places and other tourist generations. *Second*, the predictor variables involved are attraction, accessibility, main facilities, and supporting facilities with dependent variables of satisfaction and revisit intention. Future researchers can add another predictor, such as tourism infrastructure (Mandić et al., 2018; Platov et al., 2021) by integrating other dependent variables such as tourist loyalty and destination image (Chenini and Touaiti, 2018; Jin et al., 2016; Sangmook, 2016).

REFERENCES
Abou-Shouk, M.A., Zoair, N., El-Barbary, M.N., & Hewedi, M.M. (2018). Sense of Place Relationship with Tourist Satisfaction and Intentional Revisit: Evidence from Egypt. *International Journal of Tourism Research*, 20(2), 172–181. https://doi.org/10.1002/jtr.2170
Achmad, F., Prambudia, Y., & Rumanti, A.A. (2023). Improving Tourism Industry Performance through Support System Facilities and Stakeholders: The Role of Environmental Dynamism. *Sustainability*, 15(5), 4103. https://doi.org/10.3390/su15054103
Andrianto, T., & Sugiama, G. (2016). The Analysis of Potential 4A's Tourism Component in the Selasari Rural Tourism, Pangandaran, West Java. *Proceedings of the Asia Tourism Forum. 2016 - the 12th Biennial Conference of Hospitality and Tourism Industry in Asia*. https://doi.org/10.2991/atf-16.2016.21
Ariesta, D., Sukotjo, E., & Suleman, N.R. (2020). The Effect of Attraction, Accessibility and Facilities on Destination Images and Its Impact on Revisit Intention in the Marine Tourism of the Wakatobi Regency. *International Journal of Scientific & Technology Research*, 9(3).
Baquero, A. (2023). Is Customer Satisfaction Achieved Only with Good Hotel Facilities? A Moderated Mediation Model. *Administrative Sciences*, 13(4), 108. https://doi.org/10.3390/admsci13040108
Bichler, B.F., & Peters, M. (2021). Soft Adventure Motivation: an Exploratory Study of Hiking Tourism. *Tourism Review*, 76(2), 473–488. https://doi.org/10.1108/TR-10-2019-0403
Biswas, C., Omar, H., Rashid, R., & Jasmine Z.R.R. (2020). The Impact of Torist Attraction and Accessibility on Tourists' Satisfaction: The Moderating Role of Tourists'' Age. *GeoJournal of Tourism and Geosites*, 32(4), 1202–1208. https://doi.org/10.30892/gtg.32402-558
Buffa, F. (2015). Young Tourists and Sustainability. Profiles, Attitudes, and Implications for Destination Strategies. *Sustainability*, 7(10), 14042–14062. https://doi.org/10.3390/su71014042
Cavagnaro, E., Staffieri, S., & Postma, A. (2018). Understanding millennials' tourism experience: values and meaning to travel as a key for identifying target clusters for youth (sustainable) tourism. *Journal of Tourism Futures*, 4(1), 31–42. https://doi.org/10.1108/JTF-12-2017-0058

Çevik, H. (2020). The Relationship Between Park Satisfaction, Place Attachment and Revisit Intention in Neighborhood Parks with Physical Activity Facilities. *Journal of Education and Learning*, 9(2), 178. https://doi.org/10.5539/jel.v9n2p178

Chatzigeorgiou, C., & Simeli, I. (2017). Perception of Service Quality in Agrotourism Accommodations: Impact on Guest Loyalty and Revisit Intentions. *Journal of Tourism, Heritage & Services Marketing*, 3(1), 33–41.

Chenini, A., & Touaiti, M. (2018). Building Destination Loyalty Using Tourist Satisfaction and Destination Image: A Holistic Conceptual Framework. *Journal of Tourism, Heritage & Services Marketing*, 4(2), 37–43. https://doi.org/10.5281/zenodo.1490491

Crilley, G., Weber, D., & Taplin, R. (2012). Predicting Visitor Satisfaction in Parks: Comparing the Value of Personal Benefit Attainment and Service Levels in Kakadu National Park, Australia. *Visitor Studies*, 15(2), 217–237. https://doi.org/10.1080/10645578.2012.715038

Dai, D., Bo, M., & Zhou, Y. (2022). How Do the Young Perceive Urban Parks? A Study on Young Adults' Landscape Preferences and Health Benefits in Urban Parks Based on the Landscape Perception Model. *International Journal of Environmental Research and Public Health*, 19(22), 14736. https://doi.org/10.3390/ijerph192214736

Daniels, B., & Melstrom, R.T. (2017). Examining Recreation Demand for Lakeshore Parks in Oklahoma: What is Causing the Downward Trend in Attendance? *Journal of Park and Recreation Administration*, 35(2), 25–36. https://doi.org/10.18666/JPRA-2017-V35-I2-7530

Edwards, D., Griffin, T., & Hayllar, B. (2008). Urban Tourism Research. *Annals of Tourism Research*, 35(4), 1032–1052. https://doi.org/10.1016/j.annals.2008.09.002

Edwards, M.D., Mueller, J.T., Graefe, A.R., & Mowen, A.J. (2018). Coping with Climate Change: A Study of Great Lakes Water-Based Recreationists. *The Journal of Park and Recreation Administration*, 36(2), 52–74. https://doi.org/10.18666/JPRA-2018-V36-I2-8296

Folgado-Fernández, J., Di-Clemente, E., Hernández-Mogollón, J., & Campón-Cerro, A. (2018). Water Tourism: A New Strategy for the Sustainable Management of Water-Based Ecosystems and Landscapes in Extremadura (Spain). *Land*, 8(1), 2. https://doi.org/10.3390/land8010002

Ghorbanzade, D., Mehrani, H., & Rahehagh, A. (2019). The Effect of Experience Quality on Behavioral Intentions of domestic Tourists in Visiting Water Parks. *Cogent Business & Management*, 6(1). https://doi.org/10.1080/23311975.2019.1580843

Ginting, N., & Sasmita, A. (2018). Developing Tourism Facilities Based on Geotourism in Silalahi Village, Geopark Toba Caldera. *IOP Conference Series: Earth and Environmental Science*, 126, 012163. https://doi.org/10.1088/1755-1315/126/1/012163

Hai, L.T.D., Nguyen, Q.N., & Huyen, K.N. (2023). The Attraction of Can Tho City, Vietnam as a Tourist Destination. *GeoJournal of Tourism and Geosites*, 50(4), 1458–1465. https://doi.org/10.30892/gtg.50426-1144

Hair, J.F., Hult, G.T.M., Ringle, C.M., & Sarstd, M. (2016). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Second). SAGE Publications, Inc.

Hair, J.F., Hult, G.T.M., Ringle, C.M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). Sage Publications Inc.

He, Li, D., & Wei, X. (2022). Analysis on the Coordination Between Tourism Activities and Tourism Supporting Facilities: A Case Study in China. In *Proceedings of the 26th International Symposium on Advancement of Construction Management and Real Estate*, 1621–1635. https://doi.org/10.1007/978-981-19-5256-2_124

Henseler, J., Ringle, C.M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hersanti, G., Suhud, U., & Wibowo, S.F. (2014). Three Modified Models to Predict Intention of Indonesian Tourists to Revisit Sydney. *European Journal of Business and Management*, 6(25).

Jin, Line, N.D., & Merkebu, J. (2016). The Effects of Image and Price Fairness. *International Journal of Contemporary Hospitality Management*, 28(9), 1895–1914. https://doi.org/10.1108/IJCHM-03-2015-0094

Jin, N.P., Lee, S., & Lee, H. (2015). The Effect of Experience Quality on Perceived Value, Satisfaction, Image and Behavioral Intention of Water Park Patrons: New versus Repeat Visitors. *International Journal of Tourism Research*, 17(1), 82–95. https://doi.org/10.1002/jtr.1968

Kanwel, S., Lingqiang, Z., Asif, M., Hwang, J., Hussain, A., & Jameel, A. (2019). The Influence of Destination Image on Tourist Loyalty and Intention to Visit: Testing a Multiple Mediation Approach. *Sustainability*, 11(22), 6401. https://doi.org/10.3390/su11226401

Kawuryan, M.W., Fathani, A.T., Purnomo, E.P., Salsabila, L., Azmi, N.A., Setiawan, D., & Fadhlurrohman, M.I. (2022). Sustainable Tourism Development in Indonesia: Bibliometric Review and Analysis. *Indonesian Journal of Geography*, 54(1). https://doi.org/10.22146/ijg.64657

Kerdpitak, C., & Heuer, K. (2016). Key Success Factors of Tourist Satisfaction in Tourism Services Provider. *Journal of Applied Business Research (JABR)*, 32(4), 1237–1242. https://doi.org/10.19030/jabr.v32i4.9733

Kim. (2018). The Impact of Memorable Tourism Experiences on Loyalty Behaviors: The Mediating Effects of Destination Image and Satisfaction. *Journal of Travel Research*, 57(7), 856–870. https://doi.org/10.1177/0047287517721369

Kuklina, M., Dirin, D., Filippova, V., Savvinova, A., Trufanov, A., Krasnoshtanova, N., Bogdanov, V., Kobylkin, D., Fedorova, A., Itegelova, A., & Batotsyrenov, E. (2022). Transport Accessibility and Tourism Development Prospects of Indigenous Communities of Siberia. *Sustainability*, 14(3), 1750. https://doi.org/10.3390/su14031750

Kurar, İ., & Kavack, M. (2023). The Recreation Experience Preference and Local-centered Satisfaction Status of Local People and Second Home Owner. *GeoJournal of Tourism and Geosites*, 50(4), 1303–1317. https://doi.org/10.30892/gtg.50411-1129

Kusdibyo, L. (2022). Tourist Loyalty to Hot Springs Destination: the Role of Tourist Motivation, Destination Image, and Tourist Satisfaction. *Leisure/Loisir*, 46(3), 381–408. https://doi.org/10.1080/14927713.2021.1986420

Kutlu, D., & Ayyildiz, H. (2021). The Role of the Destination Image in Creating Memorable Tourism Experience. *Journal of Tourism and Services*, 12(23), 199–216. https://doi.org/10.29036/JOTS.V12I23.303

Lee, Gibson, J.M., Brown, J., Habtewold, J., & Murphy, H.M. (2023). Burden of Disease from Contaminated Drinking Water in Countries with High Access to Safely Managed Water: A Systematic Review. *Water Research*, 120244. https://doi.org/10.1016/j.watres.2023.120244

Lee, S., Jeong, E., & Qu, K. (2020). Exploring Theme Park Visitors' Experience on Satisfaction and Revisit Intention: A Utilization of Experience Economy Model. *Journal of Quality Assurance in Hospitality & Tourism*, 21(4), 474–497. https://doi.org/10.1080/1528008X.2019.1691702

Lee, S., Jin, N., & Lee, H. (2014). The Moderating Role of Water Park Service Quality, Environment, Image, and Food Quality on Perceived Value and Customer Loyalty: A South Korean Case Study. *Journal of Quality Assurance in Hospitality & Tourism*, 15(1), 19–43. https://doi.org/10.1080/1528008X.2014.855102

Leo, G., Brien, A., Astor, Y., Najib, M., Novianti, S., Rafdinal, W., & Suhartanto, D. (2021). Attraction Loyalty, Destination Loyalty, and Motivation: Agritourist Perspective. *Current Issues in Tourism*, 24(9), 1244–1256. https://doi.org/10.1080/13683500.2020.1772207

Lim, C., Zhu, L., & Koo, T.T.R. (2019). Urban Redevelopment and Tourism Growth: Relationship between Tourism Infrastructure and International Visitor Flows. *International Journal of Tourism Research*, 21(2), 187–196. https://doi.org/10.1002/jtr.2253

Liu, X., Li, J., & Kim, W.G. (2017). The Role of Travel Experience in the Structural Relationships among Tourists' Perceived Image, Satisfaction, and Behavioral Intentions. *Tourism and Hospitality Research*, 17(2), 135–146. https://doi.org/10.1177/1467358415610371

Lu, C.Y., Chen, B.T., & Hutapea, R.S. (2022). What Drives Tourist Loyalty toward Taiwan as a Tourist Destination? A Lesson Prior to the COVID-19 Pandemic. *International Journal of Applied Business Research*, 4(2), 133–150.

Mahdzar, M., Ahmad, S., Sridar, R., & Syamsul H.M.A. (2015). The Role of Destination Attributes and Memorable Tourism Experience in Understanding Tourist Revisit Intentions. *American-Eurasian Journal of Agricultural & Environmental Sciences*, *2015*(15), 32-39.

Mandić, A., Mrnjavac, Ž., & Kordić, L. (2018). Tourism Infrastructure, Recreational Facilities and Tourism Development. *Tourism and Hospitality Management*, *24*(1), 41–62. https://doi.org/10.20867/thm.24.1.12

Markus, Z., Perovic, D., Pekovic, S., & Popovic, S. (2019). Assessing Tourist Revisit Intention through the Sports and Recreational Services Offered. *Business Systems Research Journal*, *10*(2), 141–150. https://doi.org/10.2478/bsrj-2019-023

Martins, M.R., & Costa, R.A. (2023). Backpacker conceptualisation criteria: discussion, clarification and operationalisation proposal. *International Journal of Tourism Cities*, *9*(1), 220–243. https://doi.org/10.1108/IJTC-07-2022-0175

Marzuki, A., Khoshkam, M., Mohamad, D., & Abdul Kadir, I. (2017). Linking Nature-based Tourism Attributes to Tourists' Satisfaction. *Anatolia*, *28*(1), 96–99. https://doi.org/10.1080/13032917.2016.1277432

Mi, C., Chen, Y., Cheng, C.S., Uwanyirigira, J.L., & Lin, C.T. (2019). Exploring the Determinants of Hot Spring Tourism Customer Satisfaction: Causal Relationships Analysis Using ISM. *Sustainability*, *11*(9), 2613. https://doi.org/10.3390/su11092613

Nguyen. (2021). Impact of Investment in Tourism Infrastructure Development on Attracting International Visitors: A Nonlinear Panel ARDL Approach Using Vietnam's Data. *Economies*, *9*(3), 131. https://doi.org/10.3390/economies9030131

Nguyen, Q.N., Nguyen, H.L., & Le, T.D.H. (2020). Relationships among Novelty Seeking, Satisfaction, Return Intention, and Willingness to Recommend of Foreign Tourists in Vietnam. *Management Science Letters*, 2249–2258. https://doi.org/10.5267/j.msl.2020.3.011

Nguyen Viet, B., Dang, H.P., & Nguyen, H.H. (2020). Revisit Intention and Satisfaction: The Role of Destination Image, Perceived Risk, and Cultural Contact. *Cogent Business and Management*, *7*(1). https://doi.org/10.1080/23311975.2020.1796249

Platov, A., Silaeva, A., & Boboshko, N. (2021). Tourist Infrastructure as the Basis for Sustainable Development of the Destination. *Proceedings of the 1st International Scientific Forum on Sustainable Development of Socio-Economic Systems*, 206–213. https://doi.org/10.5220/0010666200003223

Porto, N., Rucci, A.C., & Ciaschi, M. (2018). Tourism Accessibility Competitiveness. A Regionalapproach for Latin American Countries. *Nvestigaciones Regionales* , 75–91.

Rahman, H.M.T., & Shil, S.R. (2012). Measuring Service Satisfaction of Young Tourists: a Case Study of Lawachara National Park, Bangladesh. *Anatolia*, *23*(2), 196–206. https://doi.org/10.1080/13032917.2012.664823

Raimkulov, M., Juraturgunov, H., & Ahn, Y. (2021). Destination Attractiveness and Memorable Travel Experiences in Silk Road Tourism in Uzbekistan. *Sustainability*, *13*(4), 2252. https://doi.org/10.3390/su13042252

Rasoolimanesh, S.M., Seyfi, S., Rather, R.A., & Hall, C.M. (2022). Investigating the Mediating Role of Visitor Satisfaction in the Relationship between Memorable Tourism Experiences and Behavioral Intentions in Heritage Tourism Context. *Tourism Review*, *77*(2), 687–709. https://doi.org/10.1108/TR-02-2021-0086

Ringle, C.M., Wende, S., & Becker, J.M. (2015). *SmartPLS 3*. Boenningstedt: SmartPLS GmbH; Http://Www.Smartpls.Com.

Robustin, T.P., Sularso, R.A., Suroso, I., & Yulisetiarini, D. (2018). The Contribution of Tourist Attraction, Accessibility and Amenities in Creating Tourist Loyalty in Indonesia. *GATR Journal of Business and Economics Review*, *3*(4), 92–98. https://doi.org/10.35609/jber.2018.3.4(3)

Robustin, T.P., Sularso, R.A., Suroso, I., & Yulisetiarini, D. (2019). Contribution of Tourism Products in Creating Satisfying Quality of Tourism Services and Tourist Loyalty. *Journal of Environmental Management and Tourism*, *10*(6), 1382–1391.

Rubio-Escuderos, L., García-Andreu, H., & de la Rosa, J.U. (2021). Accessible Tourism: Origins, State of the Art and Future Lines of Research. *European Journal of Tourism Research*, *2021*(28).

Sangmook , L. (2016). The Impact of Food Quality on Experiential Value, Price Fairness, Water Park Image, Satisfaction, and Behavioral Intention in Context of Water Park. *Culinary Science & Hospitality Research*, *22*(1), 87–95. https://doi.org/10.20878/cshr.2016.22.1.010

Seetanah, B., Teeroovengadum, V., & Nunkoo, R. (2020). Destination Satisfaction and Revisit Intention of Tourists: Does the Quality of Airport Services Matter? *Journal of Hospitality & Tourism Research*, *44*(1), 134–148. https://doi.org/10.1177/1096348018798446

Som, A.P.M., & Badarneh, M.B. (2011). Tourist Satisfaction and Repeat Visitation; Toward a New Comprehensive Model. *World Academy of Science, Engineering and Technology*, *5*(2), 239–246.

Sugiama, A.G., & Nufi, T. (2021). The Identification of Infrastructure, Accessibility, Environment, and Physical Tourism Attraction Resources: Cibeureum Lake Case. *Proceedings of the 2nd International Seminar of Science and Applied Technology (ISSAT 2021)*, *207*(2021), 650–655.

Sugiama, A.G., Nurhikmah, W., Rini, R.O.P., & Wigati, E. (2023). Investigating the Essence of Recreational Accessibility and Its Effects on Satisfaction, Memories, and Loyalty of City Park Visitors. *African Journal of Hospitality, Tourism and Leisure*, *12*(4), 1524–1541. https://doi.org/10.46222/ajhtl.19770720.447

Sugiama, A.G., Oktavia, H.C., & Karlina, M. (2022). The Effect of Tourism Infrastructure Asset Quality on Tourist Satisfaction: A Case on Forest Tourism in Tasikmalaya Regency. *International Journal of Applied Sciences in Tourism and Events*, *6*(1), 65–71. https://doi.org/10.31940/ijaste.v6i1.65-71

Suhartanto, D., Dean, D., Wibisono, N., Astor, Y., Muflih, M., Kartikasari, A., Sutrisno, R., & Hardiyanto, N. (2021). Tourist Experience in Halal Tourism: what Leads to Loyalty? *Current Issues in Tourism*, *24*(14), 1976–1990. https://doi.org/10.1080/13683500.2020.1813092

Suhartanto, D., Ruhadi, & Triyuni, N. (2016). Tourist Loyalty Toward Shopping Destination: the Role of Shopping Satisfaction and Destination Image. *European Journal of Tourism Research*, *13*, 84–102. https://doi.org/10.54055/ejtr.v13i.233

Teo, T.L.L., Coleman, H.M., & Khan, S.J. (2015). Chemical contaminants in swimming pools: Occurrence, implications and control. *Environment International*, 76, 16–31. https://doi.org/10.1016/j.envint.2014.11.012

Torabi, Shalbafian, Allam, Z., Ghaderi, Z., Murgante, B., & Khavarian-Garmsir, A. (2022). Enhancing Memorable Experiences, Tourist Satisfaction, and Revisit Intention through Smart Tourism Technologies. *Sustainability*, *14*(5), 2721. https://doi.org/10.3390/su14052721

Tóth, G., & Dávid, L. (2010). Tourism and Accessibility: An Integrated Approach. *Applied Geography*, *30*(4), 666–677. https://doi.org/10.1016/j.apgeog.2010.01.008

Tverijonaite, E., Ólafsdóttir, R., & Thorsteinsson, T. (2018). Accessibility of Protected Areas and Visitor Behaviour: A Case Study from Iceland. *Journal of Outdoor Recreation and Tourism*, *24*, 1–10. https://doi.org/10.1016/j.jort.2018.09.001

Van Aalst, I., & Brands, J. (2021). Young People: Being Apart, Together in an Urban Park. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, *14*(1), 1–17. https://doi.org/10.1080/17549175.2020.1737181

Vengesayi, S., Mavondo, F.T., & Reisinger, Y. (2009). Tourism Destination Attractiveness: Attractions, Facilities, and People as Predictors. *Tourism Analysis*, *14*(5), 621–636. https://doi.org/10.3727/108354209X12597959359211

Xiao-Ting, H., & Bi-Hu, W. (2012). Intra-attraction Tourist Spatial-Temporal Behaviour Patterns. *Tourism Geographies*, *14*(4), 625–645. https://doi.org/10.1080/14616688.2012.647322

INNOVATION MODEL OF HUMAN RESOURCES TRAINING AND DEVELOPMENT FOR THE HOTEL INDUSTRY FROM THE ASEAN STANDARD FRAMEWORK: A CASE IN NAKHON RATCHASIMA PROVINCE, THAILAND

Thanasit SUKSUTDHI[*]

Hospitality Technology Innovation Program, School of Management Technology, Institute of Social Technology,
Suranaree University of Technology, Nakhon Ratchasima, Thailand, e-mail: thanasit@sut.ac.th

Abstract: From the current global changes and the rapid development of innovation and technology, personnel development according to the previous approach may be insufficient for work. It is necessary to increase the skills of the workforce and improve work efficiency for higher quality. This research aims to study the training and development of human resources in the hotel industry in Nakhon Ratchasima Province at present, to study innovations in training and human resource development in the hotel industry and the ASEAN hotel industry standard framework, and to propose the innovation model for training and development of human resources in the hotel industry from the ASEAN standard framework. The findings suggest implementing the innovation model of resources training and development in the hotel industry by integrating modern technology and training techniques into use in developing staff in various forms that are in accordance with the ASEAN standard framework and hotel service standards to increase the hotel service quality and staff performance. The quantitative approach was employed by using structural equation modeling for path analysis. The data was collected by using questionnaires from 400 samplings from hotel staff in Nakhon Ratchasima Province. The model is consistent with empirical material in statistical significance. It can confirm that seven significant factors directly affect service performance which are job rotation, blended learning, practice training, classroom training, study tour for learning, learning through playing games, and teaching respectively and the new model was proposed for innovative development and training for the hotel staff. This research proposes an innovation process for hotels to implement the use of technology and techniques for human resources training and development. It can increase staff service performance, lead to positive guest experience and satisfaction, and lead to hotel revenue. However, the potential, the different hotel contexts and characteristics, and its organizational culture should be considered for the implementation.

Key words: Training and development innovations, Human resources, Hotel industry, ASEAN Standard Framework, Nakhon Ratchasima Province

* * * * * *

INTRODUCTION

The 13th National Economic and Social Development Plan of Thailand (2023-2027) aims to transform Thailand into a hi-value and sustainable country (Transformation to Hi-Value and Sustainable Thailand) by using knowledge, creativity, technology, and innovation as tools to drive potential enhancement and development of the country in all dimensions. As well as to the development of human capital and adjust labor skills to meet quality standards in line with the needs of the labor market and the modern world (Suksutdhi, 2022). In contrast, the quality of education and the skill development system in Thailand is still at a low level, resulting in a labor shortage that is inconsistent with the country's development direction. These problems are likely to be exacerbated by the future of work and rapid changes in technology, lifestyles, and cultures that come with the demand for jobs and new types of skills (Ketprapakorn and Kantabutra, 2019).

In addition, the change in the structure of the Thai population into a completely aging society will result in labor shortages due to non-standard labor quality problems, technology development delays, and management problems. This will be a limitation in increasing the country's competitiveness and economic growth potential, whereas the development of knowledge and skills of the workforce is also inconsistent with the job market requirement (Anantanasuwong, 2021). However, according to a declining population, entering an aging society, and urbanization will bring opportunities to improve the quality of education and training as well as promote lifelong learning to be able to produce and develop a workforce to have high performance (Norrman, 2023), which is an important fundamental factor in transforming Thailand into a hi-value and sustainable country in the future. Hence, the labor sector needs to increase skills and adjust labor aptitudes following new trends. Furthermore, human capital development should focus on developing people to have higher skills, knowledge, and abilities and to be able to adapt to global trends, based on having strong social institutions as an important social capital to drive the country's further development (Anantanasuwong, 2021).

Nakhon Ratchasima is the province with the widest area in Thailand. It is considered the economic center of the lower Northeastern region that has grown quite rapidly over the past several years. At the present day, the government has developed an important infrastructure that connects travel and transportation from the capital city, Bangkok, to Nakhon

---

[*] Corresponding author

Ratchasima Province such as high-speed trains and motorways. Hence, it drives the tourism and the hotel industry in Nakhon Ratchasima Province to grow significantly. Currently, there are many famous large hotels operating in the central business district including large hotels, medium-sized hotels, small hotels, and boutique hotels. According to the latest survey data of the National Statistical Office of Thailand found that in 2020, Nakhon Ratchasima Province had over 793 accommodation establishments spread at famous tourist attractions throughout the province, including the center of the city, archaeological sites, historical parks, and world heritage sites, Khao Yai National Park (Suksutdhi, 2022).

Therefore, the policy of country development progress and the global trends in various fields mentioned above will directly affect the workforce development of hotels in Nakhon Ratchasima Province to keep up with the changes, as it is a place to accommodate and service the business travelers and tourists who come to the province for their own purpose. The success of the hotel business is to provide international quality service and satisfy guests as expected by excellent service quality that should come from quality and professional staff. Nevertheless, many studies in the hospitality industry stated that service personnel still lack the necessary qualifications to perform their duties in many issues, especially international quality standards and ASEAN standards, such as English language, hotel professional skills, and service psychology (Aragon and Aquino, 2022). However, with the changing world and the rapid development of innovation and technology, human resource development according to the traditional ASEAN approach may not be sufficient for working in the present era. Thus, it is necessary to study the training and human resource development innovation for the hotel industry in addition to the framework of ASEAN standards to increase the necessary skills for the workforce and to increase the efficiency of the workforce for higher quality as well as to support the policy of development of the country.

LITERATURE REVIEW

Innovation refers to the process of introducing new ideas, products, services, processes, or methods that result in improvements or advancements in various aspects of life, business, technology, society, and institutional changes (Kochetkov, 2023). In addition, technological innovation affects economic growth and many scholars have investigated different influencing factors. It involves finding novel solutions to existing problems, creating new opportunities, and pushing the boundaries of what's currently possible (Alqahtani, 2023). Kochetkov (2023) added that innovation is a result of a process of information and specific knowledge, consisting of two phases: the first phase is the initiation of the idea and the implementation of that idea, and the second phase is creatively developing ideas for implementation in solving problems and challenges. Therefore, innovation is a new thing that can be practical and useful and can occur in every industry. However, innovation does not only consist of developing new products or commercializing inventions, but it also includes humanitarian, social, and institutional biases and requires an individual's fit with the organization (Pertiwi et al., 2023).

Innovation can be divided into various aspects such as product, process, service, marketing, language, arts and culture, management, and domination. To drive innovation, there are many factors to refer to including (1) technology and research, technological advancements often drive innovation by providing tools, resources, and platforms to create and scale new ideas. It plays a critical role in discovering new possibilities, (2) market and user feedback, feedback from customers and users is vital for successful innovation. Understanding their needs, preferences, and pain points can guide the refinement and adaptation of innovative ideas, (3) competition in the market, intense competition in the market where organizations must modernize their processes, products, and services for their survival, and (4) change in environment, the innovation implies a departure from the status quo. It introduces change and disrupts established patterns, whether it's in technology, business models, social norms, or other areas (Febriandika and Raihanita, 2023; Kochetkov, 2023).

According to the changes and trends mentioned, the development of manpower of the organizations is necessary together with the implementation of the theory of learning and innovation (Pertiwi et al., 2023). Learning theory encompasses a range of psychological, educational, and cognitive theories that seek to understand how individuals acquire new knowledge, skills, behaviors, and attitudes. These theories provide insights into the processes, mechanisms, and factors that influence learning. From both ethical and behavioral concepts, it is used as the basis of various learning theories such as (1) mental discipline, believing that rigorous mental training will make people smarter and better; (2) behaviorism, believing that humans are rational and freedom of action if encouraged, can reason and draw out knowledge in the learner; and (3) apperception or herbarianism which was popular in the 20th century and was applied to teaching and learning. This theory believes that humans learn from the five senses that help individuals learn. There are three levels of learning that occur, namely (1) sense activity, (2) memory characterized), and (3) conceptual thinking or understanding, the new knowledge, and existing knowledge are linked together, and they can be applied to new problems. Hence, Employees feel more freedom to experiment and try new things without fear of being punished or seen as inadequate. This encourages them to feel confident to create new and different things, leading to better performance (Ding and Li, 2023; Pertiwi et al., 2023).

Likewise, human resource development is the development of employees of the organization to become the intellectual capital which consists of the fundamental skills needed to do the job. As well as technology and innovation application and teamwork include knowledge and understanding of the organization's operational systems linked to the knowledge of the organization. This may be done in several techniques, for instance, mentoring developmental training or in the form of seniors teaching juniors. Education empowers employees to have the knowledge and skills they need to perform better at individual, team, and organizational levels. Especially in the new era, the dynamics of change are occurring so rapidly that organizations cannot predict which skills are suitable for future work, but having employees have a positive attitude will affect employee working behavior better (Xu et al., 2023). There are many scholars and experts who explained the learning theory in similar ways (e.g.: Aidoo, 2023; Baars et al., 2023; Bousalem et al., 2023; Inprasitha, 2023; Kerimbayev et al., 2023; Yang, 2023; Yu and Zin, 2023) which can be concluded that theories of learning are diverse and have different

characteristics that must be studied in conjunction with other related theories, e.g. learning based on an outcome method consists of (1) behavioral theories, which are theories that involve observing changes in one's behavior, skills, and habits (2) cognitive theories, which look deeper into thinking, and memory, and (3) constructivist theories are interested in how people create meaningful events and activities that lead to knowledge creation. For instance, teaching adults must inform the objectives of learning to understand and know the different learning behaviors of each person. Creating a stimulating learning experience and bringing direct experience to learn together and adults will learn when they are ready to learn (Baars et al., 2023). The theory of cooperative or collaborative learning is a small group learning in which 3-6 group members with different abilities help each other to learn towards the goals of the group. The other popular theory is problem-based learning (PBL), which is widely used by learners to face real problems or situations and collaboratively solve problems, will help learners learn meaningfully and develop the necessary skills for lifelong learning (Aidoo, 2023).

Training is a pre-planned study of an organization with the objective of learning to develop employees' competencies, skills, knowledge, and behavior in their day-to-day operations at the level required by the organization (Parent-Lamarche et al., 2023). Employees may be trained to enhance certain competencies that will help them work in their current position. Training results can be returned to the organization's income, for instance, a comparison of waste before and after training or for moving into a new position in the future (Molina-Castillo et al., 2023). It adds value to the work of the organization including personal growth. Training is most effective if it is in line with the organization's strategy (Hubbart, 2023). Training techniques use means of communicating knowledge, facts, and experiences from instructor to trainer and between trainers by organizing seminars, consensus, and group meetings to achieve learning, change behavior, and achieve specified objectives. Each training technique is effective in building knowledge and skills and the learning roles of the participants are different. However, there is currently not the best training method because each technique has its pros and cons, which depend on the trainer choosing to use it according to the context of the learners and the training objectives.

In addition, Rosário and Dias (2023) explained that although technological advances and innovations have changed a lot and are used in service work, many service jobs still require direct human interaction between customers and service personnel. Hence, service organizations should be closely integrated with human resources and dedicated to the selection of training methods to motivate and develop employees to have both technical knowledge, good interpersonal skills, and positive attitudes. Types of training can be categorized by teaching methods, including telling, showing, and practical, or categorized by involvement, consisting of the instructor being highly engaged and the trainees having a high level of involvement, a joint role. However, the most popular methods are on-the-job training, for example, job rotation, job coaching, mentoring, job instructional training, apprenticeship training, and committee assignments. Whereas off-the-job training provides self-improvement knowledge such as lectures by experts participatory and conference discussions, simulation training, case studies, games, role-playing, Internet use, learning portfolio, and team leader training (Parent-Lamarche et al., 2023). Nowadays, the training and development innovations are transforming training from trainer-centered to participant-centered training (Learner-center Training).

The facilitator should not have totalitarian control over the participants and focus on the use of PowerPoint, yet change the training in other ways, for example, talking in a comfortable place, which will make people dare to speak more. After action review (AAR) with discussions after important activities, recording suggestions, precautions, and knowledge gained from that task or using reflection techniques in exchanging new ideas and bringing them to a conclusion is collaborative learning (Sarfraz et al., 2023). In addition, Shahriar et al., (2023) suggested that the digital learning ecosystem offered flexibility in time, place, and pace, which provided essential convenience. For example, e-learning has enabled organizations to quickly adopt the new normal, secure sustainable continuity of organizational development, and ensure decent work and growth within and across organizations. It has enabled organizations to quickly cope with the new normal, causing a significant paradigm to shift in the organizational culture and corporate. Likewise, Fung So and Li (2023) added that the most significant factors are using new technology, keeping up with it, training human labor, being up-to-date, and adopting new infrastructures. However, improper management and lack of knowledge are the most critical factors behind service innovation failure in the hotel industry.

The ASEAN Standard Framework, or the ASEAN Common Competency Standards for Tourism Professionals (ACCSTP), is the minimum requirement for competency standards in tourism and hospitality. It aims to enhance tourism services and facilitate mobility between ASEAN member countries, address the imbalance between supply and demand for tourism jobs across the ASEAN region, and establish a mechanism to facilitate the mobility of skilled and certified tourism workers across the ASEAN region. These include 1) core competencies, which means the knowledge and ability to serve customers and work effectively with colleagues, the ability to adapt to the working environment, the ability to put safety knowledge into action in the workplace, knowledge of workplace hygiene, service industry savvy, and service consciousness. 2) Generic competencies, which means the ability to communicate effectively on the telephone, perform general clerical tasks, access, and search for information through computers, be proficient in using business tools and technology, presenting products and services to customers, conducting financial transactions, manage and solving problems and conflicts in various situations, and communicate in English at the basic level of operation. And 3) functional competencies, which means a specific skill to perform the duties in each job position, with the details of the work broken down according to the nature of the job (Aragon and Aquino, 2022).

Some scholars studied the ACCSTP guideline in the context of the hotel business which mostly focused on traditional training following the general standard operating procedure without suggesting and mentioning the innovative employee training and development direction as well as the techniques for developing manpower. However, some experts presented their findings in different perspectives that related to the new ideas. For instance, Chernbumroong et al., (2017) studied a

massive open online course related learning style and technology usage patterns of Thai tourism professionals and found that the smartphone plays a dominant role which influencing the technology usage of tourism professionals. The following learning styles could be identified as typical for the different learning dimensions: visual style for the input dimension; active style for the procession dimension; sequential style for the comprehension dimension and sensing style for the perception dimension. Likewise, Collin et al., (2020) studied human resource development (HRD) practices supporting creativity in Finnish growth organizations found that HRD plays an important role in increasing creativity in the workplace and that it can best support creativity by taking the form of shared responsibilities in teams, clear career paths and everyday fair leadership. In addition, Wu et al., (2023) studied formation of hotel employees' service innovation performance: Mechanism of thriving at work and change-oriented organizational citizenship behavior suggested that leader-member exchange and coworker support exert positive effects on thriving at work and change-oriented organizational citizenship behavior. Besides, thriving at work exerted positive effects on change-oriented organizational citizenship behavior, and change-oriented organizational citizenship behavior exerted positive effects on service innovation performance. Furthermore, thriving at work partially mediated (1) the relationship between leader-member exchange and change-oriented organizational citizenship behavior, and (2) the relationship between coworker support and change-oriented organizational citizenship behavior.

Thus, from studying the literature related to change and development in many dimensions mentioned above. In particular, the role of technology and innovation will play a significant role in developing the skills and service quality of staff in the hotel industry. However, there should be integrated tools for efficient human resource development and training. To provide employees with modern qualifications and skills and be able to respond to the needs of guests in this era of rapid change. Therefore, it is necessary to study new approaches and adjust human resource training and development techniques from the traditional ways to increase the efficiency and skills of employees to have better quality comparable to international levels. This study is therefore one of the first studies to promote and apply training techniques for adequate training and development. The training and development package includes classroom training, coaching, practical training, blended learning, job rotation, study visits, and learning through games these significant practices of innovative training and development will affect the service performance in the hotel industry concretely from ACCSTP. Consequently, the hypotheses are proposed from the literature review of the study as follows:

H1 Classroom training impacts effective service performance
H2 Teaching impacts effective service performance
H3 Practical training impacts effective service performance
H4 Blended learning impacts effective service performance
H5 Job rotation impacts efficient service performance
H6 Study visit for learning affects efficient service performance
H7 Learning through playing games impacts efficient service performance

MATERIALS AND METHODS

This study was conducted by a quantitative research method with the study of 400 hotel staff in Nakhon Ratchasima Province. Based on the scale development procedure (Churchill, 1979), various reliability and validity tests have been carried out to confirm the scale structure. This study implemented concepts, theories, and research related to innovation, organizational learning, human resource training and development, competency concepts, the hotel industry, and ASEAN standard framework. This research employed both descriptive statistics and inferential statistics by using structural equation modeling (SEM) for path analysis. Data was collected by using questionnaires from a purposive sampling (Cochran, 1977) by completing an online survey via Google Forms. 20 items were used to measure the model of the result of service performance (RS). A further detailed examination was carried out by looking at the standardized residual covariance of each item and modification indices. The process of research methodology is shown in Figure 1 below.

Initial items developed from concepts, theories, and research related to innovation, organizational learning, human resource training and development, competency concepts, the hotel industry, and the ASEAN standard framework.	Purifying measure implementation was sent to three experts for content validity checking and the language used to cover and match the specified definition.	Data collection methods by Google form.	Reliability and validity assessment by exploratory factor analysis to purify and reliability measurement after collecting the data.	The research employed both descriptive statistics and inferential statistics by using structural equation modeling (SEM).

Figure 1. Flow Chart of Research Methodology

After measurement, the number of paths was taken to enhance the validity of the collected data. The fit indices were tested for SEM and found that Chi-Square = 139.96, df = 131, p-value = 0.29, CFI = 0.99, GFI = 0.97, AGFI = 0.95, RMSEA = 0.013, RMR = 0.022, all of them passed the criteria (Hair et al., 2014; Schumacker and Lomax, 2010). The researcher, therefore, summarized the final of 20 variables which are a set of 3 questions per variable to Classroom Training (CT_RS), Teaching (TN_RS), Practice Training (PT_RS), Blended Learning (BL_RS), Job rotation (JR_RS), Study Tour for Learning (STL_RS) respectively, and the rest 2 questions were allocated to Learning through Playing Games (LPG_RS) which was indeed derived from several published papers as shown in Table 1.

Table 1 Summary of training and development variables

Variables	Items	References
Classroom Training (CT_RS)	CT_RS1 Transfer of knowledge and experience in actual work by specialists.	Darkwa and Antwi (2021), Inprasitha (2023), Kerimbayev (2023), Song et al., (2023), Sudibjo and Prameswari (2021), Yang (2023)
	CT_RS2 Creating operational simulations during classroom training (Simulation/Role-play)	
	CT_RS3 Organizing group discussions for collaborative learning.	
Teaching (TN_RS)	TN_RS1 Creating a mentoring system to teach work (Coaching).	Kerimbayev (2023), López-García (2023), Mazza and Valentini (2023), Yu and Zin, (2023)
	TN_RS2 Supervision of practice by a close supervisor (Close Controlling by supervisor).	
	TN_RS3 Teaching by a group of workers together. (Mentoring by peers).	
Practice Training (PT_RS)	PT_RS1 Learning to work in real situations.	Aidoo (2023), Bousalem et al., (2023), Yu and Zin (2023)
	PT_RS2 Learning by problem-solving (PBL)	
	PT_RS3 Knowledge sharing by analytical thinking.	
Blended Learning (BL_RS)	BL_RS1 Learning via online	Darkwa and Antwi (2021), Wut et al., (2023), Salman (2023), Shahriar et al., (2023)
	BL_RS2 Interactive Learning via organization networking.	
	BL_RS3 Web-based learning/on demand	
Job rotation (JR_RS)	JR_RS1 Job rotation in different service department.	Battini et al., (2022), Idris and Wahyudi (2021), Molina-Castillo et al., (2023)
	JR_RS2 Rotation of similar work in different contexts to increase skills in different situations.	
	JR_RS3 Rotating different duties to create professional learning in the service field.	
Study Tour for Learning (STL_RS)	STL_RS1 Field trip in network organization.	Hong et al., (2023), Salman (2023), Sánchez-Fuster et al., (2023)
	STL_RS2 Field trip in best practice service organization within the country to adapt in the workplace.	
	STL_RS3 Field trip in headquarters.	
Learning through Playing Games (LPG_RS)	LPG_RS1 Learning through online games-web-based gamification.	Nieto-Escamez and Roldán-Tapia (2021), Wut et al., (2023), Shahriar et al., (2023)
	LPG_RS2 Classroom gamification.	

RESULTS AND DISCUSSION

The information of all 400 hotel satff showed that most of them 224 were female accounted for 56% and 176 were male which accounted for 44%. They are age between 21 - 30 years old amount of 198 people accounted for 49.5%. 298 of employees who graduated with a bachelor's degree which accounted for 74.5%. A large group of them were having working experience lower than 5 years amount of 121 staff accounted for 30.25%. The number of 133 people who were under the other support departments accounted for 33.25%. They were the operations staff amount of 257 people accounted for 64.25%, and most of them were the satff of small hotels amount of 158 people accounted for 39.5%. The summary of the respondent's data is shown in Figure 2 below.
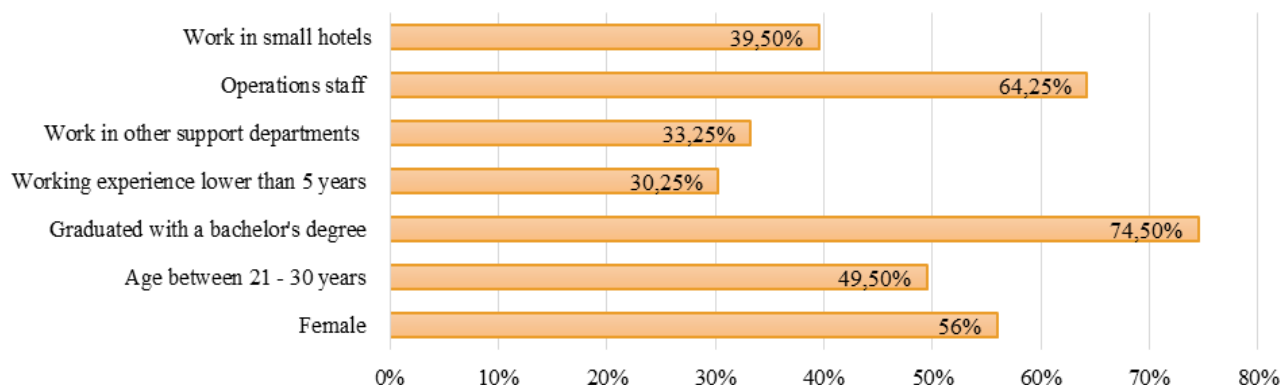

Figure 2. The Summary of the Respondent's Data

The model of the result of service performance (RS) comprising of Classroom Training (CT_RS), Teaching (TN_RS), Practice Training (PT_RS), Blended Learning (BL_RS), Job rotation (JR_RS), Study Tour for Learning (STL_RS), and Learning through Playing Games (LPG_RS). After the measurement model of the research, construct achieved the acceptable goodness-of-fit, the 20 indicators were loaded on their respective constructs and performed by CFA to estimate the fit indices for the overall measurement model. The hypotheses were related to the relationships between Classroom Training (CT_RS), Teaching (TN_RS), Practice Training (PT_RS), Blended Learning (BL_RS), Job rotation (JR_RS), Study Tour for Learning (STL_RS), and Learning through Playing Games (LPG_RS). The hypothesized model was tested by using SEM and the path diagram is presented in Figure 1 which can be explained as follows. Hypothesis 1 predicted classroom training impacts effective service performance, Hypothesis 2 predicted teaching impacts effective service performance, H3 Practical training impacts effective service performance, H4 Blended learning impacts effective service performance, H5 Job rotation impacts efficient service performance, H6 Study visit for learning affects efficient service performance, and H7 Learning through games impacts efficient service performance.

The model presents the path estimates of factor loading value of H1 equals to 0.79, and showed that classroom training (CT_RS) has directly significantly affected service performance which is consistent with the findings of Darkwa and Antwi (2021), Inprasitha (2023), Kerimbayev (2023), Song et al., (2023), Sudibjo and Prameswari (2021), and Yang (2023). Factor loading value of H2 equals to 0.72, showed that teaching (TN_RS) has directly significantly affected service performance which is consistent with the findings of Kerimbayev (2023), López-García (2023), Mazza and Valentini (2023). Factor loading value of H3 equals to 0.90, showed that practice training (PT_RS) has directly significantly affected service performance which is consistent with the findings of Aidoo (2023), Bousalem et al., (2023), Yu and Zin (2023).

Factor loading value of H4 equals to 0.91, showed that blended learning (BL_RS) has directly significantly affected service performance which is consistent with the findings of Darkwa and Antwi (2021), Salman (2023), Wut et al., (2023), Shahriar et al., (2023). Factor loading value of H5 equals to 0.92, showed that job rotation (JR_RS) has directly significantly affected service performance which is consistent with the findings of Battini et al., (2022), Idris and Wahyudi (2021), Molina-Castillo et al., (2023). Factor loading value of H6 equals to 0.79, showed that study tour for learning (STL_RS) has directly significantly affected service performance which is consistent with the findings of Hong et al., (2023), Salman (2023), Sánchez-Fuster et al., (2023).

And lastly, Factor loading value of H7 equals to 0.79, showed that learning through playing games (LPG_RS) has directly significantly affected service performance which is consistent with the findings of Nieto-Escamez and Roldán-Tapia (2021), Wut et al., (2023), Shahriar et al., (2023). In this case, classroom training (CT_RS), teaching (TN_RS), practice training (PT_RS), blended learning (BL_RS), job rotation (JR_RS), study tour for learning (STL_RS), and learning through playing games (LPG_RS) develop the result of service performance, and these seven variables

Figure 3. The Structural Model of the Study

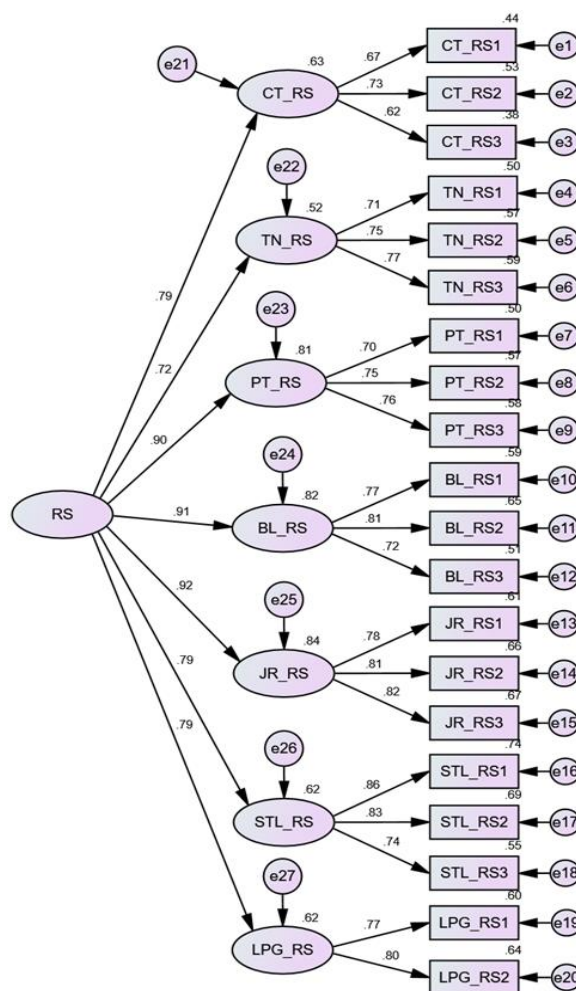all together influence directly to staff service performance for the hotel industry in Nakhon Ratchasima Province.

CONCLUSION

This study was conducted to find an innovation model for human resource training and development in the hotel industry from the ASEAN standard framework. The results of the study analyzed content data collected from questionnaires on training and human resource development in the hotel industry in Nakhon Ratchasima Province at present. In interpreting, there was an opinion that models of human resource development in the hotel industry in Nakhon Ratchasima Province include: classroom training, teaching, practice training, blended learning, job rotation, study tours for learning, and learning through playing games. In each development model, the sub-components can be described as follows, classroom training consists of transferring knowledge and experience in actual work by specialists, creating operational simulations during classroom training, and organizing group discussions for collaborative learning.

The second format is teaching includes establishing a mentoring system for teaching work, supervision of practice by a close supervisor, and coaching by a group of workers together. The third model is practice training consists of learning to work in real situations, learning by problem-solving from work (PBL), and learning and exchanging critical opinions from work. The fourth format is blended learning consists of creating work-based learning from online electronic media, creating interactive learning through organization networking, and creating lessons for self-learning at all levels at any time from the organization's website. The fifth model is job rotation includes job rotation in different service departments to increase intercommunication between the departments, job rotation of similar work in different contexts to increase skills in different situations, and job rotation in different duties to create professional learning in the service field. The sixth form of a study tour for learning consists of a field trip to a network organization, a field trip to a best practice service organization within the country to adapt to the workplace, and a field trip to headquarters.

Finally, the seventh model is learning through playing games consisting of learning through online games-web-based gamification, and classroom gamification. The results of descriptive statistical analysis at the model level in developing employees to have efficient service performance found that all forms of human resource development are at the same high level. The researcher conducted an inferential statistical analysis by analyzing the structural components in order of the greatest value: practice training format. The second has the same level of value: blended learning, and job rotation, and the third has the same score value: study tour for learning and learning through playing games followed by classroom training and teaching work respectively. In addition, the researcher developed the recommendations into an integrated model for

innovation in hotel human resource development and training. By integrating modern technology into use in developing employees in various forms that follow the ASEAN standard framework and hotel service standards, such as large hotels, medium-sized hotels, small hotels, boutique hotels, etc. For the integration of technology, training can be integrated into the classroom by playing interactive games between the trainees themselves or between the trainees and the computer system. The blended learning dimension mainly integrates the use of technology by creating self-directed learning which is learning for working-age adults who can learn at their own pace anywhere, anytime. The hotel may schedule classroom attendance sometimes for meetings and talking to build relationships with employees which is considered learning between each other. The researcher presented the issue of integrating technology in addition to learning through online games by creating a virtual classroom with technology or creating a virtual world (Metaverse), opening a new perspective for employees. Encounter virtual situations and practice solving various situations. It also inspires learning for employees. If employees can communicate and understand English well along with service skills and problem-solving that have been developed more efficiently, it will affect the satisfaction of guests who are ready to return to use the service and become loyal guests and lead to increasing hotel income, as shown in Figure 4. However, the technology and English skills may be a limitation of each staff, hence, the hotel management should also consider the techniques, timing, and strategies of training to develop individual skills.
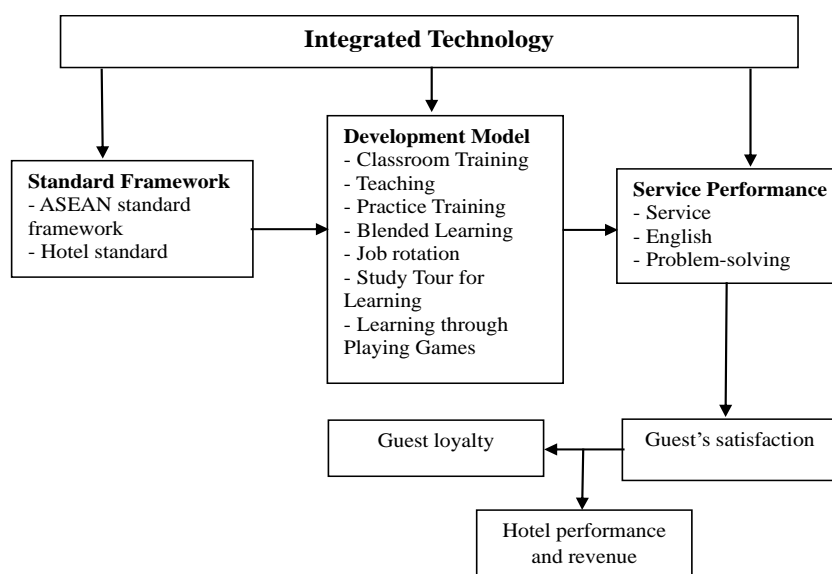

Figure 4. The Model for Innovation in Hotel Human Resource Training and Development

In conclusion, to develop the hotel staff to perform efficient service, the results of the study of training and human resource development models in the hotel industry found that the model consists of seven components as follows.

Classroom training is a transfer of knowledge and experience from experts, including creating simulation situations and providing opportunities for participants to discuss and exchange opinions. In this type of learning, each member of staff will have their own learning style. Cooperation is very important. Learning involves applying real work life problems to learning. Staff are the primary resource for ideas and examples. Therefore, classroom training is beneficial in that staff gain knowledge by sharing expert experiences and by joining the class. Studying in the classroom stimulates staff by dividing them into groups to share ideas, giving them the opportunity to let their thoughts talk and communicate with each other. Classroom training is considered one of the methods for developing human resources to increase the quality, efficiency, and potential of having the knowledge, skills, abilities, and characteristics that the organization needs to use them to perform better at both the internal and external level, individuals, team, and organization level.

Teaching (coaching) is the organization of a mentor system to teach work closely, either as a group of workers or as a supervisor, which is one of the popular forms of human capital development by involving participants in training and many roles. Trainers must create a learning atmosphere and activities by explaining lectures, experiment with two-way communication, share experiences and learn by solving real problems. In addition, teaching work from senior supervisors or co-workers together will pass on the organizational culture and build friendly relationships in working together as a team better.

Practice training (on-the-job training) is learning to work in a real place by doing and solving problems from work so that staff can put the skills and knowledge from training into practice and solve problems by themselves. Staff must truly understand and learn from real situations, namely allowing them to learn from real situations. Practical hands-on practice for maximum efficiency which staff will remember better for longer from their own experiences.

Blended learning (Hybrid Learning) is a combination of learning that the hotel uses technology to help organize training and learning by creating a lesson platform in electronic media for staff. Together with teaching through the internet network with interaction between the trainer and staff and combined with the dissemination of knowledge on the human resource's website, this blended learning is self-learning by staff can learn anytime they want.

Job rotation is the changing of duties to facilitate learning. It may be the same type of work or different duties and contexts for a wider range of experiences. It is one of the processes of practical learning that may be learning by yourself or with others or in groups, which will make learning more efficient and effective. Job rotation is considered human resource

development according to the cooperative learning theory that trains social skills. Working with others, communicating, accepting, and trusting each other, which comes from interaction, working, learning together, helping, and understanding each other, which will have a beneficial effect on the development recipient, is that there is an effort to achieve more goals, stay motivated, pursue achievement, use time efficiently. In addition, job rotation is a development that emphasizes employee experience that will lead to ideas and applications in new situations based on real situations. It is developed by considering the surrounding context related to the real problems that employees will have to face and linking it to use in other contexts. There will be constant changes and development from the original knowledge base.

Study tour for learning is considered part of the educational process that will affect personal development by seeing real examples after learning the theory so that staff can develop their thinking processes and remember from having the opportunity study tour for learning and creating meaning from activities and events into knowledge. Knowledge from learning in the classroom alone is not enough. There must be application and learning of specific work characteristics. Therefore, field trips for learning are one of the processes that help develop real images, learn from those who work in a specific field, and make comparisons that will help promote further development of theoretical knowledge from the classroom. In this regard, the study tour may be a study visit to a subsidiary hotel that is excellent in service or a leading company both in the country and abroad. Learning through playing games (Gamification) is human resource development training using games to create a fun learning environment for staff and to create teamwork and social interaction between the participants themselves. Learning through games can be organized both in the classroom and through online games. This is considered to be a training that has good results for the staff as shown in personal interviews where employees said that they were both knowledgeable and fun and had good memories.

Limitations of the Study and Future Research

This study has a limitation about the study area, which is Nakhon Ratchasima Province, even though it is the province with the largest GDP in the northeastern region of Thailand. However, if counting per capita income, it is still far from the capital, Bangkok. Hence, to obtain information that has a high impact on the hotel industry, this study should be extended to studies in Bangkok or tourist cities such as Phuket, Chiang Mai, or Pattaya to enhance the development and innovative training efficiency of the hotel staff to have the excellence service skills to the global service standard as a whole.

REFERENCES

Aidoo, B. (2023). Teacher Educators Experience Adopting Problem-Based Learning in Science Education. *Education Sciences,* 13(11), 1113. https://doi.org/10.3390/educsci13111113

Alqahtani, K.M. (2023). Digital Economy, Technological Innovation, and the Upgrading of Global Value Chains. *Journal of System and Management Sciences,* 13(6), 61-73. https://doi.org/10.33168/JSMS.2023.0604

Anantanasuwong, D. (2021). Population Ageing in Thailand: Critical Issues in the Twenty-First Century. In *Narot, P., Kiettikunwong, N. (eds) Education for the Elderly in the Asia Pacific: Issues, Concerns and Prospects,* 31-56. Springer, Singapore.

Aragon, L.C., & Aquino, M.C.G. (2022). Challenges in Implementing the ASEAN Mutual Recognition Arrangement for Tourism Professionals in the Philippines. *Aquino, R.S., Porter, B.A., Tourism in the Philippines. Perspectives on Asian Tourism,* 167-182, Springer, Singapore.

Baars, S., Schellings, G.L.M., Joore, J.P., & Van Wesemael, P.J.V. (2023). Physical learning environments' supportiveness to innovative pedagogies: students' and teachers' experiences. *Learning Environments Research,* 26(2), 617-659. https://doi.org/10.1007/s10984-022-09433-x

Battini, D., Berti, N., Finco, S., Zennaro, I., & Das, A. (2022). Towards industry 5.0: A multi-objective job rotation model for an inclusive workforce, *International Journal of Production Economics,* 250. https://doi.org/10.1016/j.ijpe.2022.108619

Bousalem, Z., Qazdar, A., & El Guabassi, I. (2023). Cooperative Learning Groups: A New Approach Based on Students' Performance Prediction. *International Journal of Online and Biomedical Engineering (iJOE),* 19(12), 34–48. https://doi.org/10.3991/ijoe.v19i12.41181

Chernbumroong, S., Sureephong, P., & Puritat, K. (2017). Massive Open Online Course Related Learning Style and Technology Usage Patterns of Thai Tourism Professionals. *International Journal of Emerging Technologies in Learning* (iJET), 12(11), 98-120. https://doi.org/10.3991/ijet.v12i11.7297

Churchill, G.A. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research,* 16(1), 64–73. https://doi.org/10.2307/3150876

Cochran, W.G. (1977). *Sampling Techniques, 3rd Edition,* John Wiley & Sons, New York, The United States of America, 448 p.

Collin, K., Lemmetty, S., & Riivari, E. (2020). Human resource development practices supporting creativity in Finnish growth organizations. *International Journal of Training and Development,* 24(4), 321- 336. https://doi.org/10.1111/ijtd.12199

Darkwa, B.F., & Antwi, S. (2021). From Classroom to Online: Comparing the Effectiveness and Student Academic Performance of Classroom Learning and Online Learning. *Open Access Library Journal,* 8, 1-22. https://doi.org/10.4236/oalib.1107597

Ding, K., & Li, H. (2023). Exploring the Mediating Role of Innovation Behavior: Unraveling the Impact of Social Capital on Entrepreneurial Performance in University Business Incubators. *Journal of System and Management Sciences,* 13(6), 64-666. https://doi.org/10.33168/JSMS.2023.0638

Febriandika, N.R., & Raihanita, I.R. (2023). An Empirical Study on the Muslims' Intention to Use Digital Waqf Innovation. *Journal of System and Management Sciences*, 13(6), 127-143. https://doi.org/10.33168/JSMS.2023.0608

Fung, So, K.K., & Li, X. (2023). Service Innovation and Emerging Technologies in Tourism and Hospitality. *Cornell Hospitality Quarterly,* 64(2), 140-142. https://doi.org/10.1177/19389655231166819

Hong, M.M., Ning, X.Y., & Gao, Z.T. (2023). Research on the High-Quality Development of Red Study Tour Based on Tourism Rituals. *Open Access Library Journal,* 10, 1-13. https://doi.org/10.4236/oalib.1111007

Hubbart, J.A. (2023). Organizational Change: The Challenge of Change Aversion. *Administrative Sciences,* 13(7), 162. https://doi.org/10.3390/admsci13070162

Idris, I., & Wahyudi, S. (2021). Job Rotation and Work Motivation: Will it Improve Employee Performance? *Webology*, 18, 1086-1098. https://doi.org/10.14704/WEB/V18SI04/WEB18183

Inprasitha, M. (2023). Blended learning classroom model: a new extended teaching approach for new normal. *International Journal for Lesson and Learning Studies,* 2(4), 288-300. https://doi.org/10.1108/IJLLS-01-2023-0011

Kerimbayev, N., Umirzakova, Z., Shadiev, R., & Jotsov, V. (2023). A student-centered approach using modern technologies in distance learning: a systematic review of the literature. *Smart Learning Environments,* 10(61), 1-28. https://doi.org/10.1186/s40561-023-00280-8

Ketprapakorn, N., & Kantabutra, S. (2019). Culture development for sustainable SMEs: toward a behavioral theory. *Sustainability,* 11(9), 2629. https://doi.org/10.3390/su11092629

Kochetkov, D.M. (2023). Innovation: A state-of-the-art review and typology. *International Journal of Innovation Studies, 7*(4), 263-272. https://doi.org/10.1016/j.ijis.2023.05.004

López-García, A. (2023). Effectiveness of a teaching methodology based on the theory of historical thinking through active methods and digital resources in Spanish adolescents. *Frontiers in Education,* 8, 1175123. https://doi.org/10.3389/feduc.2023.1175123

Mazza, B., & Valentini, E. (2023). Innovation in Teaching Methods and Techniques. Experiments and Uncertainties of Academics Before and After the Pandemic in the Italian Universities. *Italian Journal of Sociology of Education,* 15(1), 51-80. https://doi.org/10.14658/pupj-ijse-(2023)-1-3

Molina-Castillo, F.J., Meroño-Cerdán, A.L., Lopez-Nicolas, C., & Fernandez-Espinar, L. (2023). Innovation and Technology in Hospitality Sector: Outcome and Performance. *Businesses,* 3(1), 198-219. https://doi.org/10.3390/businesses3010014

Nieto-Escamez, F.A., & Roldán-Tapia, M.D. (2021). Gamification as Online Teaching Strategy During COVID-19: A Mini-Review. *Front. Psychol*, 12, 648552. https://doi.org/10.3389/fpsyg.2021.648552

Norrman, K.E. (2023). World Population Growth: A Once and Future Global Concern. *World,* 4(4), 684-697. https://doi.org/10.3390/world4040043

Parent-Lamarche, A., Dextras-Gauthier, J., & Julien, A.S. (2023). Toward a new model of human resource management practices: construction and validation of the High Wellbeing and Performance Work System Scale. *Frontiers in Psychology,* 14, 1151781. https://doi.org/10.3389/fpsyg.2023.1151781

Pertiwi, W., Setyawati, S.M., & Anggraeni, A.I. (2023). Transformational Leadership, Digital Literacy, Propensity to Trust, and Creativity of MSMEs: Mediating Effects of Knowledge Sharing. *The Journal of Behavioral Science,* 18(3), 83–100. https://so06.tci-thaijo.org/index.php/IJBS/article/view/266619

Rosário, A., & Dias, J. (2023). Marketing Strategies on Social Media Platforms. *International Journal of E-Business Research,* 19(1), 1-25. https://doi.org/10.4018/IJEBR.316969

Salman, A. (2023). Field Trips and Their Effect on Student Learning: A Comparison of Knowledge Assessment for Physical versus Virtual Field Trips in a Construction Management Course. *Virtual Worlds,* 2(3), 290-302. https://doi.org/10.3390/virtualworlds2030017

Sánchez-Fuster, M.C., Miralles-Martínez, P., & Serrano-Pastor, F.J. (2023). School Trips and Local Heritage as a Resource in Primary Education: Teachers' Perceptions. *Sustainability,* 15(10), 7964. https://doi.org/10.3390/su15107964

Sarfraz, M., Khawaja, K.F., Khalil, M., & Han, H. (2023). Knowledge-based HRM and business process innovation in the hospitality industry. *Humanities and Social Sciences Communications,* 10, 624. https://doi.org/10.1057/s41599-023-02140-9

Shahriar, S.H.B., Arafat, S., Islam, I., Nur, J.M.E.H., Rahman, S., Khan, S.I. & Alam, M.S. (2023). The emergence of e-learning and online-based training during the COVID-19 crisis: an exploratory investigation from Bangladesh. *Management Matters,* 20(1), 1-15. https://doi.org/10.1108/MANM-01-2022-0007

Song, J., MacQuarrie, S., & Hennessey, A. (2023). Working memory training: mechanisms, challenges, and implications for the classroom. *Frontiers in Education,* 8, 1198315. https://doi.org/10.3389/feduc.2023.1198315

Sudibjo, N., & Prameswari, R.K. (2021). The effects of knowledge sharing and person–organization fits on the relationship between transformational leadership on innovative work behavior. *Heliyon,* 7(6), 1-8. https://doi.org/10.1016/j.heliyon.2021.e07334

Suksutdhi, T. (2022). Self-Service technology (SST) implication toward intention to revisit in small hotels: a case study of Nakhon Ratchasima province, Thailand. *GeoJournal of Tourism and Geosites,* 41(2), 523–530. https://doi.org/10.30892/gtg.41225-859

Yu, L., & Zin, Z.M. (2023). The critical thinking-oriented adaptations of problem-based learning models: a systematic review. *Frontiers in Education,* 8, 1139987. https://doi.org/10.3389/feduc.2023.1139987

Wu, C.M., Chen, T.J., & Wang, Y.C. (2023). Formation of hotel employees' service innovation performance: Mechanism of thriving at work and change-oriented organizational citizenship behavior. *Journal of Hospitality and Tourism Management,* 54, 178-187. https://doi.org/10.1016/j.jhtm.2022.12.015

Wut, T.M., Ng, P.M., & Low, M.P. (2023). Engaging university students in online learning: a regional comparative study from the perspective of social presence theory. *Journal of Computers in Education.* https://doi.org/10.1007/s40692-023-00278-8

Xu, Y., Qian, H., Zhang, M., Tian, F., Zhou, L., & Zhao, S. (2023). Flexible human resource management systems and employee innovation performance in China – based on the moderated mediation effect. *Chinese Management Studies,* 17(6), 1259-1275. https://doi.org/10.1108/CMS-11-2021-0495

Yang, X. (2023). A historical review of collaborative learning and cooperative learning. *TechTrends,* 67, 718–728. https://doi.org/10.1007/s11528-022-00823-9

COMPREHENSIVE PARTICIPATION: A THEORETICALLY HAILED YET PRACTICALLY DISREGARDED APPROACH TO SUSTAINABLE ECOTOURISM

Derrick Sibusiso MAKHANYELA
Department of Recreation and Tourism, Faculty of Humanities and Social Sciences, University of Zululand,
KwaDlangezwa, South Africa, e-mail: sbudmakhanyela@gmail.com

Gugulethu Sebenzile NKOSI
Department of Recreation and Tourism, Faculty of Humanities and Social Sciences, University of Zululand,
KwaDlangezwa, South Africa, e-mail: NkosiG@unizulu.ac.za

Sibongile Princess TSHABALALA
Department of Recreation and Tourism, Faculty of Humanities and Social Sciences, University of Zululand,
KwaDlangezwa, South Africa, e-mail: TshabalalaS@unizulu.ac.za

Thembinkosi Keith GUMEDE[*]
Department of Recreation and Tourism, Faculty of Humanities and Social Sciences, University of Zululand,
KwaDlangezwa, South Africa, e-mail: tkgumede8@gmail.com

Abstract: The commitment and attitudes of all stakeholders, as well as giving recognition to their value as partners in the ecotourism domain, are crucial elements in ensuring sustainable ecotourism development. The social capacity theory (SCT) posits that implementing networks of relationships is a fundamental basis for successful and sustainable tourism development. However, research has shown that the planning and management of numerous ecotourism development programs are marred by a top-down approach. This study examined the level of stakeholder participation in ecotourism activities in the Umfolozi Municipality to determine if any gaps exist in the participation structure of this key economic enterprise. A concurrent exploratory mixed methods design was operated using qualitative and quantitative survey. Qualitative data that were collected from purposefully sampled participants were thematically analysed, while quantitative data that were collected from conveniently sampled respondents were analysed using SPSS software. The findings highlight the centralisation of power and a fragmented ecotourism landscape in the study area that is plagued by manipulative participation, lack of collaboration, lack of co-ordination, lack of awareness, and apathy among key stakeholders.

Key words: comprehensive participatory approach, social capital theory, top-down developmental approach, sustainable ecotourism development, KwaZulu-Natal

* * * * * *

INTRODUCTION

Tourism has been widely acknowledged for its significant ecological and non-ecological benefits for host destinations as it is a vehicle for foreign exchange earnings, economic growth, and the multiplier effect (Utami and Kafabih, 2021; Swemmer et al., 2015). Tourism is the travelling to and staying of people in places outside their residential environments, and they usually do this for leisure, business, or study purposes (Raj Sharma et al., 2022). For these reasons, tourism development is a sought-after activity that many tourism-based enterprises engage in, particularly in geographically small and economically emerging regions (Rayimovna and Shuxratovna, 2021). In 2019, the sector accounted for 10.6% of global employment and 10.4% of global gross domestic product (GDP) (Shchokin et al., 2023). Despite having been hard hit by the outbreak of COVID-19 in 2019/2020 (Bama and Nyikana, 2021) that impeded human mobility and sociability that are the bedrock on which tourism sustainability depends (Rogerson and Rogerson, 2020), the sector's share of global GDP exceeded 5.5% in 2022 (Roman et al., 2022). Indeed, tourism enhances the livelihoods of people inhabiting areas within or in the vicinity of tourist destinations (Ramaano, 2022). Tourism therefore lures direct foreign exchange earnings and enhances the socio-economic livelihoods of local communities. However, the sector is characterized by both positive and negative prospects (Streimikiene et al., 2020). On the one hand it has been responsible for global socio-economic advancement while, on the other hand, it has been responsible for environmental degradation due to mass tourism activities (Chan and Bhatta, 2013). In the ecotourism domain, the preservation of the natural environment is a main factor upon which the attractiveness of host destinations hinges (Rapti and Gkouna, 2022), hence ecotourism, which emerged during the 1970s, is widely embraced as an appropriate response to curb adverse impacts on the environment (Chan and Bhatta, 2013).

---

[*] Corresponding author

While mass tourism refers to groups of people who travel to "renowned tourism destinations outside their places of origin for exploring, relaxing, and leisure purposes" (Khatun et al., 2023: 83), Ceballos-Lascurain (1987), a Mexican ecologist, states that ecotourism involves travelling responsibly to relatively fragile destinations for the purpose of studying, admiring, and enjoying natural landscapes, fauna and flora, and cultural resources while advancing the socio-economic well-being of local communities. The key principles of ecotourism are therefore conservation, the protection of natural resources, and the promotion of the socio-economic and socio-cultural well-being of local communities (Fletcher, 2009). Moreover, it is widely regarded as a sub-set of sustainable tourism and a benign approach to mass tourism (Saurombe et al., 2017; Kodir, 2018; Chan and Bhatta, 2013). Ecotourism has been adopted by numerous developing countries[1] as a powerful economic development and conservation strategy (Stem et al., 2003a).

The success and development of ecotourism depend largely on the comprehensive participation of a variety of stakeholders (Kline and Slocum, 2015) who range from people in the public and private sectors to non-governmental organizations (NGOs), destinations' marketing structures (DMOs), ecotourism operators, ecotourism site operators, ecotourists themselves, academic researchers, and local communities (Snyman, 2016). Liu (2003) acknowledges the importance of all human role-players in ecotourism, highlighting the value of their capability for facilitating effective management as well as their ability to utilize and conserve natural resources. However, according to Chan and Bhatta (2013) and Stone (2015), the participation of local communities in ecotourism, especially in developing countries, has been quite limited. They attribute this to a top-down planning and management approach, arguing that this model poses a main barrier to sustainable relationships among ecotourism stakeholder groups (Murphy, 1985). While an extensive body of academic literature (Gumede and Nzama, 2020; Ying and Zhou, 2007; Chili and Ngxongo, 2017; Prameka et al., 2021; Xiong et al., 2021; Nugraha, 2021) highlights the significance of local community participation in ecotourism development, numerous studies (e.g., Mustapha et al., 2013; Marzuki et al., 2012; Dogra and Gupta, 2012; Snyman, 2016; Wang et al., 2015; Wen and Ximing, 2008) found manipulative participation to be dominant in most tourist destinations, including some in South Africa. Moreover, there is a paucity of academic research in the field of sustainable ecotourism development in KwaZulu-Natal. This study therefore examined the level of stakeholder participation in ecotourism activities in the Umfolozi Municipality to determine if any gaps exist in the participation structure of this key economic enterprise.

THEORETICAL FOUNDATION
Social Capital Theory
A significant percentage of individuals derive socio-economic benefits from tourism development and growth, such as job and business opportunities and infrastructural development (Baloch et al., 2022). However, the natural and environmental capital associated with this sector is steadily deteriorating due to land overuse, the accumulation of solid waste and sewage, and carbon emissions, which are mostly prompted by human mobility and sociability (Aguilar and Domasian, 2023). Currently, many African countries, including South Africa, face these challenges and, as a result, tourism authorities and policymakers are confronted with relentless pressure to cope with and mitigate these challenges (Nchor et al., 2023). By the same token, these issues create opportunities for all stakeholders, especially policymakers, to improve conservation strategies and develop strategic responses to deal with the most prevalent threats that endanger the sustainable conservation of natural resources (Watson et al., 2014; Leverington et al., 2010). Despite the challenges, tourism activities, including mass tourism, should never be diminished due to the positive socio-economic spinoffs associated with them.

Consequently, the commanding criterion of *sustainable* tourism development has been foregrounded as an urgent precedence for the development of national and provincial policies (Ramaano, 2022). Tourism that promotes and demands responsible human behaviour is therefore required to ensure minimal adverse impacts on the natural environment and the culture of indigenous groups (Aguilar and Domasian, 2023; Ramaano, 2022). Moreover, ecotourism and nature conservation are complementary and overlapping sectors of the economy as revenue generated from ecotourism can be used to fund nature conservation and socio-economic development programmes to benefit local communities (Buckley, 2010; Bello et al., 2017). This means that the development and sustainability of ecotourism depend largely on the collaborative participation of various stakeholders, including local communities (Kline and Slocum, 2015; Nchor et al., 2023) whose involvement in the management and decision-making processes influences their perceptions and attitude towards ecotourism initiatives (Ramakrishnan, 2017). Garrod (2003) and Jha and Mishra (2014) add that sustainable ecotourism needs to be complemented and supported by local residents, and therefore their voices on how ecotourism should be developed in the area where they live and work has become indispensable. Inclusive participation in and benefits from ecotourism activities encourage local custodianship, and where this has been achieved, it has minimised conflict between authorities and local residents (Balint and Mashinya, 2006). However, various studies (Gumede and Nzama, 2019a; Nchor et al., 2023; Aguilar and Domasian, 2023; Giriwati et al., 2019; Buscher, 2016) have demonstrated that local communities, despite inhabiting ecotourism-inclined areas, are not actively participating in ecotourism development processes, particularly those that were initiated in rural areas, due to various socio-economic, socio-cultural, and socio-political factors. These include, but are not limited to, lack of the necessary skills, apathy, poor infrastructural development, and fortress conservation practices pertaining to natural resources. As a result, participants tend to be drawn from among those who are perceived to have the necessary skills and who then directly benefit from ecotourism ventures through employment and direct involvement (Zanamwe et al., 2018; Vannelli et al., 2019). Against this backdrop, it is vital that all stakeholders are involved in ecotourism management to bring together a range of vantage points that will align all role-

[1] A developing country is defined by the World Bank Institute (WBI) (2012) as one in which the majority of citizens live below the poverty line (i.e., spending less than US\$1.90 per day), which includes South Africa due to its unstable economic landscape and resultant high inflation rate (Statistics South Africa, 2022).

players' interests with innovative problem-solving strategies and solutions (Nchor et al., 2023). The social capital theory (SCT), which was first proposed by Bourdieu (1986) and Coleman (1988), posits the notion that environmental transformation is advanced by the comprehensive participation of key players who need to play an active role in sustaining the pristine nature of the environment (Field, 2003). This theory argues that establishing networks of relationships is a fundamental basis for successful and sustainable development endeavours that are based on social values, norms, beliefs, trust, and institutional networks (Balijepally et al., 2004; Fukuyama, 2001). In this context, social capital is described by Prayitno et al. (2023: 209) as "a social network that benefits all elements of society" because it strengthens relationships among individuals, enhances direct action, and facilitates joint ownership by parties who share a common goal.

Therefore, most economic behaviours are embedded in social capital (Granovetter, 1985) which plays an important role in solving collective action challenges (Welzel et al., 2005). By extension, there is a positive correlation between social capital and human socio-economic well-being (Prayitno et al., 2023; United Nations Educational, Scientific and Cultural Organization [UNESCO], 2002). It is against this backdrop that this paper affirms that the SCT is a sound theoretical foundation within which the concepts of 'comprehensive participation' and 'sustainable ecotourism development' are embedded.

LITERATURE REVIEW
Comprehensive Participatory Approach and Sustainable Ecotourism Development

Ecotourists are described by Al Fahmawee and Jawabreh (2023: 28) as "tourists who seek nature-based learning experiences in an ecologically and socio-culturally sustainable way"; thus, sustainable ecotourism development depends on the voluntary and collaborative participation of a variety of stakeholders who perform different roles depending on the nature of the ecotourism destination and the required standards that its management should meet (Kline and Slocum, 2015).

This collaborative effort is described by Gumede and Nzama (2019b: 2) as "a comprehensive participatory approach (CPA) towards ecotourism development". In ecotourism, sustainable development should meet the needs of the present without compromising the ability of future generations who will also need to satisfy their livelihood needs (Stem et al., 2003b; International Institute for Sustainable Development, 2012). Ecotourism can therefore be considered sustainable if it meets the needs of ecotourists and local residents while conserving natural resources and securing future opportunities for local residents (Kiper, 2013). Accordingly, CPA encourages the involvement and participation of local beneficiaries with exponential influence on the management and sustainability of ecotourism activities as a prerequisite for successful ecotourism operations (Simon and Etienne, 2009; Vaidya and Mayer, 2014). 'Local participation' is therefore recognised as mandatory in ensuring the sustainable development of ecotourism (Simon and Etienne, 2009), while 'local involvement' simply implies gaining the co-operation of local people to achieve the predetermined aims and objectives of an ecotourism project in compliance with tokenism. The local participation approach therefore requires collaboration among community-based stakeholders (community members or end-beneficiaries and academic researchers) and system-based stakeholders (a mixture of representatives from the public, private, and governing sectors) (Vaidya and Mayer, 2014).

However, although local participation in ecotourism has been widely adopted as a strategy for assessing sustainability, efficiency, ease of use, and time saving (Vaidya and Mayer, 2014), indicators are that a lack of adequate knowledge of the basic characteristics of an ecotourism project often leads to failure to address key issues (Reed and Dougill, 2002). This means that, although numerous sites in developing countries across the globe have been declared ecotourism destinations, national policies and plans have largely ignored the significance of local communities' participation in ecotourism planning and decision-making processes (Chan and Bhatta, 2013). Several studies (e.g., Nyaupane and Thapa, 2010; Myeza et al., 2010; Nepal, 2003, Gumede and Nzama, 2019a) have argued that this exclusion is a threat to comprehensive sustainable ecotourism development as the results are often issues such as environmental degradation, marauding, and criminal offenses against tourists. Local community participation therefore remains a basic necessity for the operationalisation, management, and sustainability of ecotourism projects (Prameka et al., 2021; Nugraha et al., 2021; Xiong et al., 2021).

In this context, CPA is a viable mechanism for mitigating these shortcomings as it facilitates collective contribution and local custodianship (Kline and Slocum, 2015; De Santo, 2012; Myeza et al., 2010). Sustainable ecotourism is therefore undeniably dependent on collective buy-in and the participation of informed local communities (Sibiya et al., 2023).

MATERIALS AND METHODS
Study Area

The study was conducted in 2021 in the Umfolozi Local Municipality (ULM) area that falls under the King Cetshwayo District. The municipality is situated on the northern coastal plain of the KwaZulu-Natal province which boasts a fair view of the Indian Ocean. The climate is mild to hot with good average annual rainfall (Umfolozi Municipality, 2021/2022). This municipal area is rich in natural beauty and resources. It is, amongst others, host to the world-famous Nhlabane Nature Reserve which is adjacent to the St Lucia Estuary World Heritage Site. Another world-renowned nature-based attraction is the Hluhluwe-Umfolozi Game Reserve. Ecotourism is a significant contributor towards the municipality's GDP (Umfolozi Municipality, 2021/2022) and the study area has great potential for ecotourism development.

Research philosophy and design

The pragmatism philosophy was adopted which enabled the researchers to view the data and draw conclusions regarding the studied phenomenon based on participants' and respondents' practical experiences and perceptions rather than existing theories or preconceived ideas (Ivankova et al., 2016; Hildebrand, 2011). Also, CPA is practical and based on human experience, which justified pragmatism as an appropriate philosophical foundation for this scholarly enquiry.

Ivankova et al. (2016) argue that practical facts are a sound basis for empirical evidence. In consideration of the above, the key research question that this paper addresses is: *What is the level of stakeholder participation in ecotourism development processes in the Umfolozi Municipality?* To address this question, an appropriate research design had to be adopted. Nieuwenhuis (2016) refers to a research design as a strategy that is adopted in research enquiry to address a studied problem that is informed by the nature of the research question(s). A concurrent exploratory mixed methods design was operated because it strengthened the credibility of the results as the conclusions were informed by a combination of qualitative and quantitative data that were simultaneously analysed. All ethical research issues and permissions got acknowledged.
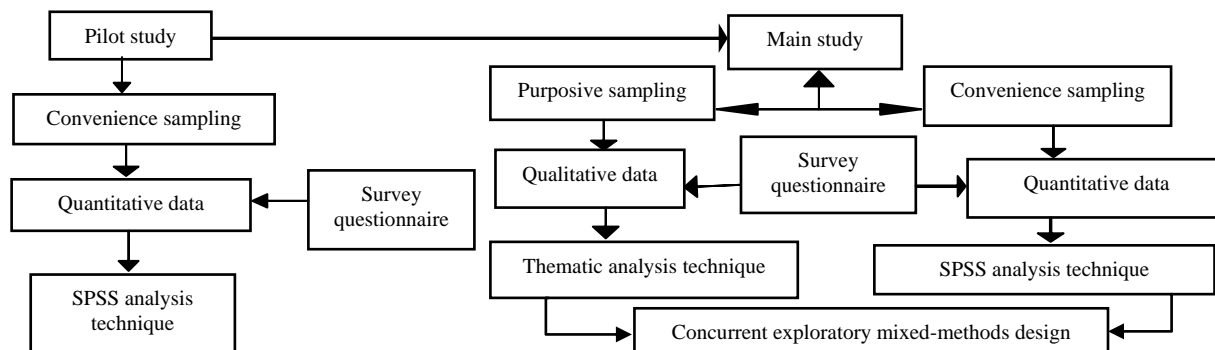

Figure 1. Research methodology flowchart (Source: Authors' illustration)

Sampling, Data Collection, and Analysis

To achieve the total sample (n=384), a sub-sample of participants (n=14) was purposefully selected and a sub-sample of respondents (n=370) was conveniently sampled from a total population of 348 553 based on the Researchers Advisory Spreadsheet of 2006. The generally accepted 5% level ($p<0.05$) was used to measure the level of significance. Table 1 presents the breakdown and distribution of the participants and respondents.

Table 1. Distribution of participants and respondents in the total sample (Source: Authors' illustration)

Participants	Number
Tourism Officials (n=1 Tourism Officer + n=1 LED Officer)	n=2
Ecotourism sites' personnel (n=1 Marketing Officer)	n=1
EZKNW's representative (n=1 Nature Conservationist)	n=1
Community Tourism Organisation's Representative (n=1 Manager)	n=1
Community Leaders (n=1 chief, n=4 ward councillors + n=4 headmen)	n=9
Total sample	N=14
Respondents	Number
Local businesspeople (n=10 formal sector + n=10 informal sector)	n=20
Members of households (n=150 elders + n=200 youths)	n=350
Total sample	N=370

Other inclusion criteria were the participants' and respondents' anticipated knowledge and the information they could provide about issues related to the studied phenomenon as well as their accessibility, geographical proximity, and willingness to participate in the study (Etikan et al., 2016). As Finn et al. (2000) recommend, a pilot study was conducted using 25 respondents (not those participating in the main study) to determine the validity and reliability of the survey questionnaire. The piloted instrument was used to collect qualitative (questionnaire-based interviews) and quantitative (dichotomous, multiple choice, and most appropriate response formats) data from n=384 participants and respondents through face-to-face surveys. As a result, the analysis of the survey questionnaire yielded partly qualitative and partly quantitative results. Although the data collection process was time consuming due to the large sample size, rich information was obtained as the questionnaires were completed and follow-up questions for clarity were asked on certain issues on the spot (Kothari, 2004). The Statistical Package for the Social Sciences (SPSS) software was used to analyse the quantitative data by means of correlation analysis to determine relationships between variables and frequency tables to illustrate the frequency counts of the responses. Moreover, thematic analysis was used to analyse the qualitative data. Broad themes emerged from the participants' perceptions of the studied phenomenon (Clarke and Braun, 2017).

Procedurally, the participants' responses and field notes were transcribed and recorded verbatim for scrabbing, coding, verification, and analysis. Where necessary, the responses were transcribed and translated from IsiZulu into English (Sutton and Auston, 2015). In essence, the participants and respondents suggested possible solutions for specific problems.

RESULTS AND DISCUSSION

Successful ecotourism endeavours are dependent upon the positive attitudes of local residents, and therefore it was deemed crucial to ascertain if ecotourism activities in the study area involved locals who had knowledge and experience of natural resources and conservation requirements, as these are essential determinants of conservation behaviour (Waylen et al., 2009). In the following section, the findings that elucidated the level of participation by local communities in ecotourism in the Umfolozi Municipality area are discussed. The survey sample was representative of the Umfolozi population and comprised people aged 18-61 years and older.

Demographic background (gender, age, education, and income) of the participants and respondents (Table 2) were considered in determining their relationships and potential impact on the extent of all role-players' participation in ecotourism activities. As advised by Pietersen and Maree (2016), the Pearson correlation coefficient, obtained from the SPSS statistical program, was used to determine relationships between independent and dependent variables (gender and income, education and income, and education and participation in ecotourism) by means of bivariate correlation analysis. Table 3 presents the results of obtained correlation (r) as examined against the level of significance (α) at $p<0.01$. The results revealed a low negative correlation (0.191) between gender and income at 0.0001 level of significance. The relationship between gender and income demonstrated that females (53%) earned a lower monthly income compared to males (47%) across all the income level categories. Morve (2016) argues that South Africa has a biased socio-economic landscape that manifests in inequitable income distribution as the majority of males, even those who share the same occupational status with women, earn more than their female counterparts. Clearly, the ecotourism sector, which is one of the central organs of South Africa's job market (Snyman, 2016), is implicated in this inequitable income distribution.

It was determined that a positive relationship existed between education and income as respondents with high education levels earned more than those who were less educated. Wolla and Sullivan (2017) also found a similar relationship between education and income in their study. In light of the South African Labour Relations Amendment Act No. 6 of 2014 (South African Government, 2014), it seems inevitable that those with a higher level of education, irrespective of gender, will earn more than their less educated counterparts.

Table 2. Demographic background of the respondents (Source: Field survey, 2021)

Respondents		Frequency	Percentage
Gender	Male	181	47
	Female	203	53
Age	18-28	128	33
	29-39	108	28
	40-50	68	18
	51-61	54	14
	Above 61	26	7
Higher education completed	No education	21	5
	Primary school	64	17
	Vocational training	47	12
	Vocational education qualification	34	9
	High school attended	23	6
	High school completed	98	26
	Technical college attended	23	6
	Technical college graduated	15	4
	Bachelor	23	6
	Honours	12	3
	B. Tech (Advanced Diploma)	16	4
	Masters	8	2
	PhD	-	-
Income	No income	63	16
	Less than R1, 000	114	30
	R1, 000-R5, 000	38	10
	R5, 001-R10, 000	68	18
	R10, 001-R20, 000	37	10
	R20, 001-R30, 000	21	5
	R30, 001-R40, 000	23	6
	R40, 001-R50, 000	12	3
	Above R50, 000	8	2

Table 3. Correlation between variables and level of significance (Source: Authors)

Variables	r	α
Gender and income	0.191	0.0001
Education and income	0.214	0.0001
Education and participation	0.422	0.0001

Wilderness Holdings Ltd. (2015) support this notion, suggesting that individuals' education status remains fundamental in determining their suitability for participating in ecotourism development processes. In the current study, the responses also highlighted education as a basic prerequisite for effective participation in ecotourism development processes. The Chi-square goodness-of-fit was applied to test the null hypothesis (H_0), which was: *Community members of the study area do not participate in ecotourism development activities.* The result indicated a moderate negative correlation. As illustrated in Table 4, a negative difference was found between observed and expected values at $X^2(1)=1.033$, $p=0.310$. Simply put, there was a negative relationship between community members and participation in ecotourism.

This finding is contrary to the argument that community participation in tourism means the inclusion of local people in the planning, decision-making, and implementation of tourism development programmes and projects (Nchor, 2021). The respondents' perceptions of community participation in ecotourism activities are illustrated in Figure 2.

Table 4. Results of the Chi-square goodness-of-fit test for community participation in ecotourism (Source: Authors)

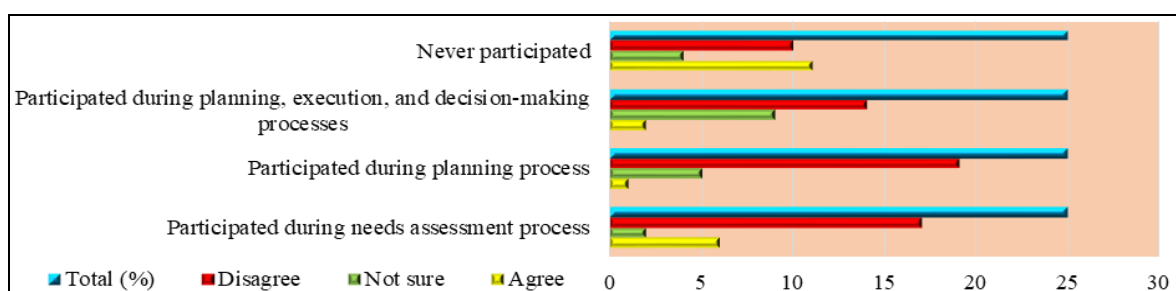|	Chi-square value	Degree of freedom (df)	Asymptotic significance (2 sided)
Community participation in ecotourism	1.033	1	0.310

Figure 2. Perception of community participation in ecotourism activities (Source: Authors)

The data revealed that the involvement of local residents (based on their capacity and required standard of participation) in all stages of ecotourism development was low, as the majority (about 60%) did not agree that they participated in ecotourism development processes. Sustainable ecotourism needs to be complemented and supported by local residents (Garrod, 2003), and therefore their voices on how ecotourism should be developed in the area where they live and work become indispensable (Jha and Mishra, 2014). Data about participants' experiences of participation in ecotourism development were therefore generated and analysed. The findings are presented under broad themes and sub-themes below.

The centralisation of public administration in ecotourism

The centralisation of power in public administration is one of many pressing concerns regarding sustainable ecotourism in developing countries (Nyaupane et al., 2006; Tosun, 2000). In the current study, the local resident participants and a few others felt that they were not considered as the custodians of ecotourism resources in the study area. Manipulative participation (which refers to the power exerted by those who determined the role of local community members in ecotourism development processes) was identified as a main barrier to CPA. These power holders were local government officials, DMOs, people in the private sector, and ecotourism authorities who were flagged as the exclusive decision makers about ecotourism development. As effective participatory planning and decision making is a shared responsibility among all sustainable ecotourism role-players (Garrod, 2013), it was felt that this lack of collaboration resulted in a lack of co-ordination among ecotourism stakeholders.

A fragmented ecotourism landscape

The literature acknowledges the comprehensive participation of key stakeholders as a fundamental mechanism upon which sustainable ecotourism development depends (Kline and Slocum, 2015). Likewise, SCT upholds networks of relationships as a fundamental basis for the successful and sustainable development of ecotourism (Balijepally et al., 2004). Considering these literary and theoretical notions, the lack of collaboration and co-ordination in ecotourism exposed it as an exclusive and fragmented sphere of tourism in the study area. It appeared that local residents had neither been consulted nor invited to participate in discussions pertaining to ecotourism development and, as a result, most local residents, especially unemployed young people (18 to about 35 years old) who should have been involved in community development programmes, lacked information about and had lost hope in ecotourism as a potential intervention strategy to uplift their socio-economic plight.

Lack of collaboration: Based on a definition by Hardy et al. (2003: 323), collaboration in the context of this study was seen as "interaction and a collective effort among stakeholders aiming at sustaining ecotourism development in the Umfolozi Municipality". Tosun (2000) and Nyaupane et al. (2006) affirm the interconnectedness between effective ecotourism development and some aspects of ideological and political beliefs, administrative arrangements, and the redistribution of wealth and power to intended beneficiaries. However, the findings indicated a lack of interaction among local stakeholders (community leaders, business people, and members of households) in ecotourism development and management. Community leaders maintained that they had never been informed or consulted (on behalf of the local community) regarding ecotourism and development. It was found that most formal businesses were owned by foreign internationals while few local people owned tourism-related enterprises such as accommodation and culinary facilities. As a result, local residents' contribution towards local economic development was relatively low compared to that of their foreign counterparts. Locals therefore did not significantly benefit from ecotourism or its related activities. Moreover, members of households were dissatisfied as they considered ecotourism sites as isolated properties where the general public did not have a voice regarding development and management processes. Despite their willingness, they were barred from ecotourism development discussions and therefore lacked a sense of custodianship for the sites and other tourism offerings. Gumede and Nzama (2019a) and Chimirri (2020) also consider ecotourism as a fragmented phenomenon that occurs aloof from local citizens. Conversely, Bramwell and Lane (2000) argue that it is unlikely that individual actors will possess the skills or ability to control all relevant components required to offer an ideal ecotourism product to consumers.

Lack of co-ordination: The term 'co-ordination' is described by Gulati et al. (2012:533-537) as "the deliberate and orderly alignment or adjustment of stakeholders' actions to collectively achieve determined goals". Simply put, every stakeholder has a role to play in ensuring sustainable ecotourism development, hence a lack of co-ordination among stakeholders may be detrimental to the effective implementation of CPA and sustainable ecotourism. Nyaupane et al. (2006) and Myeza et al. (2010) argue that the exclusion of some stakeholders from discussions concerning ecotourism poses a serious threat to building rapport and encouraging sustainable ecotourism development. For instance, vandalism, marauding, and other crimes against ecotourists are common manifestations of local residents' resentment for being excluded from local economic development projects in their vicinity. Thus, the participants, especially those in the age group 40 to 61+ (39%), perceived ecotourism as a poorly co-ordinated and dogmatic-oriented phenomenon. They argued that the preservation of wildlife was highly prioritised while local residents' interests were ignored. For instance, community leaders argued that infected livestock probably contracted foot and mouth disease (FMD) from conserved wildlife species. The participants expected the implicated nature reserve's management team, or Ezemvelo KwaZulu-Natal Wildlife (EKZNW), to reach an amicable solution by offering veterinary assistance for infected livestock. Instead, the victims had to seek medical intervention from the Department of Agriculture, Land Reform and Rural Development (DALRRD), and only then was the outbreak neutralised. The participants acknowledged that media platforms, particularly commercial radio stations and television (TV) channels, had a significant influence on the positive response by DALRRD. Gupta and Sharma (2018) and Ozer (2019) shared information about similar experiences by the communities in their respective study areas. The findings thus exposed ecotourism in the study area as poorly co-ordinated and fragmented in terms of management and development. However, based on their capacity and capabilities, some actors such as EKZNW and DMOs could play a crucial role in

ensuring that local residents' concerns regarding ecotourism development are amicably addressed. According to Jha and Mishra (2014) and Baloch et al. (2022), ecotourism can be a catalyst for local communities' social and economic welfare but, according to the SCT, the resolution of community-based challenges will require collectively crafted solutions to enable access to information and achieve power and solidarity (Balijepally et al., 2004; Granovetter, 1985; Welzel et al., 2005).

Apathy and a lack of awareness: Comprehensive and active participation in ecotourism development processes may be stifled by apathy and lack of awareness among key stakeholders (Tosun, 2000; Nyaupane et al., 2006). In the study, the responses by predominantly officials and site personnel highlighted that a lack of awareness among members of the community (community leaders, local business people, and members of households) was the main factor that contributed to a fragmented ecotourism landscape. Members of the community argued that a 'top-down approach' to tourism development was detrimental to comprehensive participation and thus denied recognition of their significance and potential contribution to ecotourism development. One participant expressed the opinion of many: They are not inclined to provide us with employment or philanthropy assistance. The majority of us are impoverished as we lost jobs due to COVID-19 outbreak and a national looting rampage that occurred in July this year [2021]. Most youths, including graduates and matriculants, lack the necessary skills and experience and therefore cannot be hired by the ecotourism sector. Despite our interest in learning about and participating in tourism-related entrepreneurship, neither tourism sites' personnel nor government agencies are inclined to offer us any training programmes. Seemingly, our socio-economic wellbeing is never their concern over [preserving] natural resources (Survey participant, 2021).

Members of the community therefore argued that a top-down approach to tourism management was detrimental to comprehensive participation in ecotourism development. The acrimonious relationship on the one hand and an apathetic attitude on the other seemed to adversely impact both collaboration and sustainable ecotourism development in the study area. The literature suggests that such unconstructive relationships result in ill-planned ecotourism development and antisocial behaviours such as marauding, excessive waste generation, pollution, loss of cultural values and traditions, and criminal offenses against ecotourism site managers and ecotourists (Nyaupane et al., 2006; Myeza et al., 2010). These findings are also corroborated by Murphy (1985) and Hussain et al. (2022), who argue that a top-down management approach and lack of awareness of the importance of ecotourism are impediments to the effective and comprehensive development of this industry. To mitigate such an outcome, Jha and Mishra (2014) acknowledge that comprehensive participation is a means by which local residents, especially women and young people, can directly contribute towards improving their livelihoods. This notion is underscored by the SCT, which demands that networks of relationships should be created as a fundamental basis for successful and sustainable ecotourism development (Balijepally et al., 2004).

CONCLUSION AND RECOMMENDATION

The aim of this study was to examine the level of stakeholder participation in ecotourism activities in the Umfolozi Municipality to determine if any gaps exist in the participation structure of this key economic enterprise in the study area. The rich and credible data that were obtained from participants and respondents were augmented by an extensive review and analysis of related literature. In essence, sustainable ecotourism development is predicated upon comprehensive stakeholder participation as posited by the SC theoretical perspective that posits that the creation of networks of relationships is a fundamental basis for successful and sustainable ecotourism development.

Moreover, the equitable distribution of economic spinoffs is another fundamental principle that underpins sustainable ecotourism development. However, inferential data analysis indicated inequitable income distribution in terms of gender, which poses a serious threat to the comprehensive development of ecotourism in the study area. Moreover, the data affirmed that education level influenced local community members' earnings as those with a higher level of education earned more than those who were less educated. Education also seemed to determine individuals' ability to participate in ecotourism activities, as a positive correlation was found between the two variables. Based on the results of the Chi-square test, it was evident that community members did not participate in ecotourism development due to their low level of education (i.e., the majority had not gone beyond primary school education). Ecotourism operates within a complex and challenging domain and therefore comprehensive participation by all stakeholders is a valuable resource for identifying and addressing planning and management challenges (Garrod, 2003). Thematic analysis revealed two key dimensions that impeded comprehensive ecotourism participation in the study area: (1) The *centralisation* of ecotourism public administration was a key finding. Ecotourism was viewed as a top-down oriented phenomenon that was dominated by local government, DMOs, the private sector, and ecotourism authorities, particularly where decision-making and the implementation of by-laws were concerned. Consequently, local residents were subjected to manipulative participation, which silenced their voices and prohibited their contribution towards sustainable ecotourism development. (2) A *fragmented* ecotourism landscape was also evident in the study area. Three fragmentation configurations were detected, namely lack of collaboration, lack of co-ordination, and apathy leading to lack of awareness. These findings highlight the necessity to address the prevalence of fragmentation by creating and forging collaborative participation bonds among all stakeholders. Willing community members felt alienated and deprived of opportunities to contribute to ecotourism and hence to economic growth in the area.

Lack of co-ordination was also flagged as a barrier, particularly as it manifested through the absence of a specific body that could be responsive to resentments concerning unsatisfactory ecotourism management. Apparently, stakeholders were apathetic about taking responsibility unless media coverage highlighted an issue. In consideration of the merging of data with theoretical background information, our overall conclusion based on both qualitative and quantitative analysis is that strategic organisation and collaborative management are preconditions for sustainable ecotourism development. Only when local community members' value is considered and they are involved as key players in the ecotourism domain, will this sector develop sustainably as a driver of the economy for host destinations and the community at large.

LIMITATIONS

During COVID-19, lockdown restrictions posed serious challenges for smooth and normal data collection approaches, procedures, and timelines. Consequently, data collection took longer than normal, particularly because the periods between making appointments and the actual survey often extended beyond the anticipated timeframe. Moreover, some local business people withdrew unexpectedly from participating in the study. Furthermore, non-probability sampling did not allow every element in the population an equal chance of being selected for participation in the study.

REFERENCES

Aguilar, M.G.W., & Domasian, R.B.V. (2023). Ecotourism perception and engagement classification among residents of a Nature City in Philippines. *Journal of Tourismology*, 9(1), 22-29. https://doi.org/10.26650/jot.2023.9.1.1214643

Al Fahmawee, E.A.D., & Jawabreh, O. (2023). Sustainability of green tourism by international tourists and its impact on green environmental achievement: Petra Heritage, Jordan. *GeoJournal of Tourism and Geosites*, 46(1), 27-36. https://doi.org/10.30892/gtg.46103-997

Balijepally, V., Mahapatra, R., & Nerur, S. (2004). Social capital: A theoretical lens for IS research. *AMCIS 2004 Proceedings*, 187.

Balint, P.J., & Mashinya, J. (2006). The decline of a model community-based conservation project: Governance, capacity and devolution in Mahenye, Zimbabwe. *Geoforum*, 37(5), 805-815. https://doi.org/10.1016/j.geoforum.2005.01.011

Baloch, Q.B., Shah, S.N., Iqbal, N., Sheeraz, M., Asadullah, M., Mahar, S., & Khan, A.U. (2022). Impact of tourism development upon environmental sustainability: A suggested framework for sustainable ecotourism. *Environmental Science and Pollution Research*, 30, 5917-5930. https://doi.org/10.1007/s11356-022-22496-w

Bama, H., & Nyikana, S. (2021). The effects of COVID-19 on future domestic travel intentions in South Africa: A stakeholder perspective. *African Journal of Hospitality, Tourism and Leisure*, 10(1), 179-193. https://doi.org/10.46222/ajhtl.19770720-94

Bello, F.G., Lovelock, B., & Carr, N. (2017). Constraints of community participation in protected area-based tourism planning: The case of Malawi. *Journal of Ecotourism*, 16(2), 131-151. https://doi.org/10.1080/14724049.2016.1251444

Bourdieu, P. (1984). *Distinction: A social critique of the judgment of taste*. Cambridge, Mass.: Harvard University Press.

Bramwell, B., & Lane, B. (2000). *Tourism collaboration and partnerships: Politics, practice and sustainability*. Clevedon: Channel View.

Buckley, R. (2010). Conservation tourism. Cambridge: CAB international.

Buscher, B. (2016). Reassessing fortress conservation? New media and the politics of distinction in Kruger National Park. *Annals of American Association of Geographers*, 106(1), 114-129. https://doi.org/10.1080/00045608.2015.1095062

Ceballos-Lascurain, H. (1987). The future of ecotourism. *Mexico Journal* (January), 13-14.

Chan, R., & Bhatta, K. (2013). Ecotourism planning and sustainable community development: Theoretical perspectives for Nepal. *South Asian Journal of Tourism and Heritage*, 6(1), 70-96.

Chili, N.S., & Ngxongo, N.A. (2017). Challenges to active community involvement in tourism development at Didima Resort: A case study of Umhlwazini community in Bergville. *African Journal of Hospitality, Tourism and Leisure*, 6, 1-15.

Chimirri, D. (2020). Collaborative configurations of tourism development: A Greenlandic example. *Journal of Tourism Futures*, 6(1), 24-39. https://doi.org/10.1108/JTF-01-2019-0006

Clarke, V., & Braun, V. (2017). Thematic analysis. *Journal of Positive Psychology*, 12(3), 297-298. https://doi.org/10.1080/17439760.2016.1262613

Coleman, J.S. (1988). Social capital in the creation of human capital. *The American Journal of Sociology*, 94(1), 95-120.

De Santo, E.M. (2012). From paper parks to private conservation: The role of NGOs in adapting marine protected area strategies to climate change. *Journal of International Wildlife Law and Policy*, 15(1), 25-40. https://doi.org/10.1080/13880292.2011.650602

Dogra, R., & Gupta, A. (2012). Barriers to community participation in tourism development: Empirical evidence from a rural destination. *South Asian Journal of Tourism and Heritage*, 5(1), 130-142.

Etikan, I., Musa, S., & Alkassim, R. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4. https://doi.org/10.11648/j.ajtas.20160501.11

Field, J. (2003). *Social Capital*. New York: Routledge.

Finn, M., Elliot-White, M., & Walton, M. (2000). *Tourism and leisure research methods*. London: Pearson Education.

Fletcher, R. (2009). Ecotourism discourse: Challenging the stakeholders' theory. *Journal of Ecotourism*, 8(3), 269-285. https://doi.org/10.1080/14724040902767245

Fukuyama, F. (2001). Culture and economic development: Cultural concerns. In N.J. Smelser and P.B. Baltes (Eds.), *International encyclopedia of the social and behavioral sciences (pp. 3130-3134)*. Oxford, UK: Pergamon.

Garrod, B. (2003). Local participation in the planning and management of ecotourism: A revised model approach. *Journal of Ecotourism*, 2(1), 33-53. https://doi.org/10.1080/14724040308668132

Giriwati, N.S.S., Hawa, L.C., Pamungkas, S.T., Iyati, W., & Hidayat, A.R.T. (2019). Local community participation in ecotourism development: The case of Sumberwangi Hamlet Destination, East Java, Indonasia. PEOPLE: *International Journal of Social Sciences*, 5(1), 81-98. https://doi.org/10.20319/pijss.2019.51.8198

Granovetter, M.S. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, 91, 481-510. https//doi.org/10.1086/228311

Gulati, R., Wohlgezogen, F., & Zhelyazkov, P. (2012). The two facets of collaboration: Cooperation and coordination in strategic alliances. *The Academy of Management Annals*, 6(1), 531-583. https://doi.org/10.1080/19416520.2012.691646

Gumede, T.K., & Nzama, A.T. (2019a). Ecotourism as a mechanism for local economic development: The case of communities adjacent to the Oribi Gorge Nature Reserve, KwaZulu-Natal, South Africa. *African Journal of Hospitality, Tourism and Leisure*, 8(4), 1-19.

Gumede, T.K., & Nzama, A.T. (2019b). Comprehensive participatory approach as a mechanism for community participation in ecotourism. *African Journal of Hospitality, Tourism and Leisure*, 8(4), 1-11.

Gumede, T.K., & Nzama, A.T. (2020). Enhancing community participation in ecotourism through a local community participation improvement model. *African Journal of Hospitality, Tourism and Leisure*, 9(5), 1252-1272. https://doi.org/10.46222/ajhtl.19770720-82

Gupta, N., & Sharma, V. (2018). The comparative analysis of employee engagement measures: A theoretical perspective. *International Journal of Management Practice*, 11(1), 42-68. https://doi.org/10.1504/IJMP.2018.10008647

Hardy, C., Phillips, N., & Lawrence, T. (2003). Resources, knowledge and influence: The organizational effects of interorganizational collaboration. *Journal of Management Studies*, 40(2), 321-347. https://doi.org/10.1111/1467-6486.00342

Hildebrand, D.L. (2011). Pragmatic democracy: Inquiry, objectivity, and experience. *Metaphilosophy*, 42(5), 589-604. https://doi.org/10.1111/j.1467-9973.2011.01717.x

Hussain, M.A., Mohd Yunos, M.Y., Ismail, N.A., Mohd Ariffin, N.F., Ismail, S., & Qianda, Z. (2022). Investigating the challenges faced in designing cultural landscape at Pantai Lido Urban Waterfront, Johor Bahru, Malaysia. *GeoJournal of Tourism and Geosites*, 41(2), 376-2386. https://doi.org/10.30892/gtg.41206-840

Ivankova, N., Creswell, J., & Plano Clark, V. (2016). *First steps in research* (2nd ed.). Pretoria: Van Schaik Publishers.

Jha, A., & Mishra, J. (2014). Integrated and participatory approach to sustainable ecotourism development: A conceptual study. *Journal of Tourism*, 15(1&2), 51-67.

Khatun, A., Sukrana, B., & Jui, F.I. (2023). The role and impact of mass tourism: A study of the mass tourist spots at Dhaka, Sylhet and Cox's Bazar, Bangladesh. *Journal of Research in Environmental and Earth Sciences*, 9(1), 83-90.

Kiper, T. (2013). Role of ecotourism in sustainable development. In M. Özyavuz (Ed.). *Advances in Landscape Architecture (pp. 773-802)*. London, UK: IntechOpen.

Kline, C.S., & Slocum, S.L. (2015). Neoliberalism in ecotourism? The newdevelopment paradigm of multinational projects in Africa. *Journal of Ecotourism*, 14(2), 99-112. https://doi.org/10.1080/14724049.2015.1023731

Kodir, A. (2018). Tourism and development: Land acquisition, achievement of investment and cultural change (Case study tourism industry development in Batu City, Indonesia). *GeoJournal of Tourism and Geosites*, 21(1), 253-265. https://doi.org/10.30892/gtg.21120-285

Kothari, C.R. (2004). *Research methodology: Methods and techniques* (2nd revised ed.). Delhi, India: New Age International Publishers.

Leverington, F.K., Lemos-Costa, H., Pavese, A., Lisle, A., & Hockings, M. (2010). A global analysis of protected area management effectiveness. *Environmental Management*, 46(5), 685-698. https://doi.org/10.1007/s00267-010-9564-5

Liu, Z. (2003). Sustainable tourism development: A critique. *Journal of Sustainable Tourism*, 11(6), 459-475. https://doi.org/10.1080/09669580308667216

Marzuki, A., Hay, I., & James, J. (2012). Public participation shortcomings in tourism planning: The case of the Langkawi Islands, Malaysia. *Journal of Sustainable Tourism*, 20(4), 585-602. https://doi.org/10.1080/09669582.2011.638384

Morve, R.K. (2016). The challenges of gender gap: A study of post-apartheid South Africa. *Centre for Comparative Literature and Translation Studies*, Central University of Gujarat, India.

Murphy, P.E. (1985). *Tourism: A community approach*. New York, London: Methuen.

Mustapha, A., Azman, I., & Ibrahim, Y. (2013). Barriers to community participation in tourism development in an island destination. *Journal of Tourism, Hospitality & Culinary Arts*, 5(1), 102-124.

Myeza, J., Mason, R.B., & Peddemors, V.M. (2010). Socio-economic implications of the KwaZulu-Natal sardine run for local indigenous communities. *African Journal of Marine Science*, 32(2), 399-404. https://doi.org/10.2989/1814232X.2010.506991

Nchor, A.A., Ebu, V.T., Nnadi, P.C., & Odey, J.E. (2021). Challenges of tourism development in Obudu Ranch Resort, Cross River State, Nigeria. *Middle-East Journal of Scientific Research*, 29(2), 82-90. https://doi.org/10.5829/idosi.mejsr.2021.82.90

Nchor, A.A., Urim, B.A., & Kejuo, E.T. (2023). Assessment of protected area management practices in the Nigerian National Park Service: The case of Cross River National Park. *GeoJournal of Tourism and Geosites*, 49(3), 1027-1036. https://doi.org/10.30892/gtg.49318-1102

Nepal, S.K. (2003). *Tourism and the environment: Perspectives from the Nepal Himalaya*. Lalitpur, Nepal: Himal Books.

Nieuwenhuis, J. (2016). Qualitative research designs and data gathering techniques. *First steps in research* (2nd ed.). Pretoria: Van Schaik Publishers.

Nugraha, A.T., Prayitno, G., Hasyim, A.W., & Roziqin, F. (2021). Social capital, collective action, and the development of agritourism for sustainable agriculture in rural Indonesia. *Evergreen*, 8(1), 1-12. https://doi.org/10.5109/4372255

Nyaupane, G.P., Morais, D.B., & Dowler, L. (2006). The role of community involvement and member/type of visitors on tourism impacts: A controlled comparison of Annapurna, Nepal and Northwest Yunnan, China. *Tourism Management*, 27(6), 1373-1385.

Nyaupane, G.P., & Thapa, B. (2010). Evaluation of ecotourism: A comparative assessment in the Annapurna conservation area project, Nepal. *Journal of Ecotourism*, 3(1), 20-45. https://doi.org/10.1016/j.tourman.2005.12.013

Ozer, M. (2019). Symbolic violence and representation of gender inequality in Turkish media: Case of New Bride TV. *Journal of Family, Counselling and Education*, 4(2), 34-40. https://doi.org/10.32568/jfce.566548

Pietersen, J., & Maree, K. (2016). *First steps in research* (2nd ed.). Pretoria: Van Schaik Publishers.

Prameka, A.S., Pradana, D.B., Sudarmiatin, S., Atan, R., & Wiraguna, R.T. (2021). The empowerment of public investment and smart management model for tourism villages' sustainability. In BISTIC *Business Innovation Sustainability and Technology International Conference*. BISTIC 2021, pp. 19-26. Atlantis: Atlantis Press.

Prayitno, G., Dinanti, D., Wisnu Adrianto, D., Rahmawati, R., Auliah, A., & Eka Wardhani, L. (2023). The influence of social capital in improving the quality of life of the community in Sidomulyo tourism village, Indonesia. *GeoJournal of Tourism and Geosites*, 46(1), 208-217. https://doi.org/10.30892/gtg.46123-1017

Raj Sharma, V., Kumar Sanu, M., Verma, K., & Rajput, S. (2022). Dimensions of sustainable tourism management: A case study of Alwar City, Rajasthan, India. *GeoJournal of Tourism and Geosites*, 41(2), 335-342. https://doi.org/10.30892/gtg.41201-835

Ramaano, A.I. (2022). Views of utilizing sustainable tourism to improve community sustenance: A case study of the impoverished rural communities of Musina Municipality. *International Hospitality Review*, 36(2), 220-243. https://doi.org/10.1108/IHR-03-2021-0019

Ramakrishnan, P.S. (2007). Traditional forest knowledge and sustainable forestry: A north-east India perspective. *Forest Ecology and Management*, 249(1-2), 91-99. https://doi.org/10.1016/j.foreco.2007.04.001

Rapti, E., & Gkouna, O. (2022). Crisis management in tourism: Visit intention, destination image and social media in times of Covid-19, the Greek case. *GeoJournal of Tourism and Geosites*, 41(2), 564-570. https://doi.org/10.30892/gtg.41230-864

Rayimovna, B.L., & Shuxratovna, B.M. (2021). Political and socio-economic significance of tourism. *International Journal of Development and Public Policy*, 1(6), 167-169.

Reed, M.S., & Dougill, A.J. (2002). Participatory selection process for indicators of rangeland condition in the Kalahari. *The Geographical Journal*, 168(3), 224-234. https://doi.org/10.10.1111/1475-4959.00050

Rogerson, C.M., & Rogerson, J.M. (2020). COVID-19 tourism impacts in South Africa: Government and industry responses. *GeoJournal of Tourism and Geosites*, 31(3), 1083-1091. https://doi.org/10.30892/gtg.31321-544

Roman, M., Roman, M., Grzegorzewska, E., Pietrzak, P., & Roman, K. (2022). Influence of the COVID-19 pandemic on tourism in European countries: Cluster analysis findings. *Sustainability*, 14, 1602. https://doi.org/10.3390/su14031602

Saurombe, H., du Plessis, Y., & Swanepoel, S. (2017). An integrated managerial framework towards implementing an ecotourism culture in Zimbabwe. *Journal of Ecotourism*, 17(1), 1-16. https://doi.org/10.1080/14724049.2017.1293066

Shchokin, R., Maziychuk, V., Mykhailyk, O., Kolomiiets, A., Akifzade, S., & Tymoshenko, Y. (2023). The impact of the crime rate on the hospitality and tourism industry in the EU countries. *GeoJournal of Tourism and Geosites*, 46(1), 135-147. https://doi.org/10.30892/gtg.46115-1009

Sibiya, T.N., Nkosi, G.S., & Gumede, T.K. (2023). Cultural events as a strategy for sustainable relationships among key players. *African Journal of Hospitality, Tourism and Leisure*, 12(2), 653- 672. https://doi.org/10.46222/ajhtl.19770720.391

Simon, C., & Etienne, M. (2009). A companion modelling approach applied to forest management planning with the civil society of Larzac lands. *Environ Modell Software*, 25(11), 1371-1384. https://doi.org/10.1016/j.envsoft.2009.09.004

Snyman, S. (2016). The role of private sector ecotourism in local socio-economic development in southern Africa. *Journal of Ecotourism*, 16(3), 247-268. https://doi.org/10.1080/14724049.2016.1226318

Stem, C.J., Lassoie, J.P., Lee, D.R., & Deshler, D.J. (2003a). How 'eco' is ecotourism? A comparative case study of ecotourism in Costa Rica. *Journal of Sustainable Tourism*, 11(4), 322-347. https://doi.org/10.1080/09669580308667210

Stem, C.J., Lassoie, J.P., Lee, D.R., & Deshler, D.J. (2003b). Community participation in ecotourism benefits: The link to conservation practices and perspectives. *Society and Natural Resources*, 16(5), 387-413. https://doi.org/10.1080/08941920309177

Stone, M.T. (2015). Community-based ecotourism: A collaborative partnerships perspective. *Journal of Ecotourism*, 14(2-3), 166-184. https://doi.org/10.1080/14724049.2015.1023309

Streimikiene, D., Svagzdiene, B., Jasinskas, E., & Simanavicius, A. (2020). Sustainable tourism development and competitiveness: The systematic literature review. *Sustainable Development*, 29(6), 259-271. https://doi.org/10.1002/sd.2133

Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and   management. *The Canadian Journal of Hospital Pharmacy*, 68(3) 226-231. https://doi.org/10.4212/cjhp.v68i3.1456

Swemmer, L., Grant, R., Annecke, W., & Freitag-Ronaldson, S. (2015). Toward more effective benefit sharing in South African national parks. *Society and Natural Resources*, 28(1), 4-20. https://doi.org/10.1080/08941920.2014.945055

Tosun, C. (2000). Limits to community participation in the tourism development process in developing countries. *Tourism Management*, 21(6), 613-633. https://doi.org/ 10.1016/S0261-5177(00)00009-1

Utami, B.A., & Kafabih, A. (2021). Sektor pariwisata Indonesia di tengah pandemi Covid-19. *Jurnal Dinamika Ekonomi Pembangunan (JDEP)*, 4(1), 383-389. https://doi.org/10.33005/jdep.v4i1.198

Vaidya, A., & Mayer, A.L. (2014). Use of the participatory approach to develop sustainability assessments for natural resource management. *International Journal of Sustainable Development and World Ecology*, 21(4), 369-379. https://doi.org/10.1080/13504509.2013.868376

Vannelli, K., Hampton, M.P., Namgail, T., & Black, S.A. (2019). Community participation in ecotourism and its effect on local perceptions of snow leopard (*Panthera uncia*) conservation. *Human Dimensions of Wildlife*, 24(2), 180-193. https://doi.org/10.1080/10871209.2019.1563929

Wang, J., Zhong, L., & Chen, T. (2015). Evolution of ecotourism development in rural regions of China. *Chinese Journal of Population Resources and Environment*, 13(2), 162-168. https://doi.org/10.1080/10042857.2015.1033804

Watson, J.E.M., Dudley, N., Segan, D.B., & Hockings, M. (2014). The performance and potential of protected areas. *Nature*, 515, 67-73. https://doi.org/ 10.1038/nature13947

Waylen, K., McGowan, P., & Milner-Gulland, E. (2009). Ecotourism positively affects awareness and attitudes but not conservation behaviours: A case study at Grande Riviere, Trinidad. *Oryx*, 43(3), 343-351. https://doi.org/10.1017/S0030605309000064

Welzel, C., Inglehart, R., & Deutsch, F. (2005). Social capital, voluntary associations, and collective action: Which aspects of social capital have the greatest civic payoff? *Journal of Civil Society*, 1(2), 121-146. https://doi.org/10.1080/17448680500337475

Wen, Y., & Ximing, X. (2008). The differences in ecotourism between China and the West. *Current Issues in Tourism*, 11(6), 567-586. https://doi.org/10.1080/13683500802475927

Wolla, S.A., & Sullivan, J. (2017). Education, income, and wealth. *Federal Reserve Bank of St. Luis*, 1-7.

Xiong, F., Zhu, S., Xiao, H., Kang, X., & Xie, F. (2021). Does social capital benefit the improvement of rural households' sustainable livelihood ability? Based on the survey data of Jiangxi province, China. *Sustainability (Switzerland)*, 13(19), 10995. https://doi.org/10.3390/su131910995

Ying, T., & Zhou, Y. (2007). Community, government and external capitals in China's rural cultural tourism: A comparative study of two adjacent villages. *Tourism Management*, 28(1), 96-107. https://doi.org/10.1016/j.tourman.2005.12.025

Zanamwe, C., Gandiwa, E., Muboko, N., Kupika, O.L., & Mukamuri, B.B. (2018). Ecotourism and wildlife conservation-related enterprise development by local communities within Southern Africa: Perspectives from the Greater Limpopo Transfrontier Conservation, South-Eastern Lowveld, Zimbabwe. *Cogent Environmental Science*, 4(1), 1531463. https://doi.org/10.1080/23311843.2018.1531463

*** IISD (International Institute for Sustainable Development). (2012). *What is sustainable development?* www.iisd.org/sd. [Accessed 11.06.2012].

*** South African Government. (2014). Labour Relations Amendment Act No. 6 of 2014. *Government Gazette No. 629*. Cape Town: Government Printers.

*** StatsSA (Statistics South Africa). (2022). *Consumer price index*. [Accessed 18 January 2023]. https://www.statssa.gov.za/ publications/P0141/P0141December2022.pdf

*** Umfolozi Local Municipality (2021/2022). *Umfolozi Integrated Development Plan*. [Accessed 20 January 2021]. Umfolozi.gov.za/ wp-content/uploads/2021/04/2021-22-Draft-IDP.pdf

*** UNESCO (United Nations Educational, Scientific and Cultural Organization). (2002). *Social capital and poverty reduction: Which roles for the society organizations and the state?* Paris (France): UNESCO.

*** Wilderness Holdings Limited. (2015). Integrated annual report 2015 (full report). [Accessed 17 June 2016]. http://www. wildernessholdings.com/ system/assets/165/original/Integrated_Annual_Report_2015(fullreport).pdf?1438585754

*** World Bank Institute (2012). The Hashemite Kingdom of Jordan: A note on updating poverty measurement methodology. *Background paper for the Jordan poverty reduction strategy*. Washington, DC: World Bank.

BEACHES AND MEDICINAL LAGOONS TOURISM DESTINATION IN PERU: SATISFACTION AND LOYALTY RESEARCH

Mayra Rita MILLAN-ANAYA

Universidad Privada del Norte, Business Faculty, Lima, Peru; e-mail: mayramillananaya.96@gmail.com

Franklin CORDOVA-BUIZA

Universidad Privada del Norte, Research, Innovation and Social Responsibility Department, Lima, Peru; e-mail: franklin.cordova@upn.edu.pe

Heber Luis OLAVARRIA-BENAVIDES*

Universidad Privada del Norte, Business Faculty, Lima, Peru; e-mail: heber.olavarria@upn.pe

Abstract: In the last years, the tourism sector has been affected by the crisis generated by COVID-19, so this prompted to rethink new strategies that bring with them the appropriate parameters and recommendation. The objective of the research was to analyze the influence of tourist satisfaction and loyalty towards a tourist destination of beaches and medicinal lagoons. The research used a non-experimental, correlational design, the technique used was the survey and as an instrument a questionnaire applied to a sample of 300 tourists. The results indicated that retired women were the most frequent visitors to the tourist destination. Also, 51% of the tourists responded that the tourist destination did meet their expectations, and with respect to loyalty, tourists would repeat the visit. Finally, if the satisfaction increase, loyalty also increase, therefore, it exists a positive correlation between the tourist satisfaction and loyalty to the tourist destination.

Key words: Satisfaction, Loyalty, Tourism, tourist destination, Expectative

* * * * * *

INTRODUCTION

In the last years, the tourism sector has been affected by the crisis generated by COVID-19, despite the uncertainty generated by the evolution of the pandemic, this prompted to rethink new strategies that bring with them the appropriate parameters and recommendations, so much so that the recovery at the international level is rising considerably (Olavarria Benavides et al, 2021). According to the World Tourism Organization (2022), worldwide destinations received almost three times more international arrivals in the first quarter of 2022 than in the same period of 2021.

In this way, touristic places are regaining interest and are presented as the most important element for the development of tourism, so understanding if the place satisfies their expectations, and if it is in accordance with the quality of service and with the touristic offer of a place is crucial. In Peru, tourism is an activity with a great contribution to the economy, which is why this sector will contribute 2.5% to the gross domestic product (GDP) this year 2022, favored by the sustained reactivation process, projected the executive president of the Commission for the Promotion of Peru for Exports and Tourism (Andina Agencia Peruana de noticias, 2022).

According to the state agency, this forecast is lower than the number recorded before the pandemy, but shows an improvement compared to 2021 (Carbajal, 2022). It should be noted that the level of satisfaction of tourists visiting the main Peruvian tourist cities in 2019 reached 80.1% satisfaction, a figure 2 percentage points higher in the city of Lima compared to the previous year (Ministerio de Comercio Exterior y Turismo [MINCETUR], 2020). Therefore, questions such as: whether satisfied tourists tend to recommend the places visited or whether satisfied tourists are loyal to the destination they visited were presented. The city of Chilca which belongs to the province of Cañete, Lima region, has several tourist attractions, however it is questioned whether tourists who visit the places can recommend to their friends, family or acquaintances the places so that there are more tourists from year to year, so the need arises to know the level of satisfaction of tourists and loyalty to the tourist destination, in the case of Chilca, so as to understand and determine whether there is any relationship between tourist satisfaction and loyalty to the tourist destination in the city of Chilca.

LITERATURE REVIEW
Tourist Satisfaction

The concept of satisfaction is intensely studied in marketing and is associated with the term "customer". In this respect, Kotler and Keller (2012) define satisfaction as the set of feelings of pleasure or disappointment generated in a person as a result of the comparison of the value perceived in the use of a product with respect to the expectations they had. Customer

---

* Corresponding author

satisfaction is determined by "general feelings, or attitudes, that people relate to a product after purchasing it" (Solomon et al., 2016). Also, the tourist satisfaction will indicates meeting the expectation of a service or experience, which includes the emotions aroused by consumption (Turki and Amara, 2017). In other words, satisfaction is evoked when consumers compare their initial expectations with their perceptions. Once the perceived experience exceeds expectations, the consumer is satisfied. Also, a higher level of customer satisfaction can lead to an increase in customer loyalty (Flint et al., 2010, Asparrent Revollar et al., 2023). Satisfaction can be determined by subjective aspects (e.g., customer needs and emotions) and objective factors (e.g., product and service characteristics). In this way, it is vital that the consumer feels satisfied with the brand he/she chooses according to the experience he/she had and thus he/she will be able to trust the brand more and become a loyal consumer (Sampetua Hariandja and Vincent, 2022). On the other hand, a study was conducted in which it was possible to establish that the congruencies between expectations and desire are determinants in the behavior of the individual towards vacations, which makes it necessary for tourist destinations to improve their services to exceed the expectations of tourists and thus achieve the satisfaction to which one wishes to focus (Correia et al., 2013; Lopez-Ortiz et al., 2023). In the context of tourism, the concept of tourist satisfaction is difficult to identify due to the fact that the tourism product is "complex" by definition cited by (Della Corte et al., 2014).

Tourist Expectations

Expectations go along with the tourist destination which has to have attributes that attract a lot of attention and thus be able to know what the tourist wants, designing and positioning the tourist services that can then exceed the tourist's expectations (Otero Gomez et al., 2014). A high level of expectations means that this service incorporates all the elements that the end consumer requires. Adequate service implies that it met the customer's expectations. This is why it is important to understand the expectations of tourists as it helps in the choice of destinations, the consumption of goods or services and the decision to visit them again (Zarraga Cano and Corona Sandoval, 2010; Mayuri-Ramos et al., 2023; Hernandez-Padilla et al., 2023).

Tourist Destinations

According to the World Tourism Organization, it refers to the physical space composed of tourism products that can be consumed, has boundaries that define its management and includes the local society with which they can establish networks that form larger destinations cited by (Solano et al., 2016). Therefore, social media is part of tourism development with significant achievements and direction in the digital economy and social media era (Picco-Schwendener et al., 2022). This really helps to know more information from a tourist destination that the tourists are interesting to visit, Also, evolution of interest in the tourist destination has been highlighted from a scientific perspective, since, until very recently, all studies only focused on the microeconomic dimension (Candela and Fingini, 2012). In turn, Blasco et al. (2013), indicates that destinations constitute the most appropriate unit of analysis for tourism research. While tourists perceive the destination as a unit, offering an experience or a product, this can also be understood as complex networks of co-production (Pallavicini and Ariana, 2017; Pike and Page, 2014). Their development must take into account the challenges of implementing strategies that involve companies directly and indirectly related to the sector, but also other actors, such as local, regional and national authorities (Ndivo et al., 2013; Riofrio Carbajal et al., 2023). By the way, it integrates quality, efficiency and urbanity in the services received from tourism professionals, cab drivers, police officers, etc. In addition, it mentions that it is the sensitivity regarding the beauty of the landscape and the comfort of the climate, the cleanliness of the streets and transportation conditions, the preservation and conservation of tourist attractions, etc. cited by (Dos Santos Daio, 2017). Therefore, tourism destinations must establish identities that differentiate them from other destinations (Hshiung Tsaur et al., 2016). Consequently, destinations are the most relevant brands within the tourism sector (Almeyda Ibañez and Babu, 2017).

Destination Attributes

Dos Santos Daio (2017) taking as a basis the dimensions already mentioned and defined by the UNWTO, mentions that the characteristics of the tourist destination are: accommodation, gastronomy, transportation, travel agencies and tour guides, cultural services, recreation and leisure, commerce, natural environment, hospitality and welcome; and price. For research purposes, these attributes were grouped into two dimensions, based on the annual survey for measuring the level of tourist satisfaction of the Ministry of Foreign Trade and Tourism, attributes for the services offered, consisting of lodging, gastronomy (restaurants), local transportation, recreation and leisure, tourist information and tourist guides. And the destination's own attributes, referring to the specific characteristics of the tourist destination, composed of perceived safety, hospitality, cleanliness of the city, accessibility, and cultural services (Ministry of Foreign Trade and Tourism [MINCETUR], 2018).

Tourist Destination Image

The image of a destination is a very important element since it is the first impression that a tourist will have when arriving at a tourist destination, in turn it will influence in such a way that the tourist will have a good perspective and a pleasant experience about his trip to the destination he has chosen to visit. Moreover, destination image is a compilation of people's beliefs and impressions of a destination that originates from processing information from various sources over the time (Wang and Zhang, 2019). On the other hand, the destination image from tourist attractions it has a critical role in visitors deciding whether to visit or not, in other term, destination image will influence tourist loyalty (Yayuk et al., 2023).

Loyalty to the tourist destination: In the search for a definition of loyalty to the tourism destination, indicates that the tourists demonstrated intention or behaviors to re-visit the same destination or to recommend the destination to others (Sangpikul, 2018). However, the destination authenticity is one of the factors that can influence customer loyalty tourists

are not only looking for experiences through modern and high-quality tourist attractions but also looking for authentic and pristine experiences (Yayuk et al., 2023). The high level of destination authenticity can create a positive emotion for visitors, and the visitors will revisit the tourist destination.

MATERIALS AND METHODS
Type of research

The type is applied, based on existing knowledge, applying it in the context of the study generates new knowledge or enriches existing knowledge (Vargas, 2009). This is due to the fact that for the study of the variable's tourist satisfaction and loyalty to the tourist destination, existing theories about them will be used, to later apply them in the context of the study.

It is correlational, because it pretends to analyze the degree of relationship between two or more concepts (Hernandez et al., 2014). Thus, it is intended to measure whether tourist satisfaction is related to loyalty to the tourist destination. It is of quantitative approach, methodologically, this research approach is going to be characterized by privileging the empirical-deductive logic, from rigorous procedures, such as, experimental methods and the use of statistical data collection techniques (Mata Solis, 2019). In addition, through data collection it tests hypotheses with numerical measurement and making use of statistical analysis (Fernandez Collado and Baptista Lucio, 2014).

The present study will analyze the variables tourist satisfaction and loyalty to the tourist destination using numerical measurement and statistical analysis. The design is non-experimental cross-sectional, because the variables are not manipulated intentionally, but are observed in their natural context and this is done at a specific time (Hernández et al., 2014).
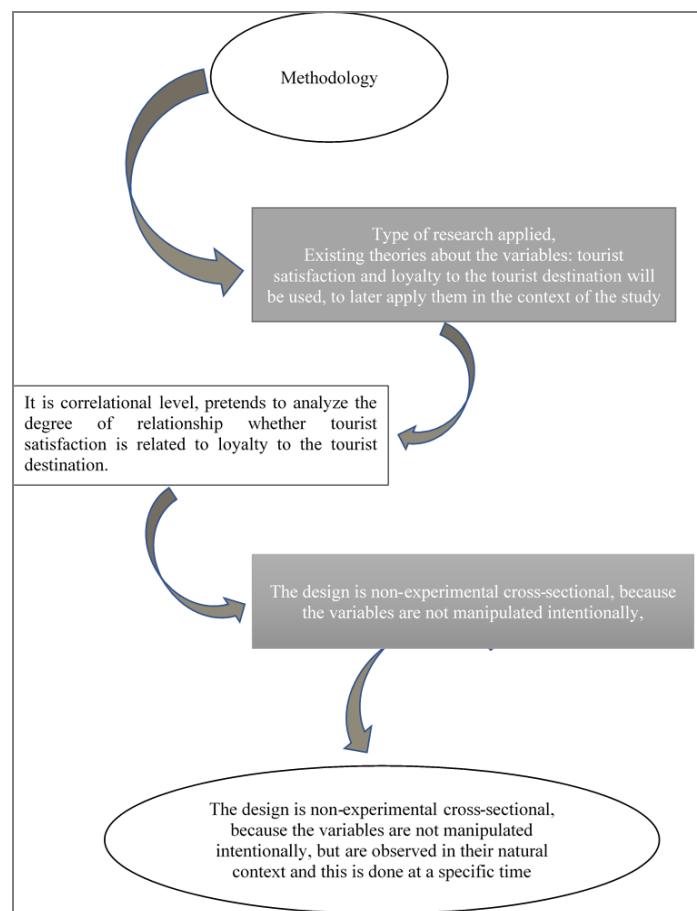

Figure 1. Methodology

Table 1. Tourist Satisfaction

Conceptual Definition	Operational definition	Markers	Items	Measuring scale
Defined as the comparison of foreign tourists' expectations with their perceptions regarding the actual contact of the service, based on its quality and tourist offer.	The variable will be evaluated trough a 10-item questionnaire (2 for service expectations, 4 for service quality, 4 for the tourism supply indicator).	Service Expectations	1	Ordinal
		Attributes of the services offered	2-24	
		Destination-specific attributes	25-32	

Table 2. Loyalty to the tourist destination

Conceptual Definition	Operational definition	Markers	Items	Measuring scale
Tourism destination loyalty or destination loyalty refers to repeat visit frequency or the relative desire to return to the same destination (Yoon and Uysal, 2005).	The variable will be evaluated through a questionnaire, composed of indicators of repeat pattern, price sensitivity and word of mouth.	Repeated visits	1.2	Ordinal
		Mouth-to-mouth	3.4	
		Intent to repurchase	5.6	

The statistical population, also known as the universe, is the set or totality of elements to be studied. These elements will be made up of each of the associated individuals who share some common characteristic (Puertecita, 2022). Therefore, the study population in this research is made up of tourists who come to the tourist destination of Chilca, a tourist destination of beaches and medicinal lagoons in the south of Lima, the capital of Peru, in the year 2018. The collection of information was carried out between the months of September and October 2018.

According to Hurtado (2010), in order to select the sample, the author refers to probability sampling and non-probability sampling. However, in this research, non-probabilistic sampling will be used, through which, the population that will be part of the study is chosen based on criteria established by the researcher. Thus, the sample will be made up of 300 tourists attending the tourist destination of Chilca (Hurtado, 2010).

The technique to be used for data collection will be the survey, which aims to seek information about in a study event through questions directly to the sources of information (Hurtado, 2010). Therefore, two questionnaires will be developed, one for the tourist satisfaction variable and the other for the tourist destination loyalty variable. The survey for the tourist satisfaction variable is made up of 10 questions, divided into a section called general data and the other section of

questions. On the other hand, the questionnaire for the variable loyalty to the tourist destination consists of 6 questions, sized in Pattern of repetition, price sensitivity, word of mouth. In turn, the present research will be validated by judges or experts, which consists of a technique that examines the theoretical correspondence between the items of the instrument and the concept of the phenomenon or event (Hurtado, 2010). It refers to the degree to which the repeated application of the instrument on the same object or individual produces the same results (Hernandez et al., 2014). To measure the reliability of the questionnaire, the internal congruence test or also called Cronbach's alpha will be performed, whereby the instrument is reliable as long as there is a high correlation between the items.

First, authorization was requested from the director of the tourist destination of Chilca, for the collection of information from the tourists who come to Chilca. Therefore, the support of the executive staff of the Chilca tourist destination was requested for the questionnaires to be taken, explaining the reason for this and their contribution to the respective research study. Likewise, the most appropriate date and time to apply the questionnaire to the tourists was determined and coordinated according to the sample determined. Finally, two surveys of 30 questions for the tourist satisfaction questionnaire and 6 questions for the tourist loyalty questionnaire were taken anonymously from tourists in the tourist destination of Chilca. After data collection with the use of descriptive statistics and inferential statistics, data processing and analysis will be performed. Descriptive statistics help to analyze each study variable, which will be done using Microsoft Excel 2017 and SPSS version 24 software, through frequency tables and graphs. On the other hand, inferential statistics helps to test hypotheses using statistical calculations. Therefore, to test the hypothesis of the present between the variable's tourist satisfaction and loyalty to the tourist destination, if $p>0.5$ is obtained, the hypothesis is rejected, while if

RESULTS AND DISCUSSION
Demographic Data

We interviewed 300 people between men and women between the ages of 20 and 60 with secondary, technical and higher education levels. According to Figure 2 of the survey, 54.3% of the visitors to Chilca are women and 45.7% are men.
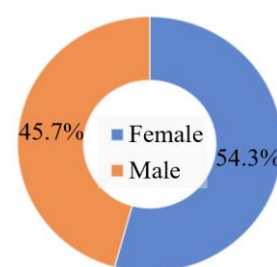
Descriptive Results

About Tourist Satisfaction: According to Table 3, 51% of the people surveyed mentioned that the district of Chilca met their expectations, given that the stay was as they imagined, while 27.3% said that the destination exceeded their expectations; on the other hand, 21.7% said that the district did not meet their expectations.

Figure 2. Tourist gender

According to Table 4, 56.7% of those surveyed mentioned that they were highly satisfied with the services in the Chilca destination, since the destination has good recreation, gastronomy and lodging are in accordance with their expectations, while 39.7% considered their satisfaction to be regular, and finally only 3.7% had low satisfaction, since they stressed that the tourist information was not as expected.

Table 3. Tourist expectations

		Frequency	Percentage	Valid Percentage	Accumulated Percentage
Valid	Below my expectations	65	21.7	21.7	21.7
	met my expectations	153	51.0	51.0	72.7
	Above my expectations	82	27.3	27.3	100.0
	Total	300	100.0	100.0	

Table 4. Satisfaction regarding services

		Frequency	Percentage	Vaiid Percentage	Accumulated Percentage
Valid	Low	11	3.7	3.7	3.7
	Regular	119	39.7	39.7	43.3
	High	170	56.7	56.7	100.0
	Total	300	100,0	100,0	

Table 5. Satisfaction regarding the destination

		Frequency	Percentage	Valid Percentage	Accumulated Percentage
Valid	Low	34	11.3	11.3	11.3
	Regular	182	60.7	60.7	72.0
	High	84	28.0	28.0	100.0
	Total	300	100.0	100.0	

According to Table 5, 28% have a high level of satisfaction with respect to the tourist destination, since the tourists stated that the attractions are well signposted, there are cultural spaces, hospitality on the part of the citizens and safety for the tourist; on the other hand, 60.7% of the tourists surveyed mentioned that their level of satisfaction is regular, since although there are good tourist sites, they did not receive good treatment from the people, while 11.3% of the tourists surveyed found their level of satisfaction to be fair. On the other hand, 60.7% of the tourists surveyed mentioned that their level of satisfaction was average, since although they found good tourist sites, they did not receive good treatment from the people, while 11.3% were dissatisfied, since everything they found at the destination was not to their satisfaction.

Loyalty to the tourist destination

According to what is presented in Table 7, 71.7% have a high attitude loyalty, since they would still recommend and speak positively about the destination to their family and friends, they would also speak well of the destination through their social networks, 19.3% had a regular attitude loyalty, and only 9% have a low attitude loyalty, since they would not speak well, nor recommend the tourist destination to their friends and less to their family.

According to Table 6, 25.7% have a high behavioral loyalty, since this group would return to visit the tourist destination of Chilca; on the other hand, 68.3% of the respondents have a regular loyalty, since there is no certainty that they would return to the destination, unless there is something that would allow them to return, and finally 6% have a low behavioral loyalty, since they do not consider returning to the tourist destination.

Table 6. Behavioral loyalty

		Frequency	Percentage	Valid Percentage	Accumulated Percentage
Valid	Low	18	6.0	6.0	11.3
	Regular	205	68.3	68.3	74.3
	High	77	25.7	25.7	100.0
	Total	300	100.0	100.0	

Table 7. Attitudinal loyalty

		Frequency	Percentage	Valid Percentage	Accumulated Percentage
Valid	Low	27	9.0	9.0	9.0
	Regular	58	19.3	19.3	28.3
	High	215	71.7	71.7	100.0
	Total	300	100.0	100.0	

Table 8. Correlation between satisfaction and behavioral loyalty (** The correlation is significant at the 0,01 level; bilateral)

			Satisfaction	Behavioral loyalty
Rho of Spearman	Satisfaction	Correlation coefficient	1.000	.906**
		Sig. (bilateral)	.	.000
		N	300	300
	Behavioral loyalty	Correlation coefficient	.906**	1.000
		Sig. (bilateral)	.000	.
		N	300	300

Table 9. Correlation between satisfaction and attitudinal loyalty (** The correlation is significant at the 0.01 level; bilateral)

			Satisfaction	Attitudinal loyalty
Rho of Spearman	Satisfaction	Correlation coefficient	1.000	.980**
		Sig. (bilateral)	.	.000
		N	300	300
	Attitudinal loyalty	Correlation coefficient	.980**	1.000
		Sig. (bilateral)	.000	.
		N	300	300

Table 10. Correlation between expectation and loyalty to the tourist destination (** The correlation is significant at the 0.01 level; bilateral)

			Expectation	Tourist destination
Rho of Spearman	Expectation	Correlation coefficient	1.000	.833**
		Sig. (bilateral)	.	.000
		N	300	300
	Tourist destination	Correlation coefficient	.833**	1.000
		Sig. (bilateral)	.000	.
		N	300	300

Hypothesis Contrasting

Tourist satisfaction is related to behavioral loyalty to the tourist destination. Table 8 shows the correlation (degree of association) between satisfaction and behavioral loyalty, measured by Spearman's Rho correlation coefficient, with a value of 0.906** significant at the 0.01 level; on the other hand, it is observed that the value of sig. (Bilateral) 0.000 is less than 0.05, therefore, the hypothesis that establishes the existence of a relationship between variables is accepted. Conclusion: There is sufficient statistical evidence at 5% significance to affirm that there is a significant correlation between satisfaction and behavioral loyalty. Tourist satisfaction is related to attitudinal loyalty to the tourist destination. Table 9 shows the correlation (degree of association) between satisfaction and attitudinal loyalty, measured through Spearman's Rho correlation coefficient, with a value of 0.980** significant at the 0.01 level; on the other hand, it is observed that the value of sig. (Bilateral) 0.000 is less than 0.05, therefore, the hypothesis that establishes the existence of a relationship between variables is accepted. Conclusion: There is sufficient statistical evidence at 5% significance to affirm that there is a significant correlation between satisfaction and attitudinal loyalty. Service Expectation is related to loyalty to the tourist destination.

Table 10 shows the correlation (degree of association) existing between the expectation and the tourist destination, measured through Spearman's Rho correlation coefficient, with a value of 0.833** significant at the 0.01 level; on the other

hand, it is observed that the value of sig. (Bilateral) 0.000 is less than 0.05, therefore, the hypothesis that establishes the existence of a relationship between variables is accepted. Conclusion: There is sufficient statistical evidence at 5% significance to affirm that there is a significant correlation between expectation and tourist destination.

Table 11. Correlation between service attributes and loyalty to the tourist destination (** The correlation is significant at the 0.01 level; bilateral)

			Attributes of the services	Tourist destination
Rho of Spearman	Attributes of the services	Correlation coefficient	1.000	.983**
		Sig. (bilateral)	.	.000
		N	300	300
	Tourist destination	Correlation coefficient	.983**	1.000
		Sig. (bilateral)	.000	.
		N	300	300

The attributes of the services offered are related to loyalty to the tourist destination. Table 11 shows the correlation (degree of association) between the attributes of the services and the tourist destination, measured through Spearman's Rho correlation coefficient, with a value of 0.983** significant at the 0.01 level; on the other hand, it is observed that the value of sig. (Bilateral) 0.000 is less than 0.05, therefore, the hypothesis that establishes the existence of a relationship between variables is accepted. Conclusion: There is sufficient statistical evidence at 5% significance to affirm that there is a significant correlation between the attributes of the services and the tourist destination. The destination's own attributes are related to the loyalty towards the tourist destination. Table 12 shows the correlation (degree of association) between the attributes and the tourist destination, measured through Spearman's Rho correlation coefficient, with a value of 0.986** significant at the 0.01 level; on the other hand, it is observed that the value of sig. (Bilateral) 0.000 is less than 0.05, therefore, the hypothesis that establishes the existence of a relationship between variables is accepted. Conclusion: There is sufficient statistical evidence at 5% significance to affirm that there is a significant correlation between the attributes and the tourist destination. Tourist satisfaction and the relationship with loyalty to the tourist destination.

Table 12. Correlation between own attributes and loyalty to the tourist destination (** The correlation is significant at the 0.01 level; bilateral)

			Own attributes	Tourist destination
Rho of Spearman	Own attributes	Correlation coefficient	1.000	.986**
		Sig. (bilateral)	.	.000
		N	300	300
	Tourist destination	Correlation coefficient	.986**	1.000
		Sig. (bilateral)	.000	.
		N	300	300

Table 13. Correlation between tourist satisfaction and loyalty to a tourist destination The correlation is significant at the 0.01 level (bilateral)

			Tourist satisfaction	Tourist destination
Rho of Spearman	Tourist satisfaction	Correlation coefficient	1.000	.983**
		Sig. (bilateral)	.	.000
		N	300	300
	Tourist destination	Correlation coefficient	.983**	1.000
		Sig. (bilateral)	.000	.
		N	300	300

Table 13 shows the correlation (degree of association) between tourist satisfaction and loyalty to the tourist destination, measured by Spearman's Rho correlation coefficient, with a value of 0.983** significant at the 0.01 level; on the other hand, it can be seen that the (Bilateral) sig. value 0.000 is less than 0.05, therefore, the hypothesis that establishes the existence of a relationship between variables is accepted. Conclusion: There is sufficient statistical evidence at 5% significance to affirm that there is a significant correlation between tourist satisfaction and loyalty to the tourist destination.

For the investigation of tourist satisfaction, a survey was conducted among tourists who were in the district of Chilca, where each tourist rated the statements according to their perception, thus measuring how satisfied tourists are with respect to the destination, while for the analysis of loyalty to the tourist destination, a survey was used in which both attitudinal and behavioral loyalty were evaluated; Finally, we sought to associate both variables to measure whether tourist satisfaction and loyalty to the tourist destination are associated. With respect to the satisfaction of the tourist destination, 28% of the tourists surveyed have a high satisfaction with respect to the tourist destination, 60.7% of the tourists surveyed mentioned that their level of satisfaction is regular, while 11.3% were dissatisfied; most of the tourists affirmed that their loyalty is regular, since despite having interesting cultural attractions, as well as natural attractions, they highlighted some negative aspects, which they consider regular. 3% were dissatisfied; the majority of tourists affirmed that their loyalty is regular, since in spite of having interesting cultural attractions, as well as natural attractions, they highlighted some negative aspects, in which the inhabitants themselves did not show hospitality to tourists, and many of them were not very kind, in addition to the fact that there was not much security, especially at night in search of entertainment, the same with respect to cleanliness, arguing that if they seek to be a tourist destination they should improve those aspects.

This is related to the research of Dos Santos Daio (2017) in which he mentioned that tourists are satisfied with the services offered by the destination which in this case was the country of Sao Tome and Principe on the African coasts, however, in aspects such as price level, recreation and leisure, trade, tourist information and cultural services there was

reluctance. These results are framed according to the literature of (Dos Santos Daio, 2017) where it specifies that some of the main characteristics around the attributes of the tourist destination, among others, recreation and leisure and tourist information or tourist guide are accurate. This, in order to increase the quality and efficiency of the services offered by the destination, since these characteristics contribute to distinguish and highlight the attributes of the place in order to increase the affluence and conservation of the place of tourist interest. According to the expectations on the part of the tourists of the tourist destination, 51% of them mentioned that with respect to the above mentioned, the tourist destination did meet their expectations, because in some way or another, they inferred that they could find a scenario in which everything would not be adequate, where what prevailed most for the topic of expectation were the services offered, this has been reinforced with what was expressed by 27. This was reinforced by 27.3% who said that the tourist destination exceeded their previous expectations, and only 21.7% mentioned that the tourist destination of Chilca did not meet their expectations.

This is related to the study by Diaz Perez and Lama Nuñez (2015) in which they determined that 40% of the tourists surveyed said they were 'somewhat satisfied' with respect to service expectations, while the alternative with the highest figure in the case of service quality was 'very satisfied'. Moreover, in the case of the Tourist Offer, the alternative with the highest numbers was also 'very satisfied', by tourists with respect to the expectations generated by the destination of Florido neighborhood. Thus, it is important to understand the expectations of tourists as it helps in the tourists' choice of destinations, the consumption of goods and services and the decision to visit them again (Zarraga Cano and Corona Sandoval, 2010). Therefore, it can be concluded that the results found in this research are valid and scientifically supported.

CONCLUSIONS

According to the correlation (degree of association) existing between tourist satisfaction and loyalty to the tourist destination, measured through the Rho Spearman correlation coefficient, this value 0.983*** is significant at the 0.01 level; on the other hand, it is observed that the value of sig. (Bilateral) 0.000 is less than 0.05; therefore, the hypothesis that establishes the existence of a relationship between variables is accepted.

There is sufficient statistical evidence at 5% significance to affirm that between tourist satisfaction and loyalty to the tourist destination there is a significant correlation to the measured correlations, it is evident that there is a statistical at 5% positive correlation between tourist satisfaction and loyalty to the tourist destination.

Also, the relationship between tourist satisfaction and behavioral loyalty was determined, because based on the satisfaction generated by the service offered, this may lead them to return to Chilca the next time. On the other hand, it was concluded that there is a relationship between tourist satisfaction and attitudinal loyalty, because both the expectations covered, and the services offered lead tourists to recommend the destination to their family and friends. In addition, it was determined that there was a relationship between expectations and loyalty to the tourist destination of Chilca, since the services offered, and the various cultural and natural attractions largely met the expectations of tourists. It was also possible to conclude that the relationship between the attributes of the services and loyalty to the tourist destination, since services such as entertainment, lodging and gastronomy had a strong impact on the tourist to generate loyalty. And finally, it was determined the relationship between the attributes of the destination and loyalty to the destination of Chilca, since it has interesting tourist attractions, as well as natural attractions, which generated in tourists an attachment to what converges in a loyalty.

REFERENCES

Almeyda Ibañez, M., & Babu, P.G. (2017). The Evolution of Destination Branding: A Review of Branding Literature in Tourism. *Journal of Tourism*, 9-17. https://doi.org/10.5281/zenodo.401370

Andina Agencia Peruana de noticias (2022). *Perú: sector turismo aportará 2.5% al crecimiento económico en 2022.* de Andina Agencia Peruana de noticias: https://andina.pe/agencia/noticia-peru-sector-turismo-aportara-25-al-crecimiento-economico-2022-908158.aspx

Asparrent Revollar, B.M., León Torres, R.E., Grillo Torres, C.M., & Cordova Buiza, F. (2023). A Comparative Analysis of The Career Perceptions of Tourism and Hospitality Students Before and During The Covid-19 Pandemic. *GeoJournal of Tourism & Geosites*, 49(3). https://doi.org/10.30892/gtg.49308-1092

Blasco, D., Guia, J., & Pratz, L. (2013). Tourism destination zoning in mountain regions: a consumer-based approach. *Tourism Geographies*, 512-528. https://doi.org/10.1080/14616688.2013.851267

Candela, G., & Fingini, P. (2012). The Economics of Tourism Destinations. *Springer Texts in Business and Economics*, 73-130. https://doi.org/10.1007/978-3-642-20874-4_4

Carbajal, A. (2022). *Federacion de periodistas del Peru*. https://fpp.org.pe/segun-estimaciones-de-promperu-el-turismo-generara-un-millon-de-empleos-este-ano/

Correia, A., Kosak, M., & Ferradeira, J. (2013). From tourist motivations to tourist satisfaction. *International Journal of Culture, Tourism and Hospitality Research*, 411-424. https://doi.org/10.1108/IJCTHR-05-2012-0022

Della Corte, V., Sciarelli, M., & Del Gaudio, G. (2014). Customer satisfaction in tourist destination: The case of tourism offer in the city of Naples. *Journal of Investment and Management*, 39-50. https://doi.org/10.11648/j.jim.s.2015040101.16

Diaz Perez, L., & Lama Nuñez, G. (2015). *Estudio de la Satisfaccion de los Turistas extranjeros que visitan el poblado de barrio Florido y alrededores, periodo 2014*. Iquitos.

Dos Santos Daio, N. (2017). *Satisfaccion y Lealtad del Turista*. Lisboa: Information Management School. https://run.unl.pt/bitstream/10362/22005/1/TEGI0385.pdf

Fernandez Collado, C., & Baptista Lucio, P. (2014). *Metodologia de la Investigacion*. Mexico: Interamericana Editores.

Flint, D.J., Blocker, C.P., & Boutin, Jr., P.J. (2010). Customer value anticipation, customer satisfaction and loyalty: An empirical Examination. *Industrial Marketing Management*, 12. https://doi.org/10.1016/j.indmarman.2010.06.034

Hernández, R., Fernández, C., & Baptista, P. (2014). *Metodología de la investigación* (Sexta ed.). México: Mc Graw Hill.

Hernandez-Padilla, J.D., Donayre-Gallo, A., Cordova-Buiza, F., & Auccahuasi, W. (2023). Innovative Digital Marketing Strategies to Increase Demand in a Hotel Company. *In ECIE 2023 18th European Conference on Innovation and Entrepreneurship* Vol 1. Academic Conferences and publishing limited. https://doi.org/10.34190/ecie.18.1.1818

Hshiung Tsaur, S., Yen, C., & Ting Yan, Y. (2016). Destination brand identity: scale development and validation. *Asia Pacific Journal of Tourism Research*, 1310-1323. https://doi.org/10.1080/10941665.2016.1156003

Hurtado, J. (2010). *Metodología de la investigación* (Cuarta ed.). Caracas: Quirón Ediciones.

Kotler, P., & Keller, K. (2012). *Dirección de marketing* (Decimocuarta ed.). México D.F., México: Pearson Educación.

Lopez-Ortiz, D.M., Rosas-Ybañes, I.F., Cordova-Buiza, F., & Auccahuasi, W. (2023). Tourism Promotion Using Social Networks: A Systematic Review. *In International Conference on Tourism Research*, 6(1), 158-165. https://doi.org/10.34190/ictr.6.1.1130

Mata Solis, L. (2019). *Investigalia*. https://investigaliacr.com/investigacion/el-enfoque-cuantitativo-de-investigacion/

Mayuri-Ramos, E., Sifuentes-Salcedo, M.R., Cordova-Buiza, F., Rojas-Rosales, J.B., Toribio-Tamayo, G., Conde-Beltran, Y.V., & Auccahuasi, W. (2023). Eating at a Peruvian Themed Restaurant: Consumer Profile and Behavior. *In International Conference on Tourism Research* (Vol. 6, No. 1, pp. 194-202). https://doi.org/10.34190/ictr.6.1.1251

Ministerio de Comercio Exterior y Turismo [MINCETUR]. (2018). *Encuestas Trimestrales de Turismo*. Recuperado el 2023, de Mincetur. https://www.mincetur.gob.pe/turismo/publicaciones/encuestas-trimestrales-de-turismo/

Ministerio de Comercio Exterioy Turismo [MINCETUR]. (2020). *Mincetur*. Recuperado el 2023, de Mincetur. https://cdn.www.gob.pe/uploads/document/file/1021388/Lima-Nivel-Satisfaccion-Turista-2019.pdf

Ndivo, R., Waudo, J., & Waswa, F. (2013). From National to Regional Tourism Development Focus in Kenya: Examining the Challenges and Opportunities. *Tourism Planning & Development*, 99-109. doi:https://doi.org/10.1080/21568316.2012.729759

Olavarria-Benavides, H.L., Carassa, A.G.C., & Cordova-Buiza, F. (2021). Travel influencers as a factor in choosing a tourist destination post covid-19: Analysis of the national tourist. In 2021 *IEEE Sciences and Humanities International Research Conference (SHIRCON)* (pp. 1-4). IEEE. https://doi.org/10.1109/SHIRCON53068.2021.9652385

Otero-Gómez, M.C., Giraldo-Pérez, W., & Ramírez-Ospina, D.E. (2014). La imagen y la expectativa frente a la realidad de Villavicencio como destino turístico. *Orinoquia*, 18(2), 108-118.

Pallavicini, C., & Ariana, J. (2017). Factors Influencing Tourism Destinations Attractiveness: The Case of Malaga. *Digitala Vetenskapliga Arkivet*. https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1129652&dswid=7230

Picco-Schwendener, A., Kalbaska, N., Hasenzahl, L., & Cantoni, L. (2022). e-Government and tourism. In Z. Xiang, M. Fuchs, U. Gretzel, & W. Höpken (Eds.), Handbook of e-Tourism (pp. 1629-1644). Springer International Publishing. https://doi.org/10.1007/978-3-030-486525_101

Pike, S., & Page, S. (2014). Destination Marketing Organizations and destination marketing: A narrative analysis of the literature. *Tourism Management*, 202-227. https://doi.org/10.1016/j.tourman.2013.09.009

Puertecita, M. (2022). *Scribd*. https://es.scribd.com/document/596845269/Que-es-una-poblacion-y-una-muestra-en-tesis

Riofrio Carbajal, M., Olavarria Benavides, H.L., Robles Fabián, D.A., & Cordova Buiza, F. (2023). New tourist needs and perceptions on sustainability during the pandemic: An analysis of Paracas National Reserve, Peru. *Innovative Marketing*, 19(1), 37-47. http://dx.doi.org/10.21511/im.19(1).2023.04

Sampetua Hariandja, E., & Vincent, F. (2022). Linking customer experience, satisfaction, and loyalty to brand power and performance in international hotels. *Business Perspectives*, 14. https://doi.org/10.21511/im.18(3).2022.06

Sangpikul, A. (2018). The effects of travel experience dimensions on tourist satisfaction and destination loyalty: The case of an island destination. *International Journal of Culture, Tourism and Hospitality Research*, 12(1), 106123. https://doi.org/10.1108/IJCTHR-06-2017-0067

Solano, M., Riquelme, P., & Carreño, F. (2016). Destinos turísticos emergentes y empoderamiento del mundo rural: las divergencias y convergencias en las políticas turística. *International Journal of Scientific Managment Tourism, 2*(2), 467-468.

Solomon, M., Bamossy, G., Askegaard, S., & Hogg, M.K. (2016). *Consumer Behaviour A European Perspective*. New Jersey, Prentice Hall.

Turki, H., & Amara, D. (2017). Toward a better understanding of experience during trips: Impact on satisfaction, destination attachment and word-of-mouth. *International Journal of Tourism Cities*, 3(4), 466-482. https://doi.org/10.1108/ijtc-10-2016-0038

Vargas, Z. (2009). La investigación aplicada: Una forma de conocer las realidades con evidencia científica. *Educación, 33*(1), 155-165. de http://www.redalyc.org/pdf/440/44015082010.pdf

Wang, Q., & Zhang, D. (2019). Branding city destinations: A comparative analysis of the multimodal discourse in Beijing and London publicity films. *Chinese Semiotic Studies*, 15(3), 379-410. https://doi.org/10.1515/css-20190022

World Tourism Organization. (2022). *World Tourism Barometer*. Recuperado el 2022, de World Tourism Organization: https://en.unwto-ap.org/news/world-tourism-barometer-may-2022/

Yayuk, Y., Sulistya Rini, E., Sirojuzilam, Helmi Situmorang, S., and Syahputra Silalahi, A. (2023). Mediating role of authenticity in the relationship between destination image and destination loyalty. *Innovative Marketing*, 19(4), 14-25. http://dx.doi.org/10.21511/im.19(4).2023.02

Zarraga Cano, L., & Corona Sandoval, E. (2010). Las Expectativas de los Turistas Cuando Contratan los Servicios de los Guias de Turistas: Un Enfoque Cualitativo. *Revista Administración Internacional & Finanzas, 3*(2), 75-89. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1674703

THE GEOHERITAGE POTENTIAL OF THE SOUTH-EAST PAŁUKI (WESTERN POLAND) TO PROMOTE GEOTOURISM

Maria GÓRSKA-ZABIELSKA[*]

Jan Kochanowski University in Kielce, Institute of Geography and Environmental Sciences,
Kielce, Poland, e-mail: maria.gorska-zabielska@ujk.edu.pl

Natalia BŁASZCZYK

Kielce, Poland, e-mail: nataliaj.blaszczyk@gmail.com

Izabela NOWAK

Pałucki Division of the Polish Tourist Country-Lovers Society in Żnin, Pl. Wolności, Żnin, Poland, e-mail: alpinus11@wp.pl

Abstract: The aim of the work is to examine the possibilities of developing geotourism in the context of existing, but not yet recognised, geoheritage in the north-eastern Wielkopolska, western Poland. Pałuki is characterised by exceptional geodiversity, which has enormous potential for diversifying the present tourist offer. The valorisation method of selected 12 geosites was used, taking into account geomorphological, additional and utility categories. The results of the analytical part made it possible to identify the most valuable and geotouristically attractive geosites. They form two original geotourism trails under the common name of "Geodiversified Pałuki". In order to increase the possibilities of developing local geotourism, two proposals for thematic geotourism trail focusing on the most interesting, and highly rated, geosites in the research area are presented.

Key words: geoheritage, geodiversity, evaluation analysis, geotrail, geotourism, Pałuki, western Poland

* * * * * *

INTRODUCTION

Every society, every person has its own precious treasure, which is called heritage. Special emphasis is placed on cultural heritage, which is related to traditions, culture and art (Reynard and Giusti, 2018; Sisto et al., 2020; Vale Caetano and Corral Martins de Oliveira Ponciano, 2021; Pijet-Migoń and Migoń, 2022). There is no doubt that cultural heritage is extremely important for knowing and understanding our past. But we often forget what is with us every day, what has been with mankind since time immemorial. This is the geological heritage. It is a very specific kind of heritage that is difficult to perceive by the general public. It is hard for lay recipients to find texts about geoheritage in scientific literature. However, they can learn about it through oral transmission, such as storytelling (Wolniewicz, 2019). This is why the role of the expert, who is able to discover the secrets of the earth and pass them on skilfully, is so important.

Alexandrowicz (2007, cf. Urban et al., 2021) believes that geoheritage is "components of natural geodiversity that have significant value for people, scientific research, education, aesthetics, inspiration, cultural development and places that are important for social reasons". According to Carrión-Mero et al. (2018), "geological heritage is defined as a set of geological elements or geological sites (geosites) with outstanding scientific, cultural and educational values". According to Urban et al., 2020; Urban et al., 2021: "Geological heritage is the abiotic elements of nature - fragments of the Earth's crust, its relief and the processes that shape the Earth, which enable the scientific reconstruction of the history of the Earth and life on it, and the understanding of the processes that shape it, but also elements of significant importance for human culture and intellectual life". According to Ng (2022), "the terms geodiversity and related activities such as geoprotection, geotourism and geoeducation are new to most people. They are becoming more widely used as awareness of the protection of the abiotic elements of the environment has grown in recent decades, complementing a sustainable approach to environmental protection. There are many definitions of geodiversity in the literature (Zwoliński, 2004; Serrano and Ruiz-Flano, 2007; Gray, 2013, 2018), which were recently summarised by Ng (2022) into one: "the natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (landforms, processes) and soil features, including their assemblages, relationships, properties, interpretations and systems. Geodiversity provides an abiotic environment and a foundation upon which biological, human and cultural activities can be carried out effectively".

Geodiversity is the result of presence within a limited area of genetically diverse abiotic resources. They are common, but only some of them - geosites - are unique and have exceptional aesthetic, scientific and educational values (Vujičić et al., 2011). If they are characterised by clear geomorphological features, they are called geomorphosites (Reynard, 2009; Carrión-Mero et al., 2020). Both have unique features for science, education and tourism. Brilha (2016) writes that they

---

[*] Corresponding author

occur *in situ* (e.g. glacial cirques, cliffs, deserts or erratic boulder) or *ex situ* (e.g. museums where geoheritage is collected, exhibited and preserved). Geosites can also be defined (Pasquaré-Mariotto et al., 2023) as "places where geological features or fragments of the geological environment are exposed on the earth's surface and can therefore be visited and studied". Gioncada et al. (2019) emphasise "the unique importance of outreach activities based on in-depth knowledge of the general and local geological significance of the proposed site".

Geosites can be as small as a single outcrop or as large and complex as the unique Dunajec gorge through the Pieniny Mountains. Fuertes-Gutiérrez and Fernández-Martínez (2010) divide them into five typological categories: point, section, area, complex area and viewpoint. Depending on their importance, they can be local, regional, national or global (Zorina and Silantiev, 2014). Geosites can also be distinguished according to their spatial appearance (Pasquaré-Mariotto et al., 2023): confined places (e.g. rock outcrops), linear features (e.g. faults), as well as features extending in the air (e.g. mountain peaks). A vantage point, a place from which one can enjoy a panoramic view of the surroundings, should not be missing from the last group. According to Migoń and Pijet-Migoń (2017) and Bruschi et al. (2005), this issue is neglected in geosite research.

Raising people's awareness of geoheritage enables them not only to understand the processes that have taken place and to anticipate those that will take place, but also to understand the relationship between man and nature, how he has affected the Earth and how Earth processes have affected man. This can lead to environmentally responsible attitudes/behaviours.

Cultural and geological heritage are often intertwined. An example related to the topic of this article are erratic boulders, sometimes named after deities (e.g. Trygław in Tychowo, the West Pomeranian Voivodeship), which were particularly worshipped in the past. Today, an educated and aware person is able to understand the world around her/him and appreciate the value of geoheritage. Unfortunately, it is impossible to recreate it on the scale of human life, which is why all initiatives aimed at preserving the geological heritage for future generations are so important.

Pałuki, known mainly as a region rich in archaeological (e.g., Pospieszny et al., 2017) and ethnographic objects, has a rich geoheritage. It is undoubtedly genetically linked to the presence and retreat of the last Scandinavian ice sheet in this area in the Upper Pleni Vistulian (Kozarski, 1995). The record of geomorphological processes and palaeoenvironmental conditions from this period, as seen by an expert in this region today, remains silent to the average tourist. However, there are numerous examples of interesting and scientifically valuable geological objects being made available to lay tourists in a simple, accessible and successful way (Mamoon, 2014; Miśkiewicz, 2016; Kubalikova et al., 2021; Zafeiropoulos et al., 2021; Evelpidou et al., 2022, Pasquaré-Mariotto et al., 2023). Also examples of Polish young glacial landforms and various forms of legally protected nature can be used for geoeducation and tourism in areas of natural value (e.g. Szyda and Karasiewicz, 2017; Górska-Zabielska and Kamieńska, 2017; Płoskonka, 2018; Górska-Zabielska, 2021).

Over time, they become geo-attractions, visited by masses of tourists who are not necessarily trained in the geosciences (e.g. the Niagara Falls in the USA and Canada, the Colorado River Canyon in the southwest of the USA or in Poland: the Pieniny Gorge of the Dunajec River or the Land of 1000 Lakes in Masuria). Geotourism is concerned with providing tourists with access to geological and geomorphological objects, combined with age-appropriate geoeducation and obligatory geoprotection (e.g. Hose, 2005, 2012; Dowling and Newsome, 2006; Górska-Zabielska, 2020, 2021, 2022, 2023; Górska-Zabielska et al., 2022). It reads the signs of the times and provides a new, diversified tourist offer. There are, e.g., examples in the literature of ecological reclamation of abandoned post-mining areas and their transformation into recreational areas (e.g. in the Upper Silesian Coal Basin in Poland – Gaidzik and Chmielewska, 2020), natural areas (e.g., in the German-Polish UNESCO Global Geopark Muskau Arch https://www.muskau-arch.eu/ - Koźma, 2011) geo-educational areas (e.g. Koźma, 2011; in the Sadowa Góra quarry area in southern Poland https://www.jaworzno.pl/osrodek-edukacji-ekologiczno-geologicznej-geosfera/ - Chećko et al., 2022) and geotourism (e.g. in the Świętokrzyskie Mountains in the central Poland – Pabian, 2015; in southern Ecuador - Carrión-Mero, 2021; on the Serifos Island in Greece – Vlachopoulos and Voudouris, 2022). The role of water reservoirs in urban areas should not be forgotten. According to Szafarczyk and Gawawałkiewicz (2023), the use of pits created after mineral extraction in urban areas as water reservoirs not only increases water retention, but also has a positive impact on the standard of living of urban dwellers by lowering the air temperature in the vicinity of the reservoir. An additional benefit of this solution is that it also reduces the cost of maintaining green spaces.

Geotourism offers tourists/recipients a range of activities, products, services and infrastructure aimed at promoting geosciences. An important element of geotourism is the educational function of georesources/tourist geoattractions (e.g. Wolniewicz, 2021; Kubalikova et al., 2021), as it satisfies the need to learn new things that characterise a geotourist. Dissemination and promotion of georesources is achieved through local governments or local action groups in widely accessible and free festivals, competitions, workshops, geowatching, orienteering walk, hiking/biking rally. There are well-known ideas for learning through play (e.g. Garofano, 2015; Rodrigues et al., 2015; Żbikowski, 2018). All of them may be an effective driving force for the sustainable development of local government units located mainly in peripheral tourist areas.

South-eastern Pałuki has facilities that would provide opportunities for the development of geotourism. It is worth knowing good models - examples of sustainable development of the region based on inanimate natural objects (e.g. Fassoulas et al., 2012; Boškov et al., 2015, Orłowska, 2017; Suzuki and Takagi, 2018; Górska-Zabielska, 2021b, 2023, Drinia et al., 2022 , Stolz and Megerle, 2022, Górska-Zabielska et al., 2022) - to make them more realistic also in Pałuki.

PURPOSE AND METHODS OF RESEARCH

Taking into account numerous examples from Poland and the world of tourist development of geological heritage objects, on the one hand, and the lack of awareness among the inhabitants and authorities of the study area that this can also be realised in the south-eastern part of the Pałuki region, on the other hand, the authors aimed to demonstrate that it is possible to diversify the tourist offer with abiotic objects of the area.

To this end, they investigated the potential of the geodiversity of the south-eastern part of Pałuki for the development of geotourism. In this article, they present the results of their field research and focus on analysing the valorisation of selected geosites for the sustainable development of the region, of which geotourism is a tool (e.g. Ehsan et al., 2013; Newsome and Dowling, 2018). According to Chrobak et al. (2021), a geodiversity assessment is the first step in identifying sites with geotourism potential. In response to the needs of geotourists to learn about the region's interesting geological past or to increase their knowledge of the region's geodiversity, the authors will use the highest-rated geosites to propose two new geotourism routes under the common name of "Geodiversfied Pałuki". The adopted objectives require the use of specific research methods. In the first stage, field research was carried out, which included:

- location (smartphone application "my GPS location") and inventory of geosites according to the adopted field protocol; special features that will be used in the valorisation analysis were recorded; in the case of an erratic boulder, the petrographic type and the type (leading or indicator) of the Scandinavian erratic were recorded (Meyer and Lüttig, 2007); the estimated volume of the boulders was calculated using Schulz's formula (1999): $0.523 \times$ length $\times$ width $\times$ height and weight - assuming that 1 m3 = 2.75 t. At this stage, photographic archiving (Czubla and Petera-Zganiacz, 2019) and geowatching (Garofano, 2015) methods were used,

- records of geomorphological processes from the Upper Vistulian period and contemporary morphogenetic processes affecting the environment of the study area were identified,

- particular attention was paid to traces of subglacial impacts on the parent rock, subglacial and inglacial impacts on rock loading during glacial transport, and post-positional processes, i.e. modern morphogenetic processes modifying the silhouette of erratic boulders. In turn, within the framework of the chamber work, methods have been carried out and will be presented in this thesis, consisting of

- valorisation, using the point bonitation method, of 12 geosites representing natural environments (glacial, glacilimnic, glacifluvial and crenological) and 2 anthropogenic ones, but with a close link to the geoheritage; the categories and evaluation criteria (Table 1), although modelled on well-known and numerous sources (Coratza and Giusti, 2005; Serrano, González Trueba, 2005; Reynard et al., 2007; Bruschi and Cendrero, 2009; Pena dos Reis and Henriques, 2009; Pereira and Pereira, 2010; Fassoulas et al., 2012; Kubalíková, 2013; Štrba et al., 2015; Brilha, 2016; Bollati et al., 2016; Warowna et al., 2016; Carrión-Mero et al., 2021;), have been modified to suit the local context, mainly due to the nature of the young glacial relief, the rich cultural heritage and the good development of tourism infrastructure such as hotels and restaurants. The categories and evaluation criteria have been also adjusted to suit the purpose of this study.

Table 1. Criteria and categories of valuation analysis of selected geosites in south-eastern Pałuki

CATEGORIES		CRITERIA			
		Points			
		0	0,25	0,5	1
1	Geomorphological values				
1a	Current state	totally destryed	transformed by a man or/and by natural processes	transformed exclusively by natural processes	lack or low state of transformation
1b	Educational value	low	only relevant for experts	mean	high (e.g., several educational elements on a boulder)
1c	Geomorphological representativeness	invisible	low visible	visible	perfect example
2	Added values				
2a	Aesthetic values	-	low	mean	high
2b	Cultural value	lack		there are legends about the object; the boulder serves as a boundary	there are legends and are related to geological and geoarchaeological heritage
2c	The vicinity of an object of animate nature protected by law	lack	a monument of inanimate nature	NATURA 2000 area/natural and landscape complex/ protected landscape area	nature reserve
3	Utility values				
3a	Availability	lack	a hiking trail leading on an unpaved road, or only an unpaved road	paved road	paved road (asphalt)
3b	Visibility	invisible	limited by trees or other obstacles	visible only from a distance	possibility of close observation
3c	Level of security	strict security - no access	occurring in the cover of the form of protection	no protection	shaping appropriate pro-environmental attitudes
3d	Hotel service within distance	more than 25 km	25-10 km	10-5 km	less than 5 km
3e	Restaurant service within distance	more than 25 km	25-10 km	10-5 km	less than 5 km
3f	Special offer	Lack	local	leaflets	special offer in INTERNET

The maximum number of points to be obtained in this evaluation analysis was 12, while in individual categories it could be reached, taking into account: - Geomorphological values - 3 points, - Added value - 3 points, - Utility values - 6 points,

- dissemination of geological knowledge and promotion of geotourism by proposing new, unique in the research area, two geotourist trails under the common name of "Geodiversified Pałuki".

We intend to promote the most geotouristically attractive sites identified in the valorisation analysis by including them in the author's geotourist trail. The geoproduct can only fulfil its potential if it is properly and effectively publicised and integrated into the network of other local trails. They must be equipped with a well-designed, clear informative panel with a small amount of text, different levels of text and descriptive graphics (e.g. Kicińska-Świderska and Słomka, 2004; Stolz and Megerle, 2022). It is worth supplementing the board with a QR code, where the interested geotourist will receive an additional dose of knowledge. More traditional forms of knowledge transfer should not be forgotten either - tourists should have access to leaflets or brochures discussing the material, educational, environmental and cultural values of the geosite and its immediate surroundings. Upgrading the skills of local guides and teachers will make it possible to organise walks with a geo-interpreter, who, by providing experiential guided tours, will present the geological past of the region in a professional, engaging way that can be understood by the layman (see e.g. Tetik, 2016, Van Geert, 2019, Górska-Zabielska, 2023).

The social responsibility of science through its innovative popularisation is a very current trend in today's world. Attractive geo-objects, by conveying specialised knowledge (e.g. Macadam, 2018; Pasquaré-Mariotto et al., 2023), reveal the backstage of the geological past without destroying it and preserve it for future generations.

Criteria and categories of valuation analysis

An extremely important stage of the evaluation analysis is the selection of categories and criteria for assessing the geosites in the context of their current functioning and future participation in the development of geotourism. Therefore, categories and criteria for assessing the geotourism attractiveness of the previously presented geoheritage objects qualified for analysis have been established. At this point, the authors' contribution to the creation of a set of evaluation criteria should be clearly emphasised. The authoresses followed known examples from the literature (e.g. Pereira et al., 2007; Kubalíková, 2013; Brilha, 2016; Górska-Zabielska et al., 2019; Saurabh et al., 2021; Fancello et al., 2022; Marescotti et al., 2022). However, due to the specificity of the research area, they modified these parameters in relation to the characteristics and uniqueness of geosites in the young glacial relief which is abundant in the south-eastern part of Pałuki (see Sisto et al., 2020). Such modifications have been made in criteria 1b (educational value), 1c (geomorphological representativeness), 2b (cultural value; there are legends about the object; the area is rich in geoarchaeological heritage) and in criteria 3d and 3e (utility values; hotel and restaurant at a distance corresponding to the tourist infrastructure development of the study area).

These adjustments were made to suit the purpose of this study. The categories and criteria are listed in Table 1. The categories were divided into three groups according to geomorphological values (enabling knowledge transfer) and additional and utility values (meeting the needs of tourists). The evaluation criteria were described in detail along with the points that could be allocated. A geosite could receive between 0 and 1 point in each of the 12 categories. A maximum of 12 points could be awarded to each surveyed site in the overall analysis (Table 2).

Table 2. Assessing the Pałuki geosites according to their geotourism attractiveness
(Red font of digits indicates the highest score in a particular group of values)

Object No.	Geomorphological values				Added values				Utility values							sum
	1a	1b	1c	Σ	2a	2b	2c	Σ	3a	3b	3c	3d	3e	3f	Σ	
1	0,5	0,25	1	1,75	1	0	0	1	0	1	0,5	0,5	0,5	0	2,5	5,25
2	0,25	0,25	0,5	1	1	0	0	1	0,25	1	0,5	0,5	0,5	1	3,75	5,75
3	0,25	0,25	1	1,5	1	0	0	1	0,25	0,25	0	0,5	0,5	1	2,5	5
4	1	1	0,5	2,5	0,25	0	0,5	0,75	0,5	1	0,25	1	1	0	3,75	7
5	0,25	1	1	2,25	1	1	0,5	2,5	1	0,5	0,25	1	0,5	1	4,25	9
6	0,25	1	1	2,25	1	1	0,5	2,5	0,25	1	0,25	0,5	0,5	1	3,5	8,25
7	0,5	0,25	0,5	1,25	0	0,5	0	0,5	1	1	1	1	1	0	5	6,75
8	0,25	0,25	0,25	0,75	0	0	0	0	1	1	1	1	1	0	5	5,75
9	1	1	1	3	1	0,5	0,5	2,0	0	0,25	0,25	1	1	1	3,5	8,5
10	1	1	1	3	0,25	1	0	1,25	0	0,25	1	0,5	1	1	3,75	8
11	1	1	1	3	1	1	0,5	2,5	0,25	1	0,5	0,5	0,5	1	3,75	9,25
12	1	1	1	3	1	1	0,5	2,5	1	1	0,25	1	1	1	5,25	10,75

Point ranges: 5-7 [red]   7,25-9,50 [yellow]   9,75-10,75 [green]

Geomorphological values: 1a - Current status, 1b - Educational value, 1c - Geomorphological representativeness.
Added values: 2a - Aesthetic values, 2b - Cultural value, 2c - Neighbourhood of an animate nature object protected by law.
Utility values: 3a - Accessibility, 3b - Visibility, 3c - Degree of protection, 3d - Hotel services at a distance from the boulder, 3e - Restaurant services at a distance from the boulder, 3f – Promotion. Geosite number: 1 - erratic boulder in the forest buffer zone on the slope of Jabłowska Hill, 2 - anthropogenic lake in the area of the former limestone quarry in Piechcin, 3 - artificial geological outcrop in the area of the Wapienno Mining Plant, 4 - erratic boulder on the high, western shore of the Głęboczek Wielki Lake, 5 - St Hubert's Spring, 6 - erratic boulder "Kamienny Dom", 7 - erratic boulder in Czewujewo, 8 - a heap of erratics in Czewujewo, 9 - subglacial trough of the Lake Ostrówieckie, 10 – the "Turek" Hill, 11 – the Pniewy Lake, 12 – the Rogowskie Lake

Study area and its Quaternary geodiversity

According to the physical and geographical regionalisation of Macias et al. (2021), Pałuki is located within the macroregion of the Greater Poland Lake District (315.5) and its mesoregions (Figure 1) in the northern part of the Żnińsko-Mogińskie Lake District (315.58), and the eastern part of the Chodzieskie Lake District (315.53). As noted by Skoczylas (2006), a small northern and northeastern part of Pałuki lies in the Toruń-Eberswald pradolina, which, with reference to Kot et al. (2021) denotes the mesoregion: Central Noteć Valley (315.34) and Toruńska Valley (315.35).

The etymology of the word 'Pałuki' has been explained in various ways. Researchers (e.g., Kozierowski, 1924, cf. Adamczewski, 2002) are of the opinion that Pałuki is a topographical name. Since Pałuki (Polish *łuk* – Eng. *arch*) has a word-forming segment that means 'arch', the gently curving hills of this young post-glacial landscape could have given the region its name. There is also possibility (Świrko, 1964), that the name Pałuki originates from an old Slavic root: łęg / lye / łuk / łuh - meaning wet grass or marshes situated over a bend or arc of a river or lake. There is also an idea that the word Pałuki derives from the name of fishing nets, 'pałuk', which can still be found in the area. The study area covers four municipalities: Barcin, Łabiszyn, Gąsawa and Rogowo in the Żnin county and the Dąbrowa municipality in the adjacent Mogilno county (Figure 2). They belong to the Kujawsko-Pomorskie Voivodship. The twelve surveyed geosites are located in this region.

During the Pleistocene, a geological epoch that lasted from about 2.6 million to 11.7 ka BP, the Scandinavian ice sheet entered Poland several times. Its last maximum extent in the vicinity of Leszno during the Vistula Glaciation (also called the Weichselian) dates back to about 20 ka BP (= thousand years before present; Kozarski, 1995). As a result of climate change, the ice sheet began to retreat northwards. It was not a uniform movement, but an oscillating one - the ice front stopped along the way, first north of Poznań (during the Poznań subphase) and then for a short time near Brzeźno, each time leaving/revealing a hilly relief.

The deglaciation of the Pałuki area occurred between 18.8 ka BP (Poznań subphase) and 17.7 ka BP (Chodzież phase) (Kozarski, 2005). The shrinking ice sheet left behind many different shapes and deposits. This young glacial landscape is basically characterised by a moraine plain with little diversified relief (flat moraine plateau) (Sydow and Machowiak, 2004). The latitudinal valley of the Wełna River (marginal valley origin) and the associated system of lake channels cut into the plateau create a more varied landscape. Today they are filled with the waters of Tonowskie, Wolskie and Rogowskie Lakes, as well as Sobiejuje Duże and Mały Żnińskie Lakes. Larger deviations are associated with the moraine hill zones of the recessionary Ryszewo Oscillation (Kozarski, 1962) on the southern
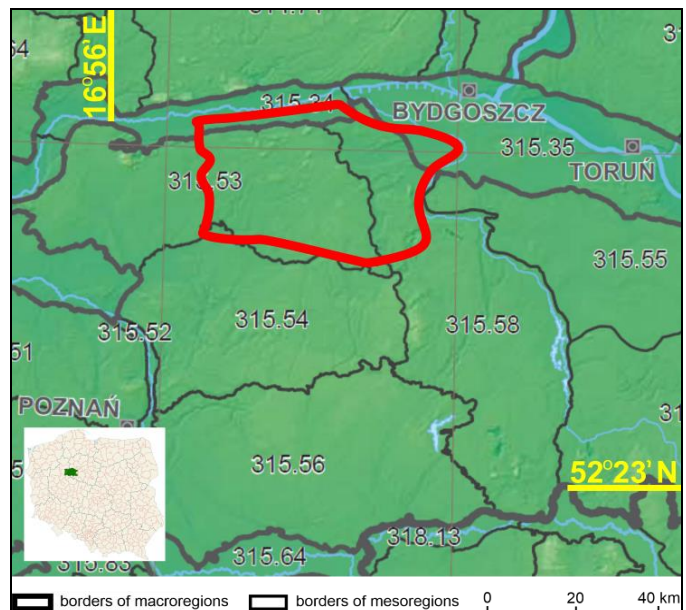

Figure 1. Location of the Pałuki region (red line) against the background of the macro- and meso-regions of this part of Poland. The study area is located in the SE part of Pałuki. After: Macias et al. (2021), changed
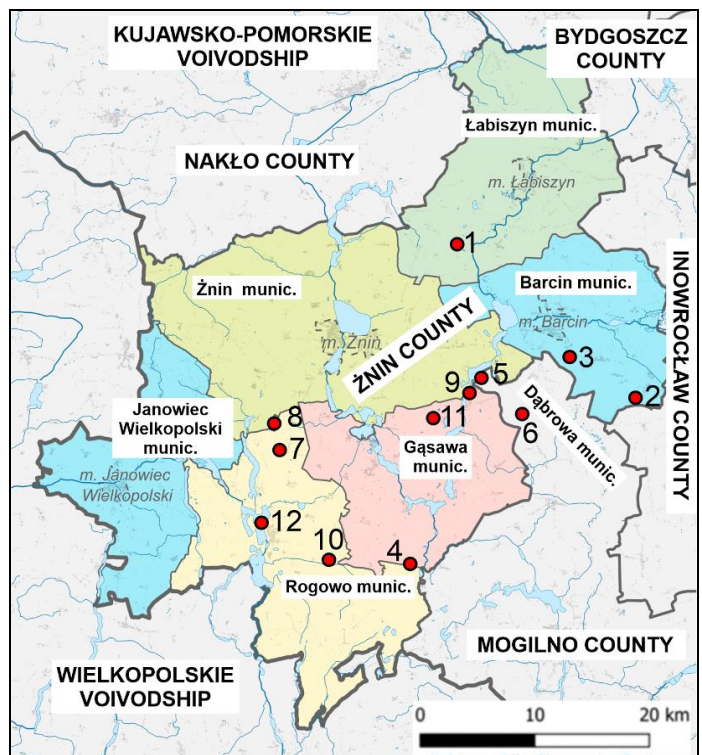

Figure 2. Location of 12 studied geosites within 4 municipalities Łabiszyn, Barcin, Gąsawa and Rogowo in the Żnin county and within the Dąbrowa municipality in the Mogilno county, in the south-eastern Pałuki. Numerical explanations: 1 – erratic boulder in the forest buffer zone on the slope of Jabłowska Hill, 2 – anthropogenic lake in the area of the former limestone quarry in Piechcin, 3 – artificial geological outcrop in the area of the Wapienno Mining Plant, 4 – erratic boulder on the high, western shore of Głęboczek Lake, 5 – Saint Hubert's Spring, 6 – erratic boulder "Stone House", 7 – boundary erratic boulder in Czewujewo, 8 – a heap of erratics in Czewujewo, 9 – subglacial channel Ostrówieckie Lake, 10 – "Turek" Hill, 11 – Pniewy Lake, 12 - Rogowskie Lake

edge of the study area (south of Rogowo and Gąsawa) and the Chodzież phase (17.7 ka BP, Kozarski, 1995) in the north of the region. There is no shortage of glacial (fluvioglacial) accumulation forms (outwash plains, kames) and erosional forms

(e.g. subglacial channels, now mostly used by streams, meltwater valleys, depressions left by dead ice - meltwater ponds). In addition to glacial and fluvioglacial processes, the relief includes complexes of fluvial, crenological, aeolian and swamp formations (Sydow and Machowiak, 2004), which together give this small area great geodiversity. In the Pałuki area, there are numerous forms under legal protection (Nature Protection Act, 2004). Among the forms of protection (http://crfop.gdos.gov.pl/CRFOP/index.jsf) we can mention the Żnińskie and Rogowskie Lakes Protected Landscape Area, natural and landscape complexes of lakes in the Rogowo Commune, Natura 2000 areas of the Gnieźnieńskie Lake District and the Barcińsko-Gąsawska Ostoja, the Długi Bród ecological utility and numerous monuments of abiotic nature (erratic boulders). In the latter group, three erratic boulders in the western and south-western part of Pałuki (Górska-Zabielska, 2010) and nine in the eastern and northern part of the region (Górska-Zabielska, 2022) should be mentioned, as well as those included in the Central Register of Geosites of Poland (managed by the Polish Geological Institute - National Research Institute). Many of the listed forms occur within forest communities.

Finally, it is worth mentioning that Pałuki is a region rich in archaeological and ethnographic sites. The prehistoric cultural heritage in the immediate vicinity of the lakes is well known to archaeologists. In the context of the functioning Archaeological Museum in the nearby village of Biskupin (https://biskupin.pl/), there is no need to expose these inaccessible geoarchaeological resources to anthropopressure (cf. Sisto et al., 2020).

Overview of geosites in south-eastern Pałuki

Given the large number of georesources in the study area and taking into account the above definitions, it was decided to characterise 12 geosites in detail. In the opinion of the authoresses, their educational and aesthetic value distinguishes them from the other georesources of the studied area. The authoresses know the region with its different georesources and have decided to disseminate only 12 of them, which meet the categories (Table 1). They are discussed in the order given in Figure 2.

1. Erratic boulder in the forest buffer zone on the slope of Jabłowska morainic hill (17°51'01" E, 52°54'52" N)

The unnamed boulder (Figure 3) on the south-eastern slope of Jabłowska Hill (152 metres above sea level) is the indicator erratic boulder - Åland rapakivi granite - with a characteristic internal structure and texture. It was eroded by the Scandinavian Ice Sheet at the base of today's Åland Islands on the Baltic isthmus between Stockholm and Helsinki. Its measured dimensions are: length 3 m, width 2.31 m, height 1.53 m. The converted dimensions (according to Schulz, 1999) are: volume 5.55 m³, weight 15.25 t. The boulder has not been moved since its glacial deposition some 18 ka BP, so it is *in situ*, which is its greatest scientific and cognitive value. The boulder is in the middle of an agricultural field, making ploughing difficult. The owner of the field wanted to remove it, but the dimensions of the geological object exceeded his imagination. Today, unearthed, it is surrounded by a collar of sediment. It can only be reached in winter (Figure 3), when the vegetation is not growing.

Figure 3. The erratic boulder on the arable slope of Jabłowska Hill is accessible only in winter

The erratic boulder in question is not legally protected, which may indicate that it was excavated in the recent past (Górska-Zabielska, 2022). However, it was long enough for lichens to colonise its surface in some places.

2. Anthropogenic Piechcin lake in the area of a former quarry

The Piechcin Lake (Figure 4) is a former mining pit, which was part of the "Kujawy" Mining Plant. The plant's activities covered the area occupied by the Lafarge Cement SA - ZG "Kujawy" mining and processing plant in Bielawy, with a total area of approximately 1,092.5 ha (Ostręga et al., 2011). The Piechcin mine was closed down in 1966 following protests from local residents. Until then, the exploitation of the deposit below the groundwater level determined the recultivation of the excavation towards the water. The area around the mine was reforested. Another source (www.polskaniezwykla.pl) mentions that "an old quarry, closed since the 1960s, created a lake with an area of approximately 4.5 ha and a maximum depth of 25 m. White limestone rocks give the water a unique bright turquoise colour. Visibility ranges from 8 to 12 m. After rain, visibility is reduced by limestone deposits washed down from the slopes. At the bottom of the reservoir there are remains of the former mining operations, including pipes, steel plates, stairs, but also two sunken Fiat 126 cars, car tyres, a wooden 6.5 metre cabin sailing boat and a 12-metre sea yacht". At present, the artificial lake has been developed as a local diving centre, so the reservoir is already being used for recreation and relaxation.

3. Artificial geological exposure on the premises of the Wapienno Mining Plant

Mining in the Pałuki area goes back more than 150 years, resulting in numerous forms of anthropogenic sculpture.

One of them is an artificial exposure in the area of the largest stone raw material mine in Poland (Ostręga et al., 2011) - the "Wapienno" limestone mine belonging to the "Kujawy" Mining Plant (Figure 5).

It is an open-cast mine (excavation depth 60-100 m, ultimately 120 m) of Jurassic limestone raw material for the needs of the cement industry, with an annual mineral extraction of approximately 5 million tonnes (Pikies, 2009). The limestones and marls (marine origin) in the roof of the excavation are covered by Pleistocene sediments: the Wapienno Formation (fluvial sediments) in the lower part, and the Barcin Formation (glacial sediments) in the upper part. The mine is located on a moraine plateau formed by a thin ground moraine.

Figure 4. The anthropogenic lake
in Piechcin is today a local diving center

Figure 5. The relief of anthropogenic genesis in the open pit of the "Wapienno" Jurassic limestone mine, belonging to the "Kujawy" Mining Plant, has great potential for the development of local geotourism

The Wapienno excavation will soon be connected with the Bielawy excavation (Kupczyk, 2010, cf. Drążek et al., 2010). The author adds that: "Over the course of more than 100 years, the quarries have managed to blend into the landscape of the Barcin area. These quarries are perceived as an integral part of the landscape with certain cultural and utilitarian values that enrich the geodiversity of the environment. For a naturalist, ecologist and biogeographer, they are a special research area". As the above-mentioned author further points out, areas transformed by humans and initially devoid of life are slowly coming back to life, with the appearance of plants and animals (e.g. mouflons from Corsica or Sardinia, acclimatised for hunting purposes; Ostręga et al., 2011). At present, the quarry itself is not open to the public (it is not possible to approach the site legally), except from a vantage point with a magnificent view of the mine. In the future, access to the mine site could be developed, not only because of its unique anthropogenic relief, but also because of the exposed geological riches. It is a geosite registered in the Central Register of Geosites of Poland (http://geostanowiska.pgi. gov.pl/gsapp_v2/ObjectDetails.aspx?id=202) and was elaborated by Pikies (2009). The concept of recultivation and final development of the "Wapienno" limestone mine is presented by Ostręga et al. (2011). Figure 6 comes from this work, which clearly shows the planned functional zones for the development of the post-mining area.
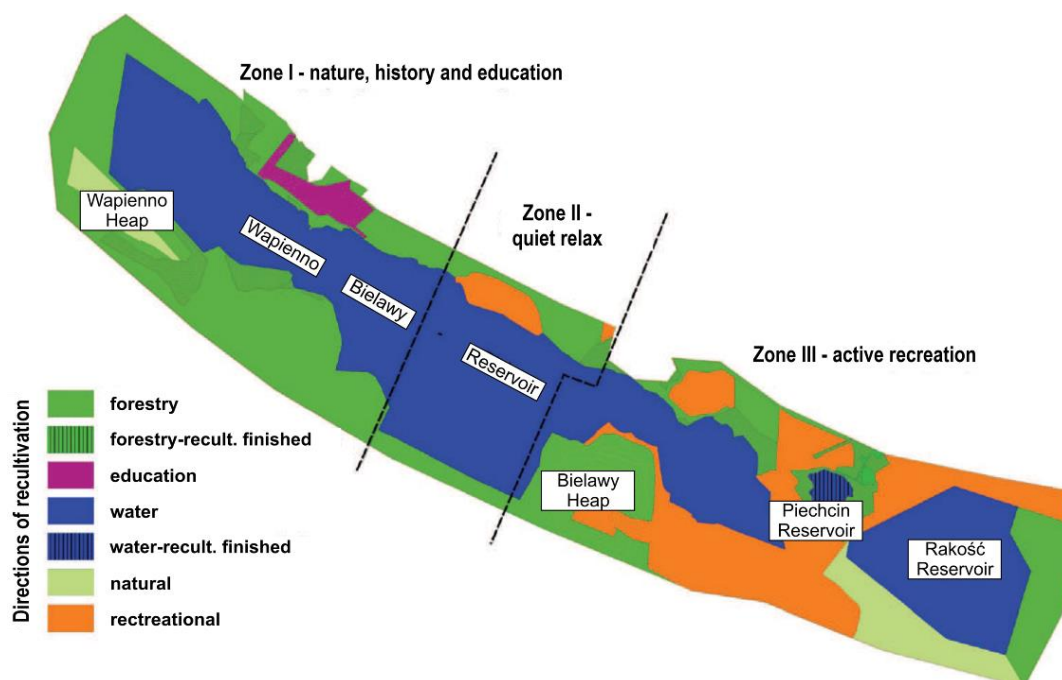

Figure 6. Designed functional zones for the development of the post-mining area
of the Kujawy limestone mine reclamation plant (Source: Ostręga i in. (2011), changed)

4. An erratic boulder on the high, western shore of the Głęboczek Wielki Lake (52°42'06.3"N 17°48'10.5"E)

The unnamed boulder (Figure 7), located on the western, forested shore of the Głęboczek Wielki Lake (52°42'06.9"N 17°48'10.7"E), is the indicator erratic boulder - Åland rapakiwi granite - with characteristic feldspathic ovoids and round quartz crystals (Czubla et al., 2006). Its dimensions are: length - 1.2 m, width - 0.9 m, height - 0.8 m. The following conversions are: volume - 0.45 m^3, weight - 4.2 tonnes. The erratic boulder is anchored in the ground on the high shore of the Głęboczek Wielki Lake. It bears traces of anthropogenic destruction - fragments of a broken boulder lie nearby. This fact can be used in the geointerpretation of the site, drawing attention to its geoeducational, geoconservation and pro-environmental significance. Access to the boulder is difficult as there is no path to it. The area where the erratic boulder is located is not protected by law, but it is in the immediate vicinity (from the north) of the Gąsawka Spring Water Reserve, which is located within the Żnińskie Lakes Protected Area and the NATURA 2000 - Ostoja Barcińsko-Gąsawska Habitat Area. The erratic boulder also has great geotourism potential, as its *in situ* location in the eastern branch of the Żnin subglacial trough is of great scientific and cognitive value.

5. Saint Hubert's Spring (52°49'37.59"N 17°51'43.41"E)

A small spring (Figure 8) emerges from the eastern slope of the Ostrów Gorge (near the town of Wiktorowo). The spring, located in Pleistocene formations - fluvioglacial sands and gravels of the Vistula glaciation (Uniejewska and Nosek, 1990), has been walled up and is currently located in a chapel built of erratic rocks of different sizes and finishes. The water flowing out at a rate of 8 litres per minute turns the underlying rocks a rusty colour, indicating that the water has a very high iron content. There is a legend associated with the chapel, according to which Borislav was an avid hunter and killed all the animals he encountered. The hunt was very successful, which worried his mother, who said that Satan himself must be behind it. When Borislav went hunting and missed Sunday Mass, his mother prayed fervently for him. Borislav saw a beautiful deer, which turned out to be led by Lucifer himself. The deer attacked him and the wounded Borislav could not reach the water. Then, thanks to his mother's prayers, a spring gushed out of the ground and, after washing his wounds, Borislav made an immediate recovery. Since then, the site has become a place of worship for the locals, who have built a chapel there dedicated to St Hubert - the saint patron of hunters (see the plaque next to the site for more information). It is worth mentioning the written records of Pałuki legends and folk tales. They contribute to a better understanding of the natural and, above all, immaterial cultural heritage of the area. The St Hubert's Spring, elaborated by Szarafin (2016), is registered in the Central Register of Geosites in Poland. (http://geostanowiska.pgi.gov.pl/gsapp_v2/ObjectDetails.aspx?id=4321).

Figure 7. The indicator erratic boulder (Åland rapakivi) on the western, high shore of the channel Głęboczek Wielki Lake, which is visible in the background of the photo

Figure 8. St Hubert's Spring

6. "Stone House" erratic boulder (17°54'50"E, 52°48'12"N)

Located in the forest between the villages of Annowo and Szczepankowo, it is the largest erratic boulder in Pałuki (Figure 9). Its measured dimensions are: length - 4.2 m, width -3.2 m, height - 2.5 m. However, the following conversions are: volume - 18.67 m^3, weight -51.35 t. From a petrographic point of view, it is most likely an anorthosite, which has its outcrop in the area between Uppland and the Åland Islands (Górska-Zabielska, 2022). From there it was carried by the ice sheet during the Vistulian glaciation about 18 ka BP and deposited on its retreat after the Ryszewo Oscillation in the same

place where it is found today. Its *in situ* location is the most important scientific asset of the site. Górska-Zabielska (2022) draws attention to the rounded edges of the boulder, which perfectly illustrate the destructive processes that took place in the glacial environment in the past. However, in the upper part of the rock, there are traces of contemporary morphogenetic processes that have sculpted the surface of the studied object in the form of exfoliation (surface weathering, mainly physical). Unfortunately, the rock shows anthropogenic alteration, as much of it has been splintered, making the site less valuable. The "Stone House", like many erratic boulders in Poland, is associated with the legend of an evil sorcerer who kidnapped children and turned his castle into an erratic boulder (there is an informative panel next to the site). It is not difficult to reach the object, as the boulder is located next to a forest path. There are also signs leading to the boulder, e.g. drawn on another erratic boulder (Figure 10). There are two informative panels with the same information next to the boulder. The table is not a sufficient source of knowledge, as there is no information about where such a large object appeared in the Pałuki area. The geoeducational information is fragmentary (size of the object, circumference, location and legend). It would be worthwhile to use good models (e.g. Górska-Zabielska, 2010, 2020, 2022, 2023; Stolz and Megerle, 2022) to improve the transfer of knowledge about this largest erratic boulder in the region.

Figure 9. „Stone House" erratic boulder – the biggest one in the Pałuki region

Figure 10. A signpost on an erratic boulder

Figure 11. Boundary erratic boulder in Czewujewo is located between fields, which belong to two farmers; the dotted line follows the boundary

The boulder is located in the Żnińskie Lakes Protected Landscape Area and is a monument of abiotic nature protected by law. It is also registered in the Central Register of Geological Sites in Poland (http://geostanowiska.pgi.gov.pl/gsapp_v2/ObjectDetails.aspx?id=4305). The elaboration was prepared by Szarafin (2013).

7. An erratic boulder in Czewujewo (52°46'48.8"N, 17°39'21.7"E)

The erratic boulder (Figure 11), located in the small village of Czewujewo (52°46'48.9"N 17°39'21.7"E), lies on the divide separating fields of two farmers. The object therefore has a boundary function. In the past, erratic boulders were not only used as building material, but were also associated with a cult or used for boundary purposes. Similar examples are known from literature, e.g. from the Drawskie Lake District (Górska-Zabielska and Kamieńska, 2017; Górska-Zabielska, 2021) and from the Gowarczów commune in the north-western part of the Świętokrzyskie Voivodeship (Górska-Zabielska et al., 2020). The erratic boulder in Czewujewo is a gneiss, extruded by the Scandinavian Ice Sheet from the base of the Baltic Shield, transported during the Vistulian Glaciation and deposited in the surrounding field about 18.5 ka BP (Kozarski, 1962, 1995). From there it was moved to its present location, most probably due to obstacles in the field work. Its measured dimensions are: length - 1.3 m, width - 0.8 m, height - 1.3 m. The converted dimensions are: volume - 1.94 m^3, weight - 3.2 tons.

8. A heap of erratics in Czewujewo (52°47'53.8"N 17°39'24.9"E)

Figure 12. A heap of erratics in Czewujewo - anthropogenic landform formed from boulders and gravel from surrounding fields

Figure 13. The impact of artistic and educational workshops at the Tomaszówka Ranch in Czewujewo. The pebbles come from the village's erratics
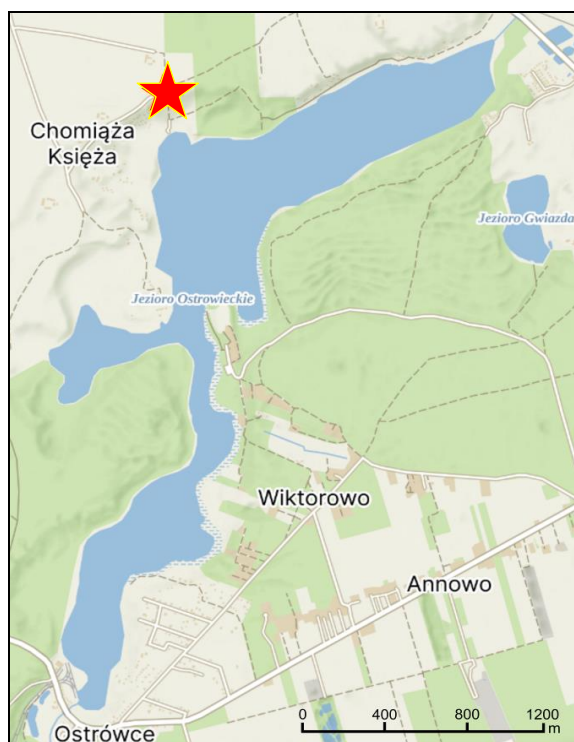

Figure 14. The Ostrówieckie Lake in a subglacial channel; ★ marks the place where the photograph (Figure 15) was taken (Source: https://pl.mapy.cz/zakladni? l=0&x=17.8567915&y=52.8198022&z=14)

In the northern part of the village of Czewujewo there is an anthropogenic heap, a heap of boulders and erratic pebbles collected from the surrounding fields during spring ploughing (Figure 12). At first glance, it might seem that such a collection of stone material would be a waste of money and of no use to anyone. Nothing could be further from the truth. The erratics of different size have great educational potential (geographical and geological workshops in nearby Tomaszówka Ranch (www.ranczotomaszowka.pl) and creative and artistic potential (painting on stone workshops there; Figure 13). The workshops are held for people of different ages under the supervision of qualified geo-interpreters and visual arts educators. By the way, it is worth noting that the Tomaszówka Ranch is an eco-agrotourism farm managed in a naturally valuable area (Jalinik, 2009).

9. Subglacial channel of the Ostrówieckie Lake

The Ostrówieckie Lake (Figures. 14 and 15), together with the long, deep lakes to its north and south, is located in a subglacial trough formed during the advance of the Scandinavian Ice Sheet about 18-20 ka BP. Channel lakes are formed "as a result of the erosion of subglacial water" (e.g., Boulton and Hindmarsh, 1987; Piotrowski, 1997; Rdzany et al., 2020). "The orientation of the trough is generally consistent with the former direction of movement of the ice sheet and perpendicular to its front" (Jaroszewski et al., 1985). When the blocks of dead ice, buried in the fluvioglacial sediments of all hollows (the subglacial channels as well), began to melt away as the ice sheet retreated, they were filled with meltwater and, over time, flowing surface water.

According to Choiński (2007), the area of the lake is 157.5 ha and its maximum depth is 28.6 m. The site on the Ostrówieckie Lake in Chomiąża Księża was chosen to investigate the geotourism potential of the study area because of its unique vantage point (Figure 15). From the terrace of the small Brzezina Resort, a 2.5 km long subglacial trough and the Ostrówieckie Lake water filling it, can be seen to the south (Figures. 14 and 15). So that not only the guests of the recreation centre can see this impressive view, a public viewing platform should be built (like the one in Lubin on Wolin Island, NW Poland, from which one can see the reverse delta of the Świna River). The local branch of the State Forest could be interested in the idea of such a geotouristic development of this place. The legend of the fishermen's island (Figure 15) on the Ostrówieckie Lake is another attraction (Malinowski, 2023).

Figure 15. View towards the south along the channel Ostrówieckie Lake from the Brzezina Resort terrace ⭐. The islet visible in the photo is shrouded in the legend of its angler

Figure 16. The small hill "Turek" (indicated by an arrow) - within the end moraines of the recessionary Ryszewo Oscillation of the Vistulian glaciation - is visible in background of the picture

10. „Turek" (pol. - a resident of Turkey) Hill

It is a small hill (125.6 m above sea level) located between the towns of Gałęzewo and Ryszewko, near the buildings of the Gałęzewko Colony. This place was once called "Sahara" because of its sandy soil. It belongs to the series of terminal moraines of the Ryszewo Oscillation of the Vistulian glaciation in this area (Figure 16). Although "Turek" is not the highest peak in Pałuki, it has its own history and legend. According to the legend, the hill was built out of sand by Turkish warriors on the orders of their leader, whose son had been kidnapped by the Pałukis and who had set him conditions - to leave the land of the Pałukis and not return, and he would get his son back.

The chief ordered the warriors to build a hill to show their strength. However, the Pałukis did not give in, and the Turkish units that followed were killed on unknown ground. The chieftain retreated and the hill remained a symbol of love for Pałuki and the courage of its inhabitants. According to oral tradition, during the Second World War the Germans built an observation tower on the top of "Turek" Hill, which also served as a triangulation tower. The tower was demolished many years ago. In the 1970s it was decided to reforest the hill, as its sandy soil made it unsuitable for agriculture (www.ryszewo.pl). The area is now privately owned.

11. Pniewy (or Pniewskie) Lake

The Pniewy Lake (Figure 17) is of glacial origin, i.e. formed as a result of melting ice (blocks of dead ice) in sediments, deposited on the foreland of the shrinking Vistulian ice sheet.

Figure 17. Pniewy Lake on an archival photo from 1936 (Source: Zwierzykowski, 2021)

According to Choiński (2007), the area of the lake is about 21 ha and the maximum depth is 18.5 m. The beach area is developed for tourism and recreation for all those who want to get away from the hustle and bustle of the city. No wonder, as the lake is surrounded by a forest and has very clean water, and the island in the lake adds to its charm.

Malinowski (2010) describes a legend that explains the creation of a tree-covered island in the middle of the Pniewy Lake (Figure 17). On the shore of the lake there used to be a rich nobleman's manor owned by the wise Pniew. He also had a daughter, Bogumiła, who was famous for her helpfulness. On the other side of the lake lived an impoverished nobleman who had a son, Gniewosz. Both men treated others badly. One day Bogumiła and Gniewosz met by chance. The boy immediately fell in love with the girl and tried to propose to her, but the engagement was rejected. Soon Bogumiła married another man and Gniewosz decided to take revenge. During the wedding party, he sailed to the Pniewo estate and set fire to the barn. All the wedding guests burned to death. Gniewosz escaped by boat and stopped in the middle of the lake to see the effect of his revenge. When he tried to swim away, it proved impossible. Soon his boat began to turn into a motionless island. He jumped out and tried to swim, but his legs began to grow into the ground and he turned into a tree. This was his punishment for killing innocent people.

12. Rogowskie Lake

It is a post-glacial channel lake (Figure 18). Together with the neighbouring water bodies, it is under legal protection in the form of the Rogowo Lakes Protected Landscape Area. According to Choiński (2007), the lake has a surface area of 285.3 ha and a maximum depth of 14.3 m.

On the shore of the Rogowski Lake, there is a municipal beach with attractive leisure facilities refurbished in 2022.

The lake was known and used as early as the Lusatian Culture (Middle and Younger Bronze Age and Early Iron Age - c. 1300 BC - 400 BC; Pospieszny et al., 2017), as people were willing to settle on its shores and in the vicinity – the numerous red asterisks (Figure 18) show archaeological sites located there. The legend "Rogowo dyke" (https://www.radiopik. pl/?idp=100&idx=1084) tells about the interesting fate of the inhabitants of Rogowo.
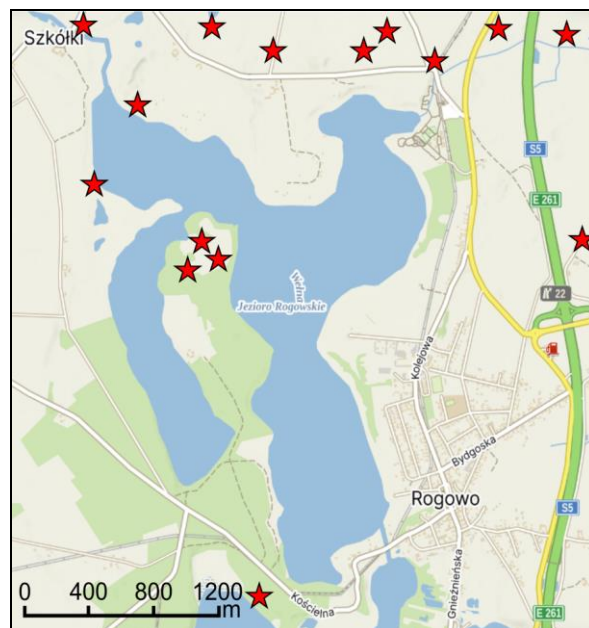

Figure 18. Archaeological sites (red asterisks) of the Lusatian culture on the shore of the Rogowskie Lake and in its vicinity (Sources: mapy.geoportal.gov.pl and Geoenvironmental map, sheet Rogowo, scale 1:50,000, Polish Geological Institute National Research Institute)

Valorisation analysis of twelve geosites in the study area

In the light of the conducted evaluation analysis (Table 2), taking into account the adopted categories and criteria (Table 1), in the south-eastern part of Pałuki there are objects with different assessments of geotourism attractiveness. The sum of the points of the evaluated geomorphological, added and utility values (Table 2) of twelve objects qualified for this analysis are in the range of 5-10.75. There are 6 objects in the research area with a value between 5 and 7. There are five geosites in the intermediate group, moderately attractive in terms of geotourism.

Only one site was rated as very attractive for geotourism. There is no geosite that has been given zero points due to the valuable geoheritage of the research area. In the category of geomorphological values, the sites with the highest score (3) are: the Ostrowieckie Lake subglacial channel (no. 9 in Table 2), the "Turek" hill (no. 10), the Pniewy Lake (no. 11), and the Rogowskie Lake (no. 12). The high geomorphological representativeness of these geosites explains their high score. Due to their excellent condition (undamaged), they have high geo-educational potential for interested public.

The second place in this category was taken by an unnamed erratic boulder on the western shore of Głęboczek Wielki Lake (No. 4). Its high score - 2.5 - is due to its good condition and high geo-educational potential.

Only one site - an anthropogenic lake on the site of a former limestone quarry in Piechcin - scored one point in the geomorphological values category of the assessment analysis. Its low score is due to the fact that it is not a natural creation, but the result of human activity. The lake is not an educational facility, but has been converted into a diving centre.

In the category of added value, the geosites with the highest number of points - 2.5 – are: the Rogowskie Lake (no. 12), St. Hubert's Spring (no. 5), the Pniewy Lake (no. 11), and "Kamienny Dom" erratic boulder (no. 6). The Rogowskie Lake is characterised by high aesthetic values, which are appreciated by tourists who like to choose it for water recreation. The lake is located within the Rogowo Lakes Protected Landscape Area, and numerous archaeological sites have been identified in several places on the shores of the lake and in its vicinity (Figure 19).

St. Hubert's Spring, the Pniewy Lake and the "Kamienny Dom" erratic boulder were chosen for their high aesthetic and cultural values (the objects are shrouded in legends, which are also related to geomorphology), as well as for their proximity to objects of living nature protected by law, which further increases their geotouristic and educational value.

The second place in this category went to the subglacial channel of the Ostrówieckie Lake (No. 9; 2.0 points). It provides beautiful panorama views, is shrouded in legend and is located within a protected landscape area. In the category of added value, there is one site that received the lowest number of points in the evaluation analysis - 0. This site is a heap of erratics in the village of Czewujewo. The low score is due to the lack of aesthetic values, there are no legends associated with it. The stony material was transported from the surrounding farmland due to obstruction in arable field.

The geoobject is not located in the immediate vicinity of one or more objects of biotic nature protected by law. In the third **category of utility values**, the geosite with the highest score is the Rogowskie Lake (No. 12) with 5.25 points. This score is due to the nearby and very attractive tourist development, rich cultural heritage, and excellent (compared to other geosites surveyed) promotion and accessibility.

Second in this category is St Hubert's Spring (No. 5) - 4.25 points. This high score is due to its excellent accessibility and very good promotion, as well as its proximity to tourist infrastructure.

The lowest scores (2.5 points each) in the category of utility values were obtained by: an artificial geological outcrop on the premises of the Wapienno Mining Plant (No. 3) and an erratic boulder in the forest buffer zone on the slope of the Jabłowska Hill (No. 1). The low rating of both sites is mainly due to poor accessibility (the boulder is almost impossible to reach), but also to the distance from hotels and restaurants. In the case of the boulder, an additional problem is the complete lack of promotion. Results of valuation analysis of geosites in south-eastern Pałuki.

As a result of the evaluation analysis carried out on twelve geosites in south-eastern Pałuki, in order to assess and valorise their geotourism potential for the development of geotourism, it should be noted that
- the highest rated geosite is the Rogowskie Lake (No. 12, Table 2), which received 10.75 points (out of 12 possible points),
- the lowest rated geosite is the artificial geological outcrop in the area of the Wapienno Mining Plant (no. 3, Table 2), which received 5 points (out of 12 possible).

The Rogowskie Lake is exceptionally attractive compared to other sites in the area. It is the only one of the 12 geosites surveyed to receive points in all but one category. Moreover, the lake gained this attractiveness thanks to the highest score (5.25 points) in the category of utility values. In the category of geomorphological values, the Rogowskie Lake was placed with the maximum number of points (3 points) in one place with the subglacial trough of the Ostrówieckie Lake (No. 9), the "Turek" Hill (No. 10) and the Pniewy Lake (No. 11). The Rogowskie Lake is valuable from the point of view of prehistoric cultural heritage; there is also a legend connected with it, which mentions post-glacial surface deposits.

The second most attractive object according to the evaluation analysis is the Pniewy Lake, which scored 9.25 points. Like the Rogowskie Lake, it received the maximum number of points in the category of geomorphological values. It lost the most points due to its low score in the utility value category (long distance from restaurants and hotels). St Hubert's Spring came third in the analysis. Although it did not score full points for geomorphological values, the location of the site close to restaurants and hotels, as well as the high score for added value, proved decisive. The fourth place with the highest score - 8.25 points - was occupied by the erratic boulder "Kamienny Dom". This geosite could not achieve the maximum number of points in the category of geomorphological values because it was destroyed by a man. However, it has the highest score of any site in the added value category because of the nearby infrastructure. The rock loses points because of its low level of protection and also because it is located next to a tourist path, which undoubtedly facilitates anthroporepression. The artificial geological outcrop at the Wapienno Mining Plant received the lowest score - 5 points - in the entire evaluation analysis. Its low score is due to the fact that it is very difficult to access and there are no legends associated with it.

DISCUSSION

Possibilities for the development of geotourism

There is currently no geotourism in the study area. Although the area is developed for tourism, geotourism does not operate in this area. In the light of the first research of this kind carried out in Pałuki, the authoresses concluded that there is a possibility of developing this branch of tourism here. Twelve geosites, proving the rich geodiversity of the research area, have the potential to develop this type of nature tourism. An important factor in the development of geotourism in Pałuki will undoubtedly be the involvement of local authorities. It is necessary to adapt facilities for tourists to ensure their comfortable visit without compromising the protection of geosites (e.g. Sisto et al., 2022).

In order to communicate information effectively, a tourist must first be aware of what he or she is observing. The authoresses suggest placing informative panels next to each geosite. A provided brief description of the geological history of the Pałuki region should be accessible to the average tourist, but at the same time retains an educational value. In some convenient places, stopping points can be set up where tourists can rest and read about what they see (e.g. about the history of the formation of the slightly undulating relief of the area, while understanding the non-obvious name of Pałuki). In order to best present the geological history of the area, high-quality information material (e.g. a separate mini-publication, folder or leaflet) should be provided, available, for example, from the Tourist Information Office in Żnin. In the longer term, it is worth trying to establish a geopark. The main purpose of such an area would be the protection and management of the geological heritage and necessary improved quality of life for locals by providing geoeducation/geostorytelling (e.g., Wolniewicz, 2019, Kubalíková et al., 2021) and preparing geosites for tourists (e.g., Zouros, 2008; Farsani et al., 2012, 2014). The currently active quarry in Wapno will be closed in the future. Like other water reservoirs that mark the end of the exploitation of mineral resources, e.g., in Babin, in the cross-border (with Germany) Geopark Łuk Mużakowa (e.g. Koźma, 2011), the lake to be, has great potential for the development of recreation, water tourism (including diving) and geotourism. The well-known Polish examples of the adaptation of abandoned quarries for geo-educational purposes (e.g., Geosfera in Jaworzno; Chećko et al., 2022, the European Centre for Geological Education on Góra Rzepka in Chęciny https://www.eceg.uw.edu.pl/en/ or the Centre of Geoeducation of the Świętokrzyski Geopark http://geonatura-kielce.pl/centrum_geo/) can certainly inspire local authorities to build such a facility in the Pałuki area.

Author's geotourist trail "Geodiversified Pałuki". As a result of an objective bonitation analysis, it is known which of the 12 surveyed geosites are the most attractive in terms of geotourism. They will be offered to the recipient in the form of two new geotourist trails. They are different in length: the longer one goes through 11 geosites, the shorter one through 5 ones.

Given that among the participants of the tourist movement there are people with different sensitivities to the beauty of abiotic nature, representing an education not necessarily related to earth sciences, the authoresses suggest that tourists should be accompanied by an expert, competent in the field of abiotic nature and familiar with the local environment. Geological content is perceived as difficult by society, so the geointerpreter must demonstrate the ability to transfer knowledge in a simple and understandable way (e.g. Zafeiropoulos et al., 2021).

Both routes are thematic routes, i.e. linear forms of environmental penetration (Styperek, 2002), passing through areas that, from the geotourist's point of view, are characterised by special values of abiotic nature. They share similar themes, e.g. genesis, age of formation of geosites, types of rocks/sediments exposed *in situ*. The thematic trail should signposted and equipped with illustrative informative panels and folders. Among the trails, the educational trail deserves special attention, as it is one of the basic, active forms of environmental education (e.g. Stolz and Megerle, 2022).

The main theme, which unites 11 or 5 geosites, is the activity of the last Scandinavian Ice Sheet in Pałuki. This includes its erosion, transport and accumulation activities. In addition to recording the functioning of this ice sheet, the geosites show fluvial (rivers), crenological (springs), aeolian (blown aeolian sands) and contemporary morphogenetic processes (manifested on the surface of erratic boulders). Several of the geosites show human activity based on abiotic natural resources and therefore the application role of geoheritage. The set of geosites of different origins clearly shows that Pałuki has a high geodiversity. This fact, so far unknown in the research area, deserves to be loudly and decisively articulated and promoted. The authoresses propose to do this by means of two geotourism trails under the common name of "Geodiversified Pałuki". Tourist activities on valuable (because they represent a wealth of expert knowledge) geological objects, here locally related to the south-eastern part of Pałuki. Such an activity, known as geotourism, is familiar around the world as an effective flywheel of the local economy, often increasing even individual people (geointerpreters, experts, geography teachers, local patriots; spatial landscape planners, designers of geostops, informative panel, folders, leaflets, maintenance services cleanliness along the trail) a financial revenues, improving their quality of life (e.g. Farsani et al., 2017; Lorenc, 2020; Frey, 2021; Herrera-Franco et al., 2022).

Geotourism is a proven lever for the standard of living of the inhabitants of peripheral and indifferent tourist areas (Smoleński, 2012). We cannot talk about such areas in Pałuki, as we have already shown. But who says that the tourist offer can't be diversified in order to attract a different segment of tourists? Not to mention the implementation of the slogan of sustainable development in areas of natural value into life in Pałuki (cf. Majdak, 2013).

Geotourist Trail "Geodiversified Pałuki" - longer version

Route: geological outcrop on the territory of the "Wapienno" Mining Plant – artificial lake in Piechcin – "Kamienny Dom" erratic boulder – subglacial channel of the Ostrówieckie Lake – St Hubert's Spring – the Pniewy Lake – erratic boulder on the high western shore of the Głęboczek Wielki Lake – the "Turek" Hill – the Rogowskie Lake – boundary erratic boulder in Czewujewo – a heap of erratics in Czewujewo. All geosites have been described in detail above.

The trail is about 100 km long if you travel by car (Figure 19), but it can also be done by bike and on foot. There are refreshment points along the way, and accommodation is available, for example, at the Ranczo Tomaszówka agritourist farm (www.ranczotomaszowka.pl). The trail is accessible to almost everyone. People with disabilities will not be able to reach the erratic boulder on the high western shore of the Głęboczek Wielki Lake and the top of "Turek" Hill. However, they will be able to see the latter from the car windows in form of a panorama view.

Geotourist trail " Geodiversified Pałuki" - shorter version

Route: "Kamienny Dom" erratic block – St Hubert's Spring – subglacial channel of the Ostrówieckie Lake – the Pniewy Lake – the Rogowskie Lake.

The trail, about 50 km long (Figure 19), runs through naturally valuable areas, free of polluting industrial plants. It can be covered by car, bicycle and on foot. There are refreshment points along the way, and accommodation is available in the nearby Ranczo Tomaszówka, the aforementioned agritourist farm. The trail is open to everyone. All the geological sites have been mentioned above. Both trails provide tourists with cognitive benefits - they learn about the abiotic heritage of the region, where the last Scandinavian Ice Sheet left its numerous traces. While following the trail, tourists will find themselves in areas that are used in different ways: in the forest (Górska-Zabielska, 2022), on arable land and on the shores of channel lakes, which
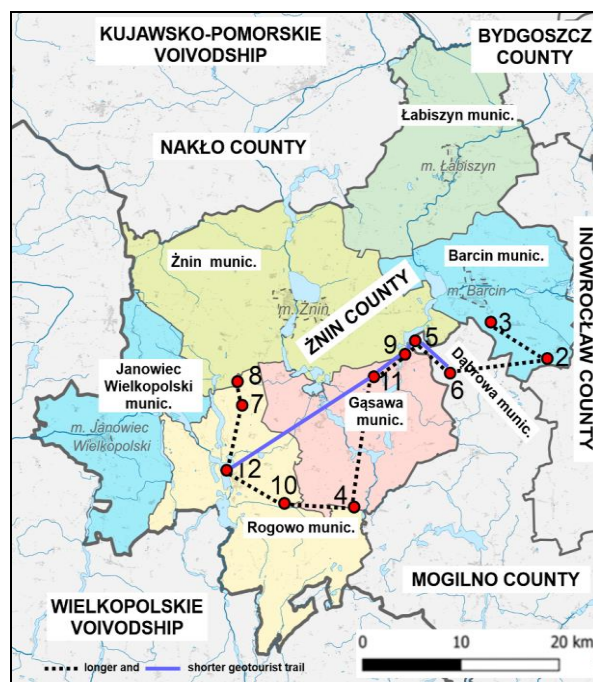

Figure 19. The simplified course of the longer (dashed black line) and the shorter (continuous blue line) geotourist trail under the common name " Geodiversified Pałuki"; Numerical explanations: 3 – artificial geological outcrop in the area of the "Wapienno" Mining Plant (inaccessible in 2023 for individual tourists), 2 – anthropogenic lake in the area of the former limestone mine in Piechcin, 6 – "Kamienny Dom" erratic boulder, 5 – St Hubert's Spring, 9 – view point on the subglacial trough of the Ostrówieckie Lake, 11 – the Pniewy Lake, 4 – erratic boulder on a high, western shore of the Głęboczek Wielki Lake, 10 – the "Turek" Hill, 12 – the Rogowskie Lake, 7 – border erratic boulder in Czewujewo, 8 – a heap of erratics in Czewujewo

offer recreation by the water. Thanks to the ideal terrain for walking, the trails are at least partly accessible on foot. Walking is a very popular leisure activity that allows you to admire morphologically beautiful natural areas and colour contrasts. These aesthetic impressions make you want to stay longer. Contact with pure nature, which is offered by protected areas on designated paths, provides psychological benefits. In such places you can calm down, take care of your weakened nervous system, cut yourself off from the world for a while, just take care of your well-being.

CONCLUSION

The work discusses the theme of geoheritage of the south-eastern part of the Pałuki area, which is not used for geotourism. It is mainly related to the presence and traces of the last Vistulian Ice Sheet in this area in its recessionary Ryszewo Oscillation (Kozarski, 1962) about 18.5 ka BP. The geosites also show the effects of fluvial, crenological, aeolian, modern morphogenetic and anthropogenic processes in the form of corresponding landforms.

The applied research method allows us to conclude that there is a great potential for the development of geotourism in the south-eastern part of Pałuki. This is especially the case in the Rogowskie Lake, which is characterised by high quality geomorphological values. The geo-educational needs can be fully met here. Utility values, extremely important for tourists, were also highly rated. Not worse in this sense is the Pniewy Lake, which is attractive mainly because of its geomorphological values. At the same time, it should be noted that the catering and accommodation services, which are necessary needs of tourists cannot be met in the immediate vicinity of the geosite. It is worth taking a look at the potential of the St Hubert's Spring for the development of geotourism. Today it is attractively developed, with easy access, parking and nearby catering and hotel facilities.

Geotourism in Pałuki can certainly develop on the basis of numerous, very large erratic boulders occurring *in situ*. One of them is the "Stone House", which, although anthropogenically destroyed, is no less worthy of inclusion in the region's development plans. Easy access to the tourist trail, good (in scale of Pałuki) development of the geosite, the subject of a legend and the fact that it is the largest geosite of this type in the region make it another very attractive geosite.

Pałuki is a region with developed tourism, as the Piast Trail, important for the beginnings of Polish statehood and for its rich archaeological monuments, passes through its area. However, tourism can and should be developed, especially as geotourism resources are available and can be used to diversify the (geo)tourist offer.

Dissemination and promotion of the resources discussed in the text are already carried out by some locals during competitions and manual geoworkshops among children, and know-how and workshops sessions for students. Geowatching, orienteering walk, and hiking/biking rally can be provided for interested adults.

In order to increase the possibilities of developing geotourism, the paper presents two proposals for thematic geotourism trail focusing on the most interesting geosites in the research area. The possible development and preparation of geo-objects for collection by geotourists, their effective promotion, the transfer of knowledge, the organisation of walks with a geo-interpreter, are just some examples of services that can generate new jobs and, at the same time, improve the quality of life of the people involved in these projects.

A necessary condition for success, apart from the availability of geo-objects, is the incorporation of the results of scientific research (like ours) social into the activities of regional tourist offices, local authorities and local action groups. Author's Geotourism Trails is an initiative that should be of interest to other institutions established for this purpose, including PTTK, schools, provincial methodological centres, local activity groups. Among the recipients, we cannot forget the guests of agritourist farms. Through an interesting tourist offer in the area, this type of rural tourism can increase the attractiveness of such a farm and thus improve the quality of life of its hosts.

It is worth considering the creation of a local geopark with both tangible and intangible geoproducts based on the attractive geological assets of the Pałuki region. The phenomenon of geo-product creation is so significant that it has been included in the UNESCO documents on the establishment of global geoparks (UNESCO, 1999). The first substantive documentation is provided in this article.

The relatively short distance between interesting local abiotic heritage objects (with a guaranteed tourist infrastructure) allows us to hope that geotourism has a chance of success, provided that local hosts are genuinely interested in the sustainable development of the region. Today, it guides economic activities that ensure the ecological security of society and increase the economic quality of life. It will be necessary to eliminate the current weaknesses and to use the existing opportunities mentioned in this article. The quality of life of the inhabitants of south-eastern Pałuki has a great chance of improving if the geotourism flywheel is implemented in the local economy.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study may be obtained on request from the corresponding author.

Acknowledgments: The authors acknowledge to (anonymous) reviewer(s) for.

Conflicts of Interest: The authoresses declare no conflict of interest.

REFERENCES

Adamczewski, J. (2002). Budownictwo ludowe na Pałukach. *Studia Lednickie* 7, 193-238. https://bazhum.muzhp.pl/media/files/Studia_Lednickie/Studia_Lednickie-r2002-t7/Studia_Lednickie-r2002-t7-s193-238/Studia_Lednickie-r2002-t7-s193-238.pdf

Bollati, I., Fossati, M., Zanoletti, E., Zucali, M., Magagna, A., & Pelfini, M. (2016). A methodological proposal for the assessment of cliffs equipped for climbing as a component of geoheritage and tools for earth science education: The case of the Verbano-Cusio-Ossola (Western Italian Alps). *J. Virtual Explor.*, 49, 1-23.

Boškov, J., Kotrla, S., Tomić, N., Jovanović, M., & Rvović, I. (2015). Perspectives for geotourism development in the Bela Crkva municipality (Serbia). *Acta Geoturistica*, 6(1), 1-10.

Boulton, G.A., & Hindmarsh, R.C.A. (1987). Sediment deformation beneath glaciers; rheology and geological consequences. *Journal of Geophysical Research.* American Geophysical Union 9,2 (B2), 9059-9082. https://agupubs.onlinelibrary.wiley.com/doi/10.1029/JB092iB09p09059

Brilha, J. (2016). Inventory and Quantitative Assessment of Geosites and Geodiversity Sites: A Review. *Geoheritage*, 8, 119-134.

Bruschi, V.M., & Cendrero, A. (2005). Geosite evaluation; can we measure intangible values? *Il Quaternario*, 18(1), 293-306. https://amq.aiqua.it/index.php/amq/article/view/499/438

Bruschi, V.M., & Cendrero, A. (2009). Direct and parametric methods for the assessment of geosites and geomorphosites. In *Geomorphosites; Reynard, E., Coratza, P., Regolini-Bissig, G., Eds.; Pfeil: München, Germany, 73-88.*

Carrión-Mero, P., Ayala-Granda, A., Serrano-Ayala, S., Morante-Carballo, F., Aguilar-Aguilar, M., Gurumendi-Noriega, M., Paz-Salas, N., Herrera-Franco, G., & Berrezueta, E. (2020). Assessment of geomorphosites for geotourism in the northern part of the "RutaEscondida" (Quito, Eecuador). *Sustainability*, 12, 8468. https://doi.org/10.3390/su12208468

Carrión-Mero, P., Borja-Bernal, C., Herrera-Franco, G., Morante-Carballo, F., Jaya-Montalvo, M., Maldonado-Zamora, A., Paz-Salas, N., & Berrezueta, E. (2021). Geosites and Geotourism in the Local Development of Communities of the Andes Mountains. A Case Study. *Sustainability*, 13, 4624. https://www.mdpi.com/2071-1050/13/9/4624

Carrión-Mero, P., Mata-Perelló, J., Herrera-Narváez, G., Sánchez-Zambrano, E., & Berrezueta, E. (2021). Assessment and Promotion of Geotouristic and Geomining Routes as a Basis for Local Development: A Case Study. *Minerals*, 11(4), 351. https://doi.org/10.3390/min11040351

Chećko, A., Jelonek, I., & Jelonek, Z. (2022). Study on restoring abandoned mine lands to economically usable state using the post-occupancy evaluation method. *Land Degradation & Development*, 33(11), 3-45. https://onlinelibrary.wiley.com/doi/10.1002/ldr.4265

Choiński, A. (2007). *Katalog jezior Polski [Catalogue of Polish lakes],* Wydawnictwo Naukowe Uniwersytetu im. Adama Mickiewicza w Poznaniu.

Chrobak, A., Novotný, J., & Struś, P. (2021). Geodiversity Assessment as a First Step in Designating Areas of Geotourism Potential. Case Study: Western Carpathians. *Front. Earth Sci.*, 9, 752669. https://doi.org/10.3389/feart.2021.752669

Coratza, P., & Giusti, C. (2005). Methodological proposal for the assessment of the scientific quality of of geomorphosites. *Alp. Mediterr. Quat.*, 18, 307-313.

Czubla, P., Gałązka, D., & Górska, M. (2006). Eratyki przewodnie w glinach morenowych Polski [Fennoscandian indicator erratics in glacial tills of Poland]. *Przegląd Geologiczny*, 54(4), 352-362. https://geoturystyka.ujk.edu.pl/ MGZ/PDF/Eratyki%20przewodnie%20w%20glinach%20morenowych%20Polski.pdf

Czubla P., Petera-Zganiacz, J. (2019). Fotografia dokumentacyjna w naukach o Ziemi. *Folia Geographica Physica*, 18, 7-28. https://doi.org/10.18778/1427-9711.18.01

Dowling, R., & Newsome, D. (eds) (2006). *Geotourism,* Elsevier/Heineman Publishers, Oxford, Great Britain.

Drążek, J., Chmiel, J., & Kupczyk, M. (eds) (2010). *Krajobrazy pałuckich wapieni. 150 lat białego górnictwa [Landscapes of the Pałuki limestone. 150 years of white mining],* Wyd. Stowarzyszenie Ekologiczne w Barcinie, Barcin.

Drinia, H., Voudouris, P., & Antonarakou, A. (eds) (2022). Geoheritage and Geotourism Resources: Education, Recreation, Sustainability. *Geosciences* 12, 251. https://doi.org/10.3390/geosciences12060251

Ehsan, S., Leman, M.S., & Ara Begum, R. (2012). Geotourism: A tool for sustainable development of geoheritage resources. *Adv. Mater. Res.*, 622-623, 1711-1715.

Evelpidou, N., Karkani, A., Komi, A., Giannikopoulou, A., Tzouxanioti, M., Saitis, G., Spyrou, E., & Gatou, M.A. (2022). GIS-Based Virtual Field Trip as a Tool for Remote Education. *Geosciences*, 12, 327. https://doi.org/10.3390/geosciences12090327

Fancello, D., Columbu, S., Cruciani, G., Dulcetta, L., & Franceschelli, M. (2022). Geological and archaeological heritage in the Mediterranean coasts: Proposal and quantitative assessment of new geosites in SW Sardinia (Italy). *Front. Earth Sci.*, 10, 910990. https://doi.org/10.3389/feart.2022.910990

Farsani, N.T., Coelho, C., Costa, C., & Carvalho, C.N. (eds) (2012). *Geoparks & Geotourism. New Approaches to Sustainability for the 21st Century*, Brown Walker Press, USA

Farsani, N.T., Coelho, C.O.A., Costa, C.M.M., & Amrikazemi, A. (2014). Geo-knowledge Management and Geoconservation via Geoparks and Geotourism. *Geoheritage*, 6(3), 185-192. https://link.springer.com/article/10.1007/s12371-014-0099-7

Farsani, N.T., Mortazavi, M., Bahrami, A., Kalantary, R., & Bizhaem, F.K. (2017). Traditional crafts: a tool for geo-education in geotourism. *Geoheritage*, 9(4), 577-584. https://link.springer.com/article/10.1007/s12371-016-0211-2

Fassoulas, C., Mouriki, D., Dimitriou-Nikolakis, P., & Iliopoulos, G. (2012). Quantitative assessment of geotopes as an effective tool for geoheritage management. *Geoheritage*, 4, 177-193.

Frey, M.L. (2021). Geotourism-Examining Tools for Sustainable Development. *Geosciences*, 11(30). https://www.mdpi.com/2076-3263/11/1/30

Fuertes-Gutiérrez, I., & Fernández-Martínez, E. (2010). Geosites Inventory in the Leon Province (Northwestern Spain): A Tool to Introduce Geoheritage into Regional Environmental Management. *Geoheritage*, 2, 57-75.

Gaidzik, K., & Chmielewska, M. (2020). Post-Mining Objects as Geotourist Attractions: Upper Silesian Coal Basin (Poland). In *Bahram Nekouie Sadry (ed.), The Geotourism Industry in the 21st Century, Wyd. Apple Academic Press.*

Garofano, M. (2015). Geowatching, a Term for the Popularisation of a Geological Heritage. *Geoheritage*, 7, 25-32.

Gioncada, A., Pitzalis, E., Cioni, R., Fulignati, P., Lezzerini, M., Mundula, F., & Funedda, A. (2019). The Volcanic and Mining Geoheritage of San Pietro Island (Sulcis, Sardinia, Italy): The Potential for Geosite Valorization. *Geoheritage*, 11(6), 1567-1581. https://link.springer.com/article/10.1007/s12371-019-00418-6

Górska-Zabielska, M. (2010). Głazy narzutowe w Wielkopolsce [Erratic boulders in the Wielkopolska region]. *Prace i Studia z Geografii i Geologii*, 18. Bogucki Wyd. Naukowe, Poznań.

Górska-Zabielska, M. (2020). Nowe obiekty geoturystyczne na południowym Podlasiu [New geotourist objects in southern Podlasie]. *Przegląd Geologiczny*, 68, 2, 91-99. https://www.pgi.gov.pl/dokumenty-pig-pib-all/publikacje-2/przeglad-geologiczny/2020/2-luty/7591-nowe-obiekty-geoturystyczne-na-poludniowym-podlasiu/file.html

Górska-Zabielska, M. (2021a). In the footsteps of the ice sheet in the area of the planned geopark "Postglacial land of the Drawa and Dębnica rivers (the Drawskie Lakeland, Poland)". *Landform Analysis*, 40: 37-56. http://geoinfo.amu.edu.pl/sgp/LA/LA40/landfana-040-002.pdf

Górska-Zabielska, M. (2021b). The Rock Garden of the Institute of Geography and Environmental Sciences, Jan Kochanowski University—A New Geo-site in Kielce, Central Poland. *Geosciences*, 11(3), 113. https://doi.org/10.3390/geosciences11030113 (Górska-Zabielska, M., (2022). Geoheritage in a Forest: Traces of Ice Sheets in Pałuki, Western Poland. *Sustainability*,14(12), 7190 https://doi.org/10.3390/su14127190

Górska-Zabielska, M. (2023a). A New Geosite as a Contribution to the Sustainable Development of Urban Geotourism in a Tourist Peripheral Region—Central Poland. *Resources*, 12(6), 71. https://doi.org/10.3390/resources12060071

Górska-Zabielska, M. (2023b). New Geoeducational Facilities in Central Mazovia (Poland) Disseminate Knowledge about Local Geoheritage. *Sustainability*, 15, 16115. https://doi.org/10.3390/su152216115

Górska-Zabielska, M., & Kamieńska, K. (2017). Geotourism potential of the Drawskie Lake District as a support for the planned geopark named "Postglacial land of the Drawa and Dębnica rivers". *Quaestiones Geographicae*, 36(1), 15-31. https://doi.org/10.1515/quageo-2017-0002

Górska-Zabielska M., Kusztal, P., & Witkowska, K. (2019). Wybrane głazy narzutowe północno-zachodniego obrzeżenia Gór Świętokrzyskich – współczesne znaczenie i potencjał geoturystyczny (Wyżyna Przedborska i Kielecka). *Przegląd Geologiczny*, 67(9), 767-774. http://dx.doi.org/10.7306/2019.45

Górska-Zabielska, M., Wieczorek, D., Zabielski, R., & Stoiński, A. (2022). Głazy narzutowe z regionu Przedborza jako obiekty geodziedzictwa oraz ich znaczenie dla geologii czwartorzędu i geoturystyki [The erratic boulders of the Przedborze region as geoheritage objects and their significance for Quaternary geology and geotourism]. *Przegląd Geologiczny*, 70(1), 34-49. http://dx.doi.org/10.7306/2022.2

Górska-Zabielska, M., Witkowska, K., Pisarska, M., Musiał, R., & Jońca B. (2020). The Selected Erratic Boulders in the Świętokrzyskie Province (Central Poland) and Their Potential to Promote Geotourism. *Geoheritage*, 30, 1-14. https://doi.org/10.1007/s12371-020-00453-8

Gray, M. (2013). *Geodiversity: valuing and conserving abiotic nature*, second ed., Wiley Blackwell, Chichester.

Gray, M. (2018). Geodiversity: the backbone of geoheritage and geoconservation. In *Reynard E., Brilha J. (eds), Geoheritage: assessment, protection, and management*, 13-25). Elsevier, Amsterdam.

Herrera-Franco, G., Mora-Frank, C., Kovács, T., & Berrezueta, E. (2022). Georoutes as a Basis for Territorial Development of the Pacific Coast of South America: a Case Study. *Geoheritage*, 14, 78. https://doi.org/10.1007/s12371-022-00711-x

Hose, T.A. (2005). Geotourism and Interpretation. In *Dowling R.K., Newsome D. (eds), Geotourism, 221-241,* Elsevier Butterworth-Heinemann, Oxford.

Hose, T.A. (2012). 3G's for Modern Geotourism. *Geoheritage*, 4, 7-24.

Jalinik, M. (2009). Zarządzanie gospodarstwem ekoagroturystycznym na obszarach przyrodniczo cennych [Eco-tourism farm management in nature-rich areas]. *Zeszyty Naukowe Politechniki Białostockiej. Ekonomia i Zarządzanie*, 14, 85-94.

Jaroszewski, W., Marks, L., & Radomski, A. (1985). *Słownik geologii dynamicznej [Glossary of dynamic geology],* Wydawnictwa Geologiczne, Warszawa.

Kicińska-Świderska, A., & Słomka, T. (2004). Projektowanie tras geoturystycznych [Designing geotourism routes]. *Folia Turistica*, 15, 179-184.

Kot, R., Andrzejewski, L., Macias, A., Bródka, S., Kubacka, M., Lechnio, J., & Malinowska, E. (2021). Pradolina Toruńsko-Eberswaldzka (315.3) [Toruń-Eberswalde Pradolina (315.2)]. In *A. Richling, J. Solon, A. Macias, J. Balon, J. Borzyszkowski, M. Kistowski (eds), Regionalna geografia fizyczna Polski,* 162-170, Bogucki Wydawnictwo Naukowe, Poznań.

Kozarski, S. (1962). Recesja ostatniego lądolodu z północnej części Wysoczyzny Gnieźnieńskiej a kształtowanie się Pradoliny Noteci–Warty [Recession of the last ice sheet from the northern part of the Gniezno Plateau and the formation of the Noteć–Warta pradolina]. *Prace Komisji Geograficzno-Geologicznej*, Poznańskie Towarzystwo Przyjaciół Nauk, Wydział Matematyczno-Przyrodniczy, 2(3).

Kozarski, S. (1995). Deglacjacja północno-zachodniej Polski: warunki środowiska i transformacja geosystemu (~20 ka →10 ka BP) [Deglaciation of northwestern Poland: environmental conditions and geosystem transformation (~20 ka →10 ka BP)]. *Dokumentacja Geograficzna*, 1, Continuo Publisher, IGiPZ PAN, Wrocław.

Koźma, J. (2011). Transgraniczny geopark Łuku Mużakowa [Muskau Arc Cross-Border Geopark]. *Przegląd Geologiczny*, 59(4), 276-290.

Kubalíková, L. (2013). Geomorphosite assessment for geotourism purposes. *Czech J. Tour.*, 2, 80-104.

Kubalíková, L., Bajer, A., & Balková, M. (2021). Brief Notes on Geodiversity and Geoheritage Perception by Lay Public. *Geosciences*, 11, 54. https://doi.org/10.3390/geosciences11020054

Lorenc, M. (2020). *Ścieżka dydaktyczna „Na tropach lądolodu". Przewodnik po ścieżce dydaktycznej [Nature trail "On the tracks of the ice sheet". Guide on the nature trail].* Wyd. Bogucki Wydawnictwo Naukowe, Poznań.

Macadam, J. (2018). Geoheritage: Getting the message across. What message and to whom? In *Reynard E., Brilha J.B. (eds), Geoheritage: Assessment, Protection, and Management,* 267-288, Elsevier: Amsterdam, The Netherlands.

Macias, A., Bródka, A., Kubacka, M., Kot, R., & Andrzejewski, L. (2021). Pojezierze Wielkopolskie (315.5) [Wielkopolskie Lakeland (315.5)]. In *A. Richling, J. Solon, A. Macias, J. Balon, J. Borzyszkowski, M. Kistowski (eds), Regionalna geografia fizyczna Polski,* 178-190, Bogucki Wydawnictwo Naukowe, Poznań.

Majdak, P. (2013). Turystyka i rekreacja na obszarach przyrodniczo cennych. Konflikty i kompromisy w świetle koncepcji rozwoju zrównoważonego [Tourism and recreation in naturally valuable areas. Conflicts and trade-offs in the light of the concept of sustainable development]. *Problemy Ekologii Krajobrazu. Rekreacja w krajobrazach o wysokim potencjale*, 34, 163-168.

Malinowski, F. (2010). *Diabeł Wenecki i inne legendy pałuckie [The Devil of Venice and other legends of the Pałuki region].* Wyd. Magraf S.C, Bydgoszcz.

Malinowski, F. (2023). *Legendy pałuckie II [Legends of the Pałuki region II].* Wydawnictwo Dominika Księskiego Wulkan, Żnin.

Mamoon, A. (2014). Geotourism: Why Do Children Visit Geological Tourism Sites? *Dirasat: Human and Social Sciences*, 41(1), 653-661. https://www.researchgate.net/publication/262932646

Mapa Geośrodowiskowa, ark. Rogowo, w skali 1:50 000 [*Geoenvironmental Map*, Rogowo arc., scale 1:50 000]. Archiwum Kartograficzne Państwowego Instytutu Geologicznego Państwowego Instytutu Badawczego [Cartographic Archive of the Polish Geological Institute National Research Institute], Warszawa.

Marescotti, P., Castello, G., Briguglio, A., Caprioglio, M.C., Crispini, L., & Firpo, M. (2022). Geosite assessment in the Beigua UNESCO Global Geopark (Liguria, Italy): A case study in linking geoheritage with education, tourism, and community involvement. *Land*, 11, 1667. https://doi.org/10.3390/land11101667

Meyer, K.D., & Lüttig, G. (2007). Was meinen wir mit Leitgeschiebe? *Geschiebekunde Aktuell*, 23(4), 106-121.

Migoń, P., & Pijet-Migoń, E. (2017). Viewpoint geosites — values, conservation and management issues. *Proceedings of the Geologists' Association*, 128(4), 511-522. https://doi.org/10.1016/j.pgeola.2017.05.007.

Miśkiewicz, K. (2016). Promoting geoheritage in geoparks as an element of educational tourism. In *Szponar A., Toczek-Werner S. (eds), Geotourism: organization of the tourism and education in the geoparks in the Middle-Europe Mountains,* 37-48, University of Business in Wrocław. https://www.researchgate.net/publication/308627346_Promoting_geoheritage_in_geoparks_as_an_element_of_educational_tourism#fullTextFileContent

Newsome, D., & Dowling, R. (2018). Geoheritage and Geotourism. In *Reynard E., Brilha J. (eds), Geoheritage,* 305-321, Elsevier, Amsterdam, The Netherlands.

Ng, Y. (2022). Editorial: Special issue on geodiversity. *International Journal of Geoheritage and Parks*, 10 (4), A1-A3. https://doi.org/10.1016/j.ijgeop.2022.11.004

Orłowska, A. (2017). Evaluation of geotourism potential of selected geological sites in the eastern part of the borderland between Siedlce Upland and Łuków Plain. *Geotourism/Geoturystyka*, 46-47(1-2), 17-30.

Ostręga, A., Uberman, R., Stożek, Ł., & Muzykiewicz, B. (2011). Koncepcja rekultywacji i docelowego zagospodarowania Kopalni Wapienia „Kujawy" [Concept for the reclamation and target development of the "Kujawy" Limestone Mine]. *Prace Naukowe Instytutu Górnictwa Politechniki Wrocławskiej nr 132. Studia i Materiały*, 39, 207-224. http://www.miningscience.pwr.edu.pl/The-reclamation-concept-and-target-redevelopment-of-the-Kujawy-limestone-mine,59910,0,2.html

Pabian, G. (2015). Kierunki zagospodarowania terenów pogórniczych na przykładzie wybranych geostanowisk Wzgórz Chęcińskich – stan aktualny i perspektywy rozwoju [Directions of development of post-mining areas on the example of selected geostationary sites of the Chęciny Hills - current status and development prospects]. *Przegląd Geologiczny*, 63, 470-474.

Pasquaré Mariotto, F., Drymoni, K., Bonali, F.L., Tibaldi, A., Corti, N., & Oppizzi, P. (2023). Geosite Assessment and Communication: A Review. *Resources*, 12, 29. https://doi.org/10.3390/resources12020029

Pena dos Reis, R., & Henriques, M. (2009). Approaching an integrated qualification and evaluation system for geological heritage. *Geoheritage*, 1, 1-10.

Pereira, P., & Pereira, D. (2010). Methodological guidelines for geomorphosite assessment. *Géomorphol. Relief Process Environ.*, 1, 215-222.

Pereira, P., Pereira, D., & Caetano Alves, M.I. (2007). Geomorphosite assessment in Montesinho Natural Park (Portugal). *Geographica Helvetica*, 62(3),159-168.

Pijet-Migoń, E., & Migoń, P. (2022). Geoheritage and Cultural Heritage—A Review of Recurrent and Interlinked Themes. *Geosciences*, 12, 98. https://doi.org/10.3390/geosciences12020098

Pikies, R. (2009). Opracowanie karty nr 000202: Zakład Górniczy Wapienno [Sheet No. 000202: Wapienno Limestone Mine]. *Centralny Rejestr Geostanowisk Polski*. http://geostanowiska.pgi.gov.pl/gsapp_v2/ObjectDetails.aspx?id=202

Piotrowski, J.A. (1997). Subglacial hydrology in north-western Germany during the last glaciation: groundwater flow, tunnel valleys and hydrological cycles. *Quaternary Science Reviews*, 16(2), 169-185. https://www.sciencedirect.com/science/article/abs/pii/S0277379196000467?via%3Dihub

Płoskonka, P. (2018). *Edukacja przyrodniczo-leśna w świetle koncepcji etyki środowiskowej Leave No Trace [Nature and forestry education in the light of the Leave No Trace concept of environmental ethics]*. In *Gila W. & Szewczykiewicz J. (eds), Współczesne problemy Komunikacji społecznej i edukacji w leśnictwie [Contemporary issues of Social Communication and Education in Forestry]*. 95-110, Instytut Badawczy Leśnictwa, Sękocin Stary.

Pospieszny, Ł., Sobkowiak-Tabaka, I., & Nowaczyk, S. (eds) (2017). *Megalityczny grobowiec kultury amfor kulistych z Kierzkowa na Pałukach. Milczący świadek kultu przodków w epoce kamienia [A megalithic tomb of the amphorae culture from Kierzków in the Pałuki region. A silent witness to ancestral worship in the Stone Age].* Wydawnictwo Biskupin.

Rdzany, Z., Frydrych, M., & Szmidt, A. (2020). Rozwój rynny Miazgi–Wolbórki (Polska środkowa) w świetle analizy jej wypełnienia [Formation of the Miazga–Wolbórka tunnel valley (central Poland) based on an analysis of its infill]. *Przegląd Geologiczny*, 68, 584-600. http://dx.doi.org/10.7306/2020.23

Reynard, E. (2009). Geomorphosites: Definitions and characteristics. In *Reynard E., Coratza P., Regolini-Bissig G. (eds), Geomorphosites,* Verlag Dr. Friedrich Pfeil, München.

Reynard, E., Fontana, G., Kozlik, L., & Capozza, C. (2007). A method for assessing the scientific and additional values of geomorphosites. *Geographica Helvetica*, 62, 148-158.

Reynard, E., & Giusti, C. (2018). Chapter 8 - The Landscape and the Cultural Value of Geoheritage. In *E. Reynard, J. Brilha (eds.), Geoheritage. Assessment, Protection, and Management,* 147-166. https://doi.org/10.1016/B978-0-12-809531-7.00008-3

Rodrigues, J., De Silva, E.C., & Pereira, D.I. (2023). How Can Geoscience Communication Foster Public Engagement with Geoconservation? *Geoheritage*, 15, 32. https://doi.org/10.1007/s12371-023-00800-5

Saurabh, M., Sudhanshu, S., Singh, S.K., & Mathur, S.C. (2021). QualitativeAssessment of Geoheritage for Geotourism Promotion: A Case Study from Mehrangarh Ridge in Jodhpur City, Western Rajasthan, India. *Geoheritage*, 13, 80-100. https://doi.org/10.1007/s12371-021-00604-5

Schulz, W. (1999). Sedimentäre Findlinge im norddeutschen Vereisungsgebiet. *Archiv für Geschiebekunde*, 2(8), 523-560.

Serrano, E., & González Trueba, J.J. (2005). Assessment of geomorphosites in natural protected areas; the Picos de Europa National Park (Spain). *Géomorphol. Relief Process Environ.*, 1, 197-208.

Serrano, E., & Ruiz-Flano, P. (2007). Geodiversity. A theoretical and applied concept. *Geographica Helvetica*, 62(3), 140-147.

Sisto, M., Di Lisio, A., & Russo, F. (2020). The Mefite in the Ansanto Valley (Southern Italy):a Geoarchaeosite to Promote the Geotourism and Geoconservationof the Irpinian Cultural Landscape. *Geoheritage*, 12, 29. https://doi.org/10.1007/s12371-020-00450-x

Sisto, M., Di Lisio, A., & Russo, F. (2022). Geosite Assessment as a Tool for the Promotion and Conservation of Irpinia Landscape Geoheritage (Southern Italy). *Resources*, 11, 97. https://doi.org/10.3390/resources11100097

Skoczylas, J. (2006). Złoża kopalin użytecznych w dziejach Pałuk [Useful mineral deposits in the history of the Pałuki region]. In *Wyrwa A.M. (ed), Studia i materiały do dziejów Pałuk. Terra Palucensis et Monasterium in Lokna: XXV lat badań archeologiczno-architektonicznych w lekneńskim kompleksie osadniczym [Twenty-five years of archaeological and architectural research in the Lekno settlement complex],* vol. 6, Wydawnictwo „Dig", Warszawa.

Smoleński, M. (2012). Modelowanie przestrzeni turystycznej peryferyjnych regionów turystycznych [Modeling of destination regions in fringearea]. *Economy and Management*, 1, 64-91.

Stolz, J., & Megerle, H.E. (2022). Geotrails as a Medium for Education and Geotourism: Recommendations for Quality Improvement Based on the Results of a Research Project in the Swabian Alb UNESCO Global Geopark. *Land*, 11, 1422. https://doi.org/10.3390/land11091422

Štrba, L., Rybár, P., Baláž, B., Molokáč, M., Hvizdák, L., Kršák, B., Lukáč, M., Muchová, L., Tometzová, D., & Ferencíková, J. (2015). Geosite assessments: Comparison of methods and results. *Curr. Issue Tour.*, 18, 496-510.

Styperek, J. (2002). *Linearne systemy penetracji rekreacyjnej [Linear systems of recreational penetration],* Bogucki Wydawnictwo Naukowe, Poznań.

Suzuki, D., & Takagi, H. (2018). Evaluation of Geosite for Sustainable Planning and Management in Geotourism. *Geoheritage*, 10, 123-135. https://doi.org/10.1007/s12371-017-0225-4

Sydow, S., & Machowiak, W. (2004). *Objaśnienia do Szczegółowej mapy geologicznej Polski w skali 1:50 000, ark. Rogowo (nr 397) [Explanations to the Detailed Geological Map of Poland in the scale 1:50 000, sheet Rogowo (no. 397)].* Archiwum Państwowego Instytutu Geologicznego Państwowego Instytutu Badawczego, Warszawa.

Szafarczyk, A., & Gawałkiewicz, R. (2023). An inventory of opencast mining excavations recultivated in the form of water reservoirs as an example of activities increasing the retention potential of the natural environment: a case study from Poland. *Geology, Geophysics & Environment*, 49, 4, 401-418, Wydawnictwa AGH. https://doi.org/10.7494/geol.2023.49.4.401

Szarafin, T. (2013). Opracowanie karty nr 004305: Głaz narzutowy Kamienny Dom [Sheet No. 004305: Erratic boulder Stony House]. Centralny Rejestr Geostanowisk Polski. http://geostanowiska.pgi.gov.pl/gsapp_v2/ObjectDetails.aspx?id=4305

Szarafin, T. (2016). Koordynacja i weryfikacja merytoryczna karty nr 004321: Źródło św. Huberta [Coordination and substantive verification of Charter No. 004321: St Hubert's Spring]. *Centralny Rejestr Geostanowisk Polski*. http://geostanowiska.pgi.gov.pl/gsapp_v2/ObjectDetails.aspx?id=4321

Szyda, B., & Karasiewicz, T. (2017). Znaczenie obszarów przyrodniczo cennych w rozwoju funkcji turystycznej stref podmiejskich wybranych polskich miast [The importance of naturally valuable areas in the development of the tourist function of suburban zones of selected Polish cities]. *Studia i Materiały CEPL w Rogowie*, 19, 52, 3, 174-181.

Tetik, N. (2016). The Importance of Interpretatıon Role of Tour Guıdes in Geotourısm: Can We Called Them as Geotour Guıdes? *International Journal of Education and Social Science* 3, 2, 41-53. https://www.academia.edu/34545497/The_Importance_of_Interpretat%C4%B1on_Role_of_Tour_Gu%C4%B1des_in_Geotour%C4%B1sm_Can_We_Called_Them_as_Geotour_Gu%C4%B1des

UNESCO (1999). UNESCO Geoparks Programme - A New Initiative to Promote a Global Network of Geoparks Safeguarding and Developing Selected Areas Having Significant Geological Features, 156EX/11 Rev. PARIS, 15 April 1999.

Uniejewska, M., & Nosek, M. (1990). Szczegółowa mapa geologiczna Polski w skali 1:50 000, arkusz Gąsawa (398) [Detailed geological map of Poland in the scale 1:50 000, sheet Gąsawa (398)]. *Wydawnictwa Geologiczne*, Warszawa.

Urban, J., Migoń, P., & Radwanek-Bąk, B. (2021). Dziedzictwo geologiczne [Geological heritage]. *Przegląd Geologiczny*, 69, 1, 16-20. http://dx.doi.org/10.7306/2021.1

Ustawa z dnia 16 kwietnia 2004 r. o ochronie przyrody [the Nature Conservation Act of 2004, in Polish]. *Dz.U. 2004 Nr 92 poz. 880.* https://www.teraz-srodowisko.pl/media/pdf/prawo-reglamentacja/385.pdf

Vale Caetano, J.M., & Corral Martins de Oliveira Ponciano, L. (2021). Cultural Geology, Cultural Biology, Cultural Taxonomy, and the Intangible Geoheritage as New Strategies for Geoconservation. *Geoheritage*, 13, 79. https://doi.org/10.1007/s12371-021-00603-6

Van Geert, F. (2019). In situ interpretation and ex situ museum display of geology. New opportunities for a geoheritage based dialogue? *Int. J. Geoheritage Parks,* 7, 129-144. https://doi.org/10.1016/j.ijgeop.2019.05.001

Vlachopoulos, N., & Voudouris, P. (2022). Preservation of the Geoheritage and Mining Heritage of Serifos Island, Greece: Geotourism Perspectives in a Potential New Global Unesco Geopark. *Geosciences*, 12, 127. https://doi.org/10.3390/geosciences12030127

Vujičić, M.D., Vasiljević, D.A., Marković, S.B., Hose, T.A., Lukić, T., Hadžić, O., & Janićević, S. (2011). Preliminary geosite assessment model (GAM) and its application on Fruškagora Mountain, potential geotourism destination of Serbia. *Acta Geogr. Slov.*, 51, 361-377. https://doi.org/10.3986/AGS51303

Warowna, J., Zglobicki, W., Kolodynska-Gawrysiak, R., Gajek, G., Gawrysiak, L., & Telecka, M. (2016). Geotourist values of loess geoheritage within the planned Geopark Malopolska Vistula River Gap, E Poland. *Quatern. Int.*, 399, 46-57.

Wolniewicz, P. (2019). Bringing the history of the Earth to the public by using storytelling and fossils from decorative stones of the City of Poznań, Poland. *Geoheritage*, 1, 1827-1837. https://doi.org/10.1007/s12371-019-00400-2

Wolniewicz, P. (2021). Beyond Geodiversity Sites: Exploring the Educational Potential of Widespread Geological Features (Rocks, Minerals and Fossils). *Geoheritage*, 13, 34. https://doi.org/10.1007/s12371-021-00557-9

Zafeiropoulos, G., Drinia, H., Antonarakou, A., & Zouros, N. (2021). From Geoheritage to Geoeducation, Geoethics and Geotourism: A Critical Evaluation of the Greek Region. *Geosciences*, 11, 381. https://doi.org/10.3390/geosciences11090381

Zorina, S.O., & Silantiev, V.V. (2014). *Geosites, classification of.* In *Encyclopedia of Mineral and Energy Policy.* Springer: Berlin/Heidelberg, Germany.

Zouros, N.C. (2008). European Geoparks Network: transnational collaboration on Earth heritage protection, geotourism and local development. *Geotourism*, 1, 12, 3-22.

Zwierzykowski, Z. (2021). *Gąsawa i okolica na starych widokówkach [Gąsawa and surroundings on old postcards]*, Wyd. Wulkan, Żnin

Zwoliński, Z. (2004). Geodiversity. In *Goudie A.S. (ed), Encyclopedia of Geomorphology, 1, 417-418,* Routledge.

Żbikowski, J. (2018). Zagospodarowanie turystyczne gminy Łuków [Tourism development of Łuków municipality]. In *Mizerski W. et al. (eds), Na krawędzi platformy", 86. Scientific Meeting of Polish Geologists Society, Łuków 2–5.09.2018, Summaries: 51–52.*

*** Atlas of Poland Encyclopaedia of the World Geography (2000), Wydwanictwo Press, Warszawa, Poland.

http://geostanowiska.pgi.gov.pl/gsapp_v2/ObjectDetails.aspx?id=202

http://geostanowiska.pgi.gov.pl/gsapp_v2/ObjectDetails. aspx?id=4305

http://geostanowiska.pgi.gov.pl/gsapp_v2/ObjectDetails.aspx?id=4321

www.ranczotomaszowka.pl

https://www.radiopik.pl/?idp=100&idx=1084

https://biskupin.pl/

GREEN HRM AND GREEN COMPETITIVE ADVANTAGE IN HOTEL AND TOURISM INDUSTRY: A MEDIATED MODERATION MODEL USING ECO-INNOVATION AND GREEN PSYCHOLOGICAL CLIMATE

Nawaf Zarie ALSHEHRI
Department of Social Studies, College of Arts, King Faisal University, Al-Hassa, Saudi Arabia, e-mail: nalshehri@kfu.edu.sa

Asier BAQUERO
Faculty of Business and Communication, International University of La Rioja, Logrono, Spain, e-mail: asier.baquero@unir.net

Mohamed Hani ABD-ELHADY
Tourism Studies Department, AlAlson High Institute for Tourism and Hotels, Cairo, Egypt, e-mail: Muhammedhani85@gmail.com

Wagih M. E. SALAMA[*]
Department of Social Studies, College of Arts, King Faisal University, Saudi Arabia;
Department of Hotel Studies, High Institute of Tourism and Hotels, Al-Hassa, Egypt, e-mail: welsayed@kfu.edu.sa

Hazem Ahmed KHAIRY[*]
Hotel Management Department, Faculty of Tourism and Hotels, University of Sadat City, Sadat City, Egypt, e-mail: hazem.khaiery@fth.usc.edu.eg

Rania Elsayed Ibrahim ABOUELENIEN
Hotel Studies Department, Higher Institute for Tourism and Hotels Luxor, Egoth, Luxor, Egypt, e-mail: rania_elsayed86@yahoo.com

Abstract: This study investigates the impact of green HRM (GHRM) on green competitive advantage (GCA), examining the mediating role of eco-innovation and the moderating role of green psychological climate (GPC). The study surveyed 472 full-time employees in five-star hotels and travel agencies, developing and testing a five-hypothesis research model using PLS-SEM. Results revealed that GHRM positively impacts GCA and eco-innovation. Eco-innovation positively impacts GCA. In addition, GPC has a positive moderating influence on the relationship between GHRM and eco-innovation. Furthermore, Eco-innovation significantly mediates the relationship between GHRM and GCA.

Key words: Green HRM, Green competitive advantage, Eco-innovation, Green psychological climate, Hotel and Tourism Industry

* * * * * *

INTRODUCTION

Organizations are increasingly promoting environmentally conscious practices, including the tourism and hospitality sector (Thai and Nguyen, 2022; Alos-Simo et al., 2023; Habobati et al., 2023). Rapid development has led to increased emphasis on environmental sustainability by businesses (Obeng et al., 2023). Global environmental sustainability is a pressing global issue, requiring companies to transition to green practices in their core businesses (Kalyar et al., 2019; Shuhua and Kanokporn, 2023; Velwin et al., 2024). Hospitality and tourism organizations are increasingly recognizing the strategic benefits of incorporating green concerns into their operations to gain a green competitive advantage. Businesses are considering their impact on the environment, promoting green human resource management (GHRM) as a strategy to maintain reputation and achieve environmental goals, improving environmental performance, and achieving a green competitive advantage (Singh and El-Kassar, 2019; Obeng et al., 2023). GHRM is a crucial aspect of green management that promotes pro-environment employee behaviors in the workplace (Dumont et al., 2017; Hameed et al., 2020). GHRM is an HRM approach that promotes environmental sustainability and performance, fostering employees who are conscious of the organization's sustainability (Álvarez et al., 2018).

In addition, Eco-innovation is gaining attention as a solution to mitigate environmental pressures and enhance competitiveness for companies (Bossle et al., 2016), particularly in tourism and hospitality businesses (Kuo et al., 2022; Alos-Simo et al., 2023). Eco-innovation involves developing novel business models, products, processes, managerial practices, corporate structures, and marketing strategies to reduce environmental impacts (Maçaneiro et al., 2013), extending beyond green technologies to the entire innovation cycle (Carrillo-Hermosilla et al., 2010). Eco-innovation

---

[*] Corresponding author

research focuses on drivers and adoption outcomes, enhancing understanding of eco-innovation (de Jesus Pacheco et al., 2018; Zhang and Walton, 2017). Organizations must investigate how GHRM impacts employees' pro-environment behavior to ensure environmental sustainability and improve overall performance (Kim et al., 2019), particularly, Eco-innovation behavior. Furthermore, the current study explores the green psychological climate, focusing on employees' perceptions and interpretations of their organization's environmental sustainability policies and practices (Norton et al., 2017), as a driver affecting GHRM and Eco-innovation relationship. Most firms are revising their business strategies toward the green agenda (Baah et al., 2020; Thai and Nguyen, 2022; ALSUBAIHI et al., 2023), with HR incorporating green management to enhance key functions (Masri and Jaaron, 2017). GHRM, a green management approach, is still in its early stages (Jain and Lima, 2018; Muisyo et al., 2022b), with some firms implementing green practices and others using it to promote corporate pro-environmental management. Scholars have researched how GHRM enhances green performance, but have not expanded it to green competitiveness (Arda et al., 2019; Roscoe et al., 2019; Muisyo et al., 2022b).

Furthermore, the adoption of eco-innovation practices remains underexplored in literature. Studies suggest further investigation into critical drivers affecting eco-innovation (Hojnik and Ruzzier, 2016a), particularly in emerging economies (Maldonado-Guzmán and Garza-Reyes, 2020) like Egypt (Mady et al., 2022). Therefore, the current study aims to examine the effect of green HRM on green competitive advantage in the Hotel and Tourism Industry in Egypt. It also attempts to explore the mediating effect of Eco-innovation on the relationship between green HRM and green competitive advantage, and the moderating effect of green psychological climate on the relationship between green HRM and Eco-innovation.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT
Green HRM and green competitive advantage
Management plays a crucial role in promoting the company's environmental policy by recruiting and training employees with congruent beliefs and values (Renwick et al., 2013). Employers can attract and select job seekers committed to green issues, while green training provides staff with the necessary skills and attitudes to achieve organizational environmental goals. Green knowledge is disseminated during training, enhancing employees' ability to recognize and participate in green issues (Daily et al., 2012). Training on green targets raises employees' awareness and concern for the environment. Such HRM activities positively influence a firm's competitive advantage (Muisyo et al., 2022a). Green competitive advantage refers to a firm's capacity to consistently achieve an economic value in green products, services, and processes that surpass its competitors (Barney and Hesterly, 2019). A firm's GHRM level indicates its environmental protection behavior, promoting green practices among employees and reducing negative environmental impacts (Oh et al., 2016). Organizations proactive in green issues boost productivity and competitive advantage, while firms lacking a comprehensive framework face hurdles and limitations due to poor green management practices (Saeed et al., 2019; Renwick et al., 2016). Therefore, the following hypothesis is formulated as follows:
H1: Green HRM positively impacts green competitive advantage.

Green HRM and Eco-innovation
Eco-innovation goes beyond reducing environmental degradation by utilizing green technologies, aiming to revitalize the entire innovation cycle (Carrillo-Hermosilla et al., 2010). Firms can improve green performance by incorporating green management solutions into their operations, fostering awareness among employees about environmental issues, and ensuring their support for environmental protection. The adoption of green practices is influenced by both the firm's green strategy and employee support (Renwick et al., 2013). A well-employee-driven green strategy and a good inventory of green skills are crucial for achieving good results (Chou, 2014). An innovative fusion of GHRM is necessary for sustained green initiatives (Jabbour and Jabbour, 2016; Mahmood and Nasir, 2023). GHRM is crucial for implementing green practices and improving an organization's environmental performance (Ren et al., 2018; Obeng et al., 2023). GHRM promotes green values among employees through staffing practices, increasing environmental consciousness and behaviors (Renwick et al., 2013). GHRM enhances employees' knowledge, skills, and abilities, promoting product and process innovation (Seeck and Diehl, 2017). Hiring environmentally conscious employees aids in developing better environmental management ideas and pursuing green goals (Chang and Chen, 2013). Organizational training provides employees with the necessary knowledge and skills for creative innovation (Chowhan, 2016). Green performance management ensures employee commitment to environmental goals, and firms reward environmental efforts by assessing their green innovation capabilities (Curran and Walsworth, 2014). Therefore, the following hypothesis is formulated as follows:
H2: Green HRM positively impacts Eco-innovation.

Moderating role of green psychological climate
Environmental psychologists recognize contextual factors, particularly organizational climate, as crucial in influencing employees' attitudes and behavior toward green behavior (Littleford et al., 2014; Schneider et al., 2013). Organizational climate is a combination of individual employees' perceptions and interpretations of their organization's policies, procedures, and practices, known as psychological climate, which is a more proximal predictor of behavior (James et al., 2008). The current study examines the green psychological climate, which refers to employees' perceptions and interpretations of their organization's environmental sustainability policies and practices (Norton et al., 2017).

The study suggests that the psychological climate is a social and psychological process that green HRM influences employee workplace green behavior (Dumont et al., 2017). Research indicates that a positive green psychological climate positively influences employee green behavior. Employees are motivated to exhibit environmentally friendly behaviors due

to their perceptions of their organization's policies and procedures (Dumont et al., 2016). A green psychological climate formed by GHRM methods inspires green activities and increases awareness about environmental issues (Sabokro et al., 2021). Employees' perception of their organization's environmental policies and procedures, supporting sustainability and green values, triggers their green behaviors "i.e.g. eco-innovation" (Dumont et al., 2017; Norton et al., 2014; Zhou et al., 2018). Therefore, a green psychological climate pushes organizations to promote GHRM practices such as job designs, rewards, and employee awareness of green values. Therefore, the following hypothesis is formulated as follows:

H3: Green psychological climate positively moderates the relationship between green HRM and Eco-innovation.

Green HRM, Eco-innovation, and green competitive advantage

Social identity theory suggests that individuals develop a positive self-concept by classifying themselves into groups and identifying as members of that group, reinforced by positive images and shared perceptions and actions (Tajfel et al., 1979). The current study uses social identity theory to suggest that collaborating with employees who support green initiatives (GHRM) can enhance eco-innovation behavior within work relationships, thereby influencing overall identification and hence, green competitive advantage. Social identification is linked to employee sustainability behavior (Carmeli et al., 2017), and GHRM promotes sustainability behaviors by signaling the organization's commitment to sustainability. This commitment reinforces and directs employee behaviors (Carmeli et al., 2017). GHRM targets green behavior, instilling meaningfulness and involvement, making employees feel part of a positive environmental effort (Rubel et al., 2021), which promotes employees' eco-innovation behavior. Furthermore, green competitive advantage (GCA) is a firm's unique position in environmental management and green innovation, which cannot be replicated by competitors, resulting in sustainable benefits (Muisyo et al., 2022b). GCA, according to the AMO theory, is the climax of business opportunities derived from GHRM and eco-innovation. The Ability-Motivation-Opportunity (AMO) theory proposes that organizational success is best served by a working system that focuses on employee ability, motivation, and opportunity (Jiang et al., 2012). The AMO theory suggests that HRM practices significantly influence employee performance, motivation, and opportunity. It suggests that HRM practices enhance employee capabilities, leading to high performance and green competitiveness. The theory also suggests that HRM practices significantly affect staff's behaviors and attitudes (Jiang et al., 2012). Based on the AMO theory, GHRM significantly affects staff's behaviors and attitudes; it enhances employee capabilities "eco-innovation capability", leading to high performance and green competitiveness "Green competitive advantage". Therefore, the following hypotheses are formulated as follows:

H4: Eco-innovation positively impacts green competitive advantage.

H5: Eco-innovation positively mediates the relationship between green HRM and green competitive advantage.

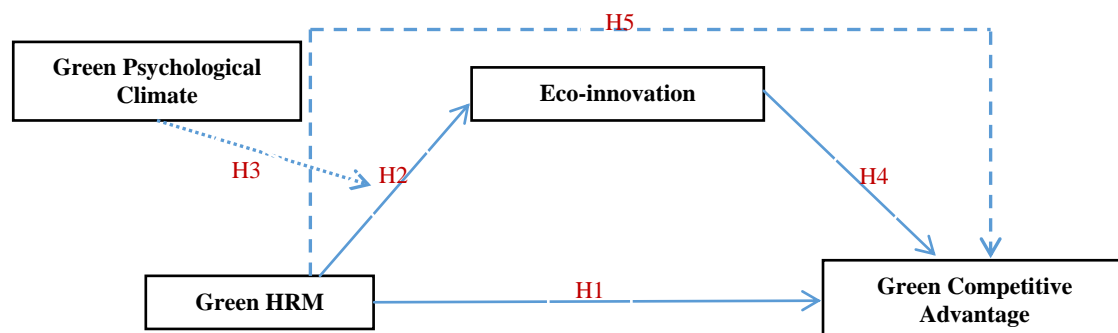The conceptual framework of the study is presented in Figure (1) below.

Figure 1. The conceptual framework of the study

METHODOLOGY
Questionnaire design and study measures

This is quantitative research based on survey methodology. A structured survey was utilized to gather the data required to test the proposed model of the study that examines the impact of green human resources management on green competitive advantage, focusing on Eco-innovation as a mediator and green psychological climate as a moderator. The survey comprises two parts: one requesting gender, age, education, and tenure, and the other evaluating the researched variables. Green human resources management (GHRM) was assessed by a 6-item scale developed by Dumont et al. (2017). For example, "My organization sets green goals for its employees" and "My organization provides employees with green training to promote green values". In addition, Eco-innovation was measured by a 6-item scale adapted from Valdez-Juárez and Castillo-Vergara (2020). For instance, "In the last 2 years, your organization has designed products that reduce the use of materials" and "In the last 2 years, your organization has designed products with components for reuse or recycling". Moreover, green competitive advantage was measured by a 4-item scale adopted from Lin and Chen (2017). Sample items include: "The firm has greater capability than competitors regarding green management" and "The firm offers better quality green products in comparison with major competitors". Furthermore, the green psychological climate was evaluated by a 5-item scale suggested by Sabokro et al. (2021). For example, "There is an emphasis on the reduction of scraps during production" and "The organization has announced the general environmental policies at the workplace". A 5-point Likert scale was used to evaluate the investigated variables. Appendix (A) provides comprehensive measurement scales.

Sample and data collection procedures

The study focuses on Egypt's tourism and hospitality businesses, including category-A travel agencies and five-star hotels, which are known for their high-quality services and commitment to environmental preservation, embracing green practices to improve their operations. Five-star hotels and category-A travel agencies are embracing green initiatives to improve their business practices in line with the global need for sustainability. The full-time employees working in category-A travel agencies and five-star hotels in Egypt comprise the study population. The study uses Cochran's (1963) sampling equation to represent a representative sample of 385 replies for large populations, as formal data is unavailable. There were 2222 category (A) travel agencies and 158 five-star hotels in Egypt (The Egyptian Ministry of Tourism reported, 2018). The study utilized the convenience sample method due to limited resources and a large population. 800 questionnaires were distributed to businesses in the Greater Cairo Region of Egypt after obtaining permission to visit and disseminate them on their premises. The acquisition of 472 valid forms resulted in a 59% response rate. 297 (62.92%) worked in 30 five-star hotels, while 175 (37.08%) worked in 55 travel agencies.

Data analysis

The study utilized the PLS-SEM technique, a widely used analytical tool in hospitality and tourism research. The PLS-SEM multi-group analysis was also employed to assess the significant differences in path coefficients between the variables examined. The statistical data analysis was conducted using WarpPLS software 7.0.

RESULTS
Participant's profile

The study involved 472 employees, with 76.69% men, 44.92% aged 35-45, and 68.22% holding a bachelor's degree. In addition, 40.04% of participants worked for two and less than six years, 62.92% worked for five-star hotels, and 37.08% worked for travel agencies.

Table 1. Participant's profile (N=472)

		Frequency	Percent
Gender	Male	362	76.69
	Female	110	23.31
Age	< 35 years	154	32.63
	35 : < 45 years	212	44.92
	≥45	106	22.46
Education	High schools/institute	88	18.64
	Bachelor	322	68.22
	Master/PhD	62	13.14
Tenure with organization	2: <6 years	189	40.04
	6 : <10 years	170	36.02
	≥ 10 years	113	2 .94
Enterprise	Hotels	297	62.92
	Travel agency	175	37.08

Table 2. Item loadings, Cronbach alpha, CR, AVE, and VIFs

Factors	Item loading	Cronbach alpha	CR	AVE	VIFs
Green Human Resources Management (GHRM)	-				
GHRM .1	0.780	0.912	0.884	0.633	3.001
GHRM .2	0.786				
GHRM .3	0.807				
GHRM .4	0.829				
GHRM .5	0.825				
GHRM .6	0.746				
Green Competitive Advantage (GCA)	-				
GCA.1	0.737	0.895	0.842	0.681	2.076
GCA.2	0.900				
GCA.3	0.860				
GCA.4	0.795				
Eco-Innovation (Eco-Inno)	-				
Eco-Inno.1	0.865	0.910	0.881	0.628	1.842
Eco-Inno.2	0.777				
Eco-Inno.3	0.828				
Eco-Inno.4	0.700				
Eco-Inno.5	0.797				
Eco-Inno.6	0.779				
Green Psychological Climate (GPC)	-				
GPC.1	0.849	0.920	0.892	0.698	2.641
GPC.2	0.828				
GPC.3	0.834				
GPC.4	0.856				
GPC.5	0.810				

Analysis and results

Measurement model: The four-factor model of green HRM, sustainable competitive advantage, Eco-innovation, and green psychological climate was tested using confirmatory factor analysis. Kock (2021) suggested ten fit indices to evaluate the quality of the model's fit. The criteria were met as follows: "Average path coefficient (APC)= 0.411, P<0.001; Average R-squared (ARS)= 0.510, P<0.001; Average adjusted R-squared (AARS)= 0.507, P<0.001; Average block VIF (AVIF)= 1.524, acceptable if ≤5, ideally ≤3.3; Average full collinearity VIF (AFVIF)= 2.141, acceptable if ≤5, ideally ≤3.3; Tenenhaus GoF

(GoF)= 0.609, small ≥0.1, medium ≥0.25, large ≥0.36; Sympson's paradox ratio (SPR)=1.000, acceptable if >= 0.7, ideally = 1; R-squared contribution ratio (RSCR)=1.000, acceptable if ≥0.9, ideally=1; Statistical suppression ratio (SSR)=1.000, acceptable if ≥0.7; and Nonlinear bivariate causality direction ratio (NLBCDR)=1.000, acceptable if ≥0.7". Table 2 shows all research constructs have composite reliability ratings above the minimal acceptable level (CR>0.70), validity confirmed by statistically significant loadings (loading>0.50, p<0.05) (Gerbing and Anderson, 1988), and the model is free of common method bias given that all latent variables have a variance inflation factor (VIF) of ≤3.3 (Kock, 2015).

With each variable's AVE value surpassing the maximum common value and a significant correlation across latent variables that is less than unity (Franke and Sarstedt, 2019), Table (3) validates the discriminant validity of the research model. The constructs' validity was further validated by calculating the HTMT, as shown in Table 4.

Multi-Group Analysis: By conducting a multi-group analysis, the study found no significant differences in responses between a five-star hotel and travel agency staff due to changes in work enterprise (Table 5).

Table 3. Discriminant validity results

	GHRM	GCA	Eco-Inno	GPC
Green Human Resources Management (GHRM)	0.796	0.625	0.616	0.752
Green Competitive Advantage (GCA)	0.625	0.825	0.583	0.631
Eco-Innovation (Eco-Inno)	0.616	0.583	0.793	0.577
Green Psychological Climate (GPC)	0.752	0.631	0.577	0.835

Table 4. HTMT for validity

HTMT ratios (good if < 0.90, best if < 0.85)	GHRM	GCA	Eco-Inno	GPC
Green Human Resources Management (GHRM)				
Green Competitive Advantage (GCA)	0.730			
Eco-Innovation (Eco-Inno)	0.694	0.683		
Green Psychological Climate (GPC)	0.849	0.731	0.652	
P values (one-tailed) for HTMT ratios (good if < 0.05)	GHRM	GCA	Eco-Inno	GPC
Green Human Resources Management (GHRM)				
Green Competitive Advantage (GCA)	<0.001			
Eco-Innovation (Eco-Inno)	<0.001	<0.001		
Green Psychological Climate (GPC)	<0.001	<0.001	<0.001	

Table 5. Multi-group analysis

Constructs/Hypotheses	Path coeff. (Five-Star Hotel)	Path coef. (Travel Agency)	Absolute path coeff. Diff.	p-values	Tstatistic	Decision
GHRM→GCA	0.465	0.363	0.102	0.133	1.112	Not significant
GHRM→Eco-innovation	0.641	0.749	0.108	0.108	1.238	Not significant
Eco-innovation → GCA	0.333	0.438	0.105	0.128	1.136	Not significant
GPC*GHRM → Eco-innovation	0.172	0.226	0.054	0.284	0.571	Not significant

Results of direct effects

The information presented in Figure 2 shows that green HRM positively impacts green competitive advantage (GCA) (β=0.45, P<0.01) and eco-innovation (β=0.67, P<0.01), with increased GHRM value resulting in increased GCA and eco-innovation, supporting hypothesis H1 and H2. In addition, the green psychological climate has a positive moderating influence on the relationship between GHRM and eco-innovation (β=0.18, P<0.01), suggesting that high GPC levels enhance the relationship between GHRM and eco-innovation, supporting H3. Furthermore, eco-innovation positively impacts GCA (β = 0.35, P<0.01), suggesting that high eco-innovation levels lead to higher GCA, supporting H4. Moreover, the Figure 2 shows that GHRM significantly interpreted 48% of the variance in eco-innovation (R2=0.48). Besides, GHRM, GPC, and eco-innovation significantly interpreted 54% of the variance in GCA (R2=0.54).

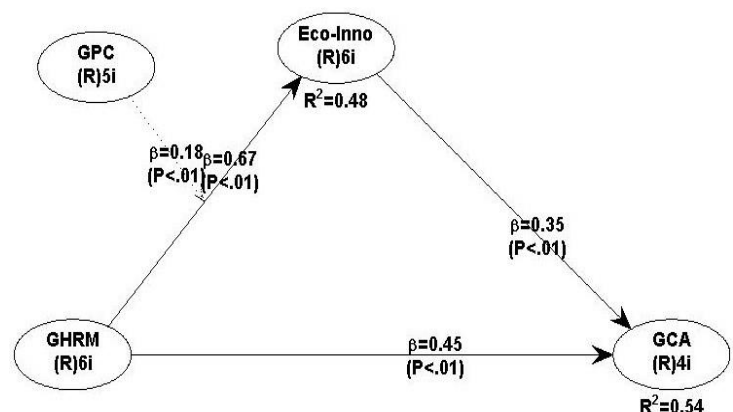Figure 2. The final model of the study

Table 6. Mediation analysis' Bootstrapped Confidence Interval

	Path aGHRM→ Eco-innovation	Path b Eco-innovation→GCA	Indirect Effect	SE	*t-value*	Bootstrapped Confidence Interval		Decision
						95% LL	95% UL	
GHRM→Eco-innovation→GCA	0.670	0.350	0.235	0.032	7.328	0.172	0.297	Mediation

Mediation Analysis

The study supports the hypothesis (H5) that eco-innovation significantly mediates the relationship between GHRM and GCA, as evidenced by a significant indirect effect and a 95% bootstrapped confidence interval. For mediation analysis, the study adopts the approach developed by Preacher and Hayes (2008). The bootstrapping analysis revealed that the indirect effect $\beta=0.235$ (0.670×0.350) was significant ($P<0.01$) with a t-value of 7.328 (Table 6). The indirect effect of 0.235, "95% bootstrapped confidence interval" (LL=0.172, UL=0.297), does not straddle a zero in between, confirming mediation.

DISCUSSION

The current research aims to investigate the impact of green HRM on green competitive advantage in the Hotel and Tourism Industry. It also seeks to investigate the mediating effect of Eco-innovation on the relationship between green HRM and green competitive advantage, and the moderating effect of green psychological climate on the relationship between green HRM and Eco-innovation. A five-hypothesis model was developed and tested using PLS-SEM.

Findings supported all proposed hypotheses (H1, H2, H3, H4, and H5). Findings revealed that green HRM has a positive impact on green competitive advantage (H1) and eco-innovation (H2). These findings are in line with those of Oh et al. (2016), Renwick et al. (2016), and Saeed et al. (2019) who argued that a firm's GHRM level impacts its green competitive position; and consistent with Obeng et al. (2023) who claimed that GHRM plays a crucial role in enhancing an organization's environmental performance through Eco-innovation. GHRM encourages employees to adopt green values, enhances their knowledge, and promotes innovation. Firms with a strong GHRM level demonstrate environmental protection behavior, boosting productivity and competitive advantage, while those lacking a comprehensive framework face challenges. Findings also revealed that green psychological climate has a positive moderating effect on the relationship between green HRM and Eco-innovation (H3). The study aligns with previous research by Dumont et al. (2017) and Norton et al. (2017), which highlighted the significant role of psychological climate in promoting green HRM and employee green behavior. Psychological climate relies on employees' perception of their work environment and their perception of their organization, particularly in the context of a green climate, which refers to the implementation of pro-environmental policies and practices (Chou, 2014; Paillé et al., 2014).

Employee motivation to adopt green behavior "i.e.g. Eco-innovation behavior" may be based on expectations, rewards, or the belief that it is acceptable or typical in their workplace (Norton et al., 2014). In addition, the psychological climate is shaped by employee interactions and the values they perceive in the workplace (Kuenzi and Schminke, 2009). Employees perceive and interpret HRM practices, shaping their perceptions of the organization and its values (Kaya et al., 2010; Dumont et al., 2017; Deac et al., 2023). A strong environmental agenda signals core values and ethics, while adopting green HRM practices engages employees in environmentally related decisions and activities (Renwick et al., 2013; Dumont et al., 2017). Lastly, findings revealed that Eco-innovation has a positive impact on green competitive advantage (H4) and has a positive mediating impact on the relationship between green HRM and green competitive advantage (H5).

These findings align with previous research by Carmeli et al. (2017) and Rubel et al. (2021), which argued that GHRM encourages green behavior by fostering meaningful involvement and a positive environmental effort among employees, thus promoting eco-innovation behavior. By incorporating the green concept into operations, firms can achieve GCA when creating unique products, minimizing resource use, and innovating core processes and products that set them apart from their competitors (Sari and Hidayatno, 2017; Nasrollahi et al., 2020). Eco-innovation enhances competitiveness (Mady et al., 2022) by positively impacting market performance, enhancing sales, profitability, and differentiation (Hansen and Klewitz, 2012; Xue et al., 2019), and providing cost advantages for organizations through convertible resources, energy, and waste recycling (de Jesus Pacheco et al., 2018; Yurdakul and Kazan, 2020).

Theoretical implications

The study explores how GHRM influences eco-innovation behavior in hotel and tourism enterprises, influencing their responses to gaining a green competitive advantage through a green psychological climate. The study is the first of its kind that examines this research model in one of the emerging economies, namely, Egypt. In addition, the findings provided additional support to Social Identity Theory (SIT) and the Ability-Motivation-Opportunity (AMO) theory used as a theoretical basis of this study. This study demonstrates that GHRM encourages eco-innovation, enhancing an organization's green competitive advantage. This linkage between employee behavior and organizational expectations strengthens employee identification with the organization. The study reveals that employees can adopt eco-innovation behavior when they perceive a green psychological climate and GHRM as part of the organization's green policies and goals.

Managerial implications

The study provides managerial implications for hotel and tourism firms implementing green human resources management, fostering a green psychological climate, and promoting eco-innovation. The study indicates that GHRM and eco-innovation are valuable strategies for hotel and tourism businesses seeking a green competitive edge. Green-oriented businesses can enhance green performance outcomes by incorporating eco-innovation strategies and aligning environmental concerns with their GHRM and innovation. The research suggests that firms that integrate environmental orientation practices "effective GHRM practices" into eco-innovation gain a green competitive advantage by creating a green psychological climate, enabling better business and environmental solutions. Green-oriented businesses can enhance performance and competitive advantage by developing specific eco-capability and products through the effective interaction of GHRM, green psychological climate, and eco-innovation.

To achieve a green competitive advantage, organizations should involve HR in adopting GHRM strategically and implementing eco-innovation practices at the employee level, enhancing clarity and performance in green behavior. This study provides valuable insights for HR practitioners aiming to recruit, select, and train environmentally conscious employees, serving as a reference for policy-making. The study indicates a strong link between GHRM and GCA, indicating that a company's achievement in GCA is significantly influenced by its recruitment and training of environmentally conscious employees. Consequently, policymakers play a crucial role in assisting companies in implementing green practices like GHRM and nurturing a green psychological and eco-innovation climate, leading to GCA.

Limitations and further research

The research sample includes five-star hotels and category-A travel agencies operating in Egypt. The study's scope is restricted to a single industry "tourism and hospitality industry" in one country "Egypt" causing industrial and cultural limitations, potentially limiting its generalizability. Future research should consider broader contexts and backgrounds. In addition, the current study is limited to eco-innovation as a mediator and green psychological climate as a moderator. Future researchers should integrate green psychological climate with other factors like absorptive capacity for competitive strategies in dynamic business environments, and consider substituting eco-innovation with green dynamic capabilities.

Appendix (A): Measurement Scales

Green Human Resource Management (Dumont et al., 2017)
"GHRM.1. My organization sets green goals for its employees.
GHRM.2. My organization provides employees with green training to promote green values.
GHRM.3. My organization provides employees with green training to develop employees' knowledge and skills required for green management.
GHRM.4. My organization considers employees' workplace green behavior in performance appraisals.
GHRM.5. My organization relates employees' workplace green behaviors to rewards and compensation.
GHRM.6. My organization considers employees' workplace green behaviors in promotion."

Eco-innovation Valdez-Juárez and Castillo-Vergara (2020)
In the last 2 years, your organization has:
"Eco-inno.1. Designed products that reduce the use of materials.
Eco-inno.2. Designed products with components for reuse or recycling.
Eco-inno.3. Designed products to avoid or reduce the use of hazardous materials.
Eco-inno.4. Used production processes that minimize or reduce waste.
Eco-inno.5. Cooperated and linked with sustainable suppliers.
Eco-inno.6. Used processes and technologies focused on energy efficiency."

Green Competitive Advantage Lin and Chen (2017)
"GCA.1. The firm has a low-cost competitive advantage regarding green management in comparison with major competitors.
GCA.2. The firm offers better quality green products in comparison with major competitors.
GCA.3. The firm invests more money in environmental research and development and green innovation than its competitors.
GCA.4. The firm has greater capability than competitors regarding green management."

Green Psychological Climate Sabokro et al. (2021)
"GPC.1. All employees are encouraged to save energy within the workplace.
GPC.2. There is an emphasis on the reduction of scraps during production.
GPC.3. The organization has announced the general environmental policies at the workplace.
GPC.4. Organization management and policies lead to environmental preservation.
GPC.5. Organization managers try to reduce waste and control harmful chemicals."

REFERENCES

Alos-Simo, L., Verdu-Jover, A.J., & Gomez-Gras, J.M. (2023). How use of knowledge sources influences eco-innovation in the tourism sector through product innovation and/or process innovation. *Journal of Sustainable Tourism*, 1-20. http://dx.doi.org/10.1080/09669582.2023.2199349

Alsubaihi, I., Rahman, S.B., & Mohamad, D.B. (2023). The Effect of Competitive Advantage on the Relationship Between Environmental Uncertainty and Hotel Performance in Saudi Arabia. *GeoJournal of Tourism & Geosites*, *51*(4), 1610-1621. https://doi.org/10.30892/gtg.514 spl02-1157

Álvarez Jaramillo, J., Zartha Sossa, J.W., & Orozco Mendoza, G.L. (2019). Barriers to sustainability for small and medium enterprises in the framework of sustainable development—Literature review. *Business Strategy and the Environment*, *28*(4), 512-524. https://doi.org/10.1002/bse.2261

Arda, O.A., Bayraktar, E., & Tatoglu, E. (2019). How do integrated quality and environmental management practices affect firm performance? Mediating roles of quality performance and environmental proactivity. *Business Strategy and the Environment*, *28*(1), 64-78. https://doi.org/10.1002/bse.2190

Baah, C., Opoku-Agyeman, D., Acquah, I.S.K., Issau, K., & Abdoulaye, F.A.M. (2020). Understanding the influence of environmental production practices on firm performance: a proactive versus reactive approach. *Journal of Manufacturing Technology Management*, *32*(2), 266-289. https://doi.org/10.1108/JMTM-05-2020-0195

Barney, J.B., & Hesterly, W.S. (2019). *Strategic management and competitive advantage: Concepts and cases*. Pearson. pp. 30-38

Bossle, M.B., de Barcellos, M.D., Vieira, L.M., & Sauvée, L. (2016). The drivers for adoption of eco-innovation. *Journal of Cleaner production*, *113*, 861-872. https://doi.org/10.1016/j.jclepro.2015.11.033

Carmeli, A., Brammer, S., Gomes, E., & Tarba, S.Y. (2017). An organizational ethic of care and employee involvement in sustainability-related behaviors: A social identity perspective. *Journal of Organizational Behavior*, *38*(9), 1380-1395. https://doi.org/10.1002/job.2185

Carrillo-Hermosilla, J., Del Río, P., & Könnölä, T. (2010). Diversity of eco-innovations: Reflections from selected case studies. *Journal of cleaner production*, *18*(10-11), 1073-1083. https://doi.org/10.1016/j.jclepro.2010.02.014

Chang, K.C., & Chen, Y.S (2013). The nonlinear effect of green innovation on the corporate competitive advantage. *Quality & Quantity*, *47*, 271-286. https://doi.org/10.1007/s11135-011-9518-x

Chou, C.J. (2014). Hotels' environmental policies and employee personal environmental beliefs: Interactions and outcomes. *Tourism management*, *40*, 436-446. https://doi.org/10.1016/j.tourman.2013.08.001

Chowhan, J. (2016). Unpacking the black box: understanding the relationship between strategy, HRM practices, innovation and organizational performance. *Human Resource Management Journal*, *26*(2), 112-133. https://doi.org/10.1111/1748-8583.12097

Cochran, W.G. Sampling techniques 2nd Edition, 1963 New York.

Curran, B., & Walsworth, S. (2014). Can you pay employees to innovate? Evidence from the Canadian private sector. *Human Resource Management Journal*, *24*(3), 290-306. https://doi.org/10.1111/1748-8583.12036

Daily, B.F., Bishop, J.W., & Massoud, J.A. (2012). The role of training and empowerment in environmental performance: A study of the Mexican maquiladora industry. *International Journal of operations & production management*, *32*(5), 631-647. https://doi.org/10.1108/01443571211226524

De Jesus Pacheco, D.A., ten Caten, C.S., Jung, C.F., Navas, H.V.G., & Cruz-Machado, V.A. (2018). Eco-innovation determinants in manufacturing SMEs from emerging markets: Systematic literature review and challenges. *Journal of Engineering and Technology Management*, *48*, 44-63. https://doi.org/10.1016/j.jengtecman.2018.04.002

Deac, L.A., Gozner, M., & Herman, G.V. (2023). The dynamics of human resource by ethnicity in the lands and areas of crişana region in the perspective of sustainable development. *GeoJournal of Tourism and Geosites*, *46*(1), 194-199. https://doi.org/10.30892/gtg.46121-1015

Dumont, J., Shen, J., & Deng, X. (2017). Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values. *Human resource management*, *56*(4), 613-627. https://doi.org/10.1002/hrm.21792

Franke, G., & Sarstedt, M. (2019). Heuristics versus statistics in discriminant validity testing: A comparison of four procedures. *Internet Research*, *29*(3), 430-447. https://doi.org/10.1108/IntR-12-2017-0515

Gerbing, D.W., & Anderson, J.C. (1988). An updated paradigm for scale development incorporating unidimensionality and its assessment. *Journal of Marketing Research*, 25(2)186-192. https://doi.org/10.1177/002224378802500207

Habobati, M.S., Hassan, T.H., Helal, M.Y., Bilalov, B.A., Ali, O.M., & Elshawarbi, N.N. (2023). Enhancing Sustainability and Reducing Customer Technostress Through Food-Ordering Apps. *GeoJournal of Tourism and Geosites*, *51*, 1738-1748. https://doi.org/10.30892/gtg.514 spl14-1169

Hameed, Z., Khan, I.U., Islam, T., Sheikh, Z., & Naeem, R.M. (2020). Do green HRM practices influence employees' environmental performance?. *International Journal of Manpower*, *41*(7), 1061-1079. https://doi.org/10.1108/IJM-08-2019-0407

Hansen, E.G., & Klewitz, J. (2012). The role of an SME's green strategy in public-private eco-innovation initiatives: The case of ecoprofit. *Journal of small business & entrepreneurship*, *25*(4), 451-477. https://doi.org/10.1080/08276331.2012.10593584

Hojnik, J., & Ruzzier, M. (2016). What drives eco-innovation? A review of an emerging literature. *Environmental innovation and societal transitions*, *19*, 31-41. https://doi.org/10.1016/j.eist.2015.09.006

Jabbour, C.J.C., & de Sousa Jabbour, A.B.L. (2016). Green human resource management and green supply chain management: Linking two emerging agendas. *Journal of cleaner production*, *112*, 1824-1833. https://doi.org/10.1016/j.jclepro.2015.01.052

Jain, N., & D'lima, C. (2018). Green HRM–a study on the perception of Generation Y as prospective internal customers. *International Journal of Business Excellence*, *15*(2), 199-208. https://doi.org/10.1504/IJBEX.2018.091916

James, L.R., Choi, C.C., Ko, C.H.E., McNeil, P.K., Minton, M.K., Wright, M.A., & Kim, K.I. (2008). Organizational and psychological climate: A review of theory and research. *European Journal of work and organizational psychology*, *17*(1), 5-32. https://doi.org/10.1080/13594320701662550

Jiang, K., Lepak, D.P., Hu, J., & Baer, J.C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of management Journal*, *55*(6), 1264-1294. https://doi.org/10.5465/amj.2011.0088

Kalyar, M.N., Shafique, I., & Abid, A. (2019). Role of lean manufacturing and environmental management practices in eliciting environmental and financial performance: the contingent effect of institutional pressures. *Environmental Science and Pollution Research*, *26*, 24967-24978. https://doi.org/10.1007/s11356-019-05729-3

Kaya, N., Koc, E., & Topcu, D. (2010). An exploratory analysis of the influence of human resource management activities and organizational climate on job satisfaction in Turkish banks. *The international journal of human resource management*, *21*(11), 2031-2051. https://doi.org/10.1080/09585192.2010.505104

Kim, Y.J., Kim, W.G., Choi, H.M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International journal of hospitality management*, 76, 83-93. https://doi.org/10.1016/j.ijhm.2018.04.007

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration (ijec)*, 11(4), 1-10. https://doi.org/10.4018/ijec.2015100101

Kock, N. (2021). WarpPLS User Manual: Version 7.0. Laredo, TX: ScriptWarp Systems.

Kuenzi, M., & Schminke, M. (2009). Assembling fragments into a lens: A review, critique, and proposed research agenda for the organizational work climate literature. *Journal of management*, 35(3), 634-717. https://doi.org/10.1177/0149206308330559

Kuo, F.I., Fang, W.T., & LePage, B.A. (2022). Proactive environmental strategies in the hotel industry: eco-innovation, green competitive advantage, and green core competence. *Journal of Sustainable Tourism*, 30(6), 1240-1261. https://doi.org/10.1080/09669582.2021.1931254

Lin, Y.H., & Chen, Y.S. (2017). Determinants of green competitive advantage: the roles of green knowledge sharing, green dynamic capabilities, and green service innovation. *Quality & Quantity*, 51, 1663-1685. https://doi.org/10.1007/s11135-016-0358-6

Littleford, C., Ryley, T.J., & Firth, S.K. (2014). Context, control and the spillover of energy use behaviours between office and home settings. *Journal of Environmental Psychology*, 40, 157-166. https://doi.org/10.1016/j.jenvp.2014.06.002

Maçaneiro, M.B., da Cunha, S.K., & Balbinot, Z. (2013). Drivers of the adoption of eco-innovations in the pulp, paper, and paper products industry in Brazil. *Latin American Business Review*, 14(3-4), 179-208. https://doi.org/10.1080/10978526.2013.833465

Mady, K., Abdul Halim, M.A.S., & Omar, K. (2022). Drivers of multiple eco-innovation and the impact on sustainable competitive advantage: evidence from manufacturing SMEs in Egypt. *International Journal of Innovation Science*, 14(1), 40-61. https://doi.org/10.1108/IJIS-01-2021-0016

Mahmood, F., & Nasir, N. (2023). Impact of green human resource management practises on sustainable performance: serial mediation of green intellectual capital and green behaviour. *Environmental Science and Pollution Research*, 30(39), 90875-90891. https://doi.org/10.1007/s11356-023-28541-6

Maldonado-Guzmán, G., & Garza-Reyes, J.A. (2020). Eco-innovation practices' adoption in the automotive industry. *International Journal of Innovation Science*, 12(1), 80-98. https://doi.org/10.1108/IJIS-10-2019-0094

Masri, H.A., & Jaaron, A.A. (2017). Assessing green human resources management practices in Palestinian manufacturing context: An empirical study. *Journal of cleaner production*, 143, 474-489. https://doi.org/10.1016/j.jclepro.2016.12.087

Muisyo, P.K., Qin, S., Ho, T.H., & Julius, M.M. (2022a). The effect of green HRM practices on green competitive advantage of manufacturing firms. *Journal of Manufacturing Technology Management*, 33(1), 22-40. https://doi.org/10.1108/JMTM-10-2020-0388

Muisyo, P., Su, Q., Ho, T.H., Julius, M.M., & Usmani, M.S. (2022b). Implications of green HRM on the firm's green competitive advantage: the mediating role of enablers of green culture. *Journal of Manufacturing Technology Management*, 33(2), 308-333. https://doi.org/10.1108/JMTM-01-2021-0033

Nasrollahi, M., Fathi, M.R., & Hassani, N.S. (2020). Eco-innovation and cleaner production as sustainable competitive advantage antecedents: The mediating role of green performance. *International Journal of Business Innovation and Research*, 22(3), 388-407. https://doi.org/10.1504/IJBIR.2020.107978

Norton, T.A., Zacher, H., & Ashkanasy, N.M. (2014). Organisational sustainability policies and employee green behaviour: The mediating role of work climate perceptions. *Journal of Environmental Psychology*, 38, 49-54. https://doi.org/10.1016/j.jenvp.2013.12.008

Norton, T.A., Zacher, H., Parker, S.L., & Ashkanasy, N.M. (2017). Bridging the gap between green behavioral intentions and employee green behavior: The role of green psychological climate. *Journal of Organizational Behavior*, 38(7), 996-1015. https://doi.org/10.1002/job.2178

Obeng, P., Dogbe, C.S.K., & Boahen, P.A.N. (2023). Nexus between GHRM and organizational competitiveness: role of green innovation and organizational learning of MNEs. *Business and Society Review*, 128(2), 275-303. https://doi.org/10.1111/basr.12310

Oh, D.S., Phillips, F., Park, S., & Lee, E. (2016). Innovation ecosystems: A critical examination. *Technovation*, 54, 1-6. https://doi.org/10.1016/j.technovation.2016.02.004

Paillé, P., Chen, Y., Boiral, O., & Jin, J. (2014). The impact of human resource management on environmental performance: An employee-level study. *Journal of Business ethics*, 121, 451-466. https://doi.org/10.1007/s10551-013-1732-0

Preacher, K.J., & Hayes, A.F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior research methods*, 40(3), 879-891. https://doi.org/10.3758/BRM.40.3.879

Ren, S., Tang, G., & Jackson, S. (2018). Green human resource management research in emergence: A review and future directions. *Asia Pacific Journal of Management*, 35, 769-803. https://doi.org/10.1007/s10490-017-9532-1

Renwick, D.W., Jabbour, C.J., Muller-Camen, M., Redman, T., & Wilkinson, A. (2016). Contemporary developments in Green (environmental) HRM scholarship. *The International Journal of Human Resource Management*, 27(2), 114-128. https://doi.org/10.1080/09585192.2015.1105844

Renwick, D.W., Redman, T., & Maguire, S. (2013). Green human resource management: A review and research agenda. *International journal of management reviews*, 15(1), 1-14. https://doi.org/10.1111/j.1468-2370.2011.00328.x

Roscoe, S., Subramanian, N., Jabbour, C.J., & Chong, T. (2019). Green human resource management and the enablers of green organisational culture: Enhancing a firm's environmental performance for sustainable development. *Business Strategy and the Environment*, 28(5), 737-749. https://doi.org/10.1002/bse.2277

Rubel, M.R.B., Kee, D.M.H., & Rimi, N.N. (2021). The influence of green HRM practices on green service behaviors: the mediating effect of green knowledge sharing. *Employee Relations: The International Journal*, 43(5), 996-1015. https://doi.org/10.1108/ER-04-2020-0163

Sabokro, M., Masud, M.M., & Kayedian, A. (2021). The effect of green human resources management on corporate social responsibility, green psychological climate and employees' green behavior. *Journal of Cleaner Production*, 313, 127963. https://doi.org/10.1016/j.jclepro.2021.127963

Sabokro, M., Masud, M.M., & Kayedian, A. (2021). The effect of green human resources management on corporate social responsibility, green psychological climate and employees' green behavior. *Journal of Cleaner Production*, 313, 127963. https://doi.org/10.1016/j.jclepro.2021.127963

Saeed, B.B., Afsar, B., Hafeez, S., Khan, I., Tahir, M., & Afridi, M.A. (2019). Promoting employee's proenvironmental behavior through green human resource management practices. *Corporate Social Responsibility and Environmental Management*, 26(2), 424-438. https://doi.org/10.1002/csr.1694

Sari, Y., & Hidayatno, A. (2017). The Development of Sustainability Strategic Management Assessment Tool (From a Systematic Literature Review to a Conceptual Framework). In *IEEE International Conference on Advanced Logistics and Transport (ICALT)*, 6, 87-93, IEEE.

Schneider, B., Ehrhart, M.G., & Macey, W.H. (2013). Organizational climate and culture. *Annual review of psychology*, *64*, 361-388. https://doi.org/10.1146/annurev-psych-113011-143809

Seeck, H., & Diehl, M.R. (2017). A literature review on HRM and innovation–taking stock and future directions. *The International Journal of Human Resource Management*, *28*(6), 913-944. https://doi.org/10.1080/09585192.2016.1143862

Shuhua, N., & Kanokporn, C. (2023). Resilient Leadership, Innovation, Executive Incentives, and Sustainable Business Performance: An Empirical Study. J*ournal of Logistics, Informatics and Service Science,* 10(4),1-19. https://doi.org/10.33168/JLISS.2023.0401

Singh, S.K., & El-Kassar, A.N. (2019). Role of big data analytics in developing sustainable capabilities. *Journal of cleaner production*, *213*, 1264-1273. https://doi.org/10.1016/j.jclepro.2018.12.199

Tajfel, H., Turner, J.C., Austin, W.G., & Worchel, S. (1979). An integrative theory of intergroup conflict. *Organizational identity: A reader*, *56*(65), 9780203505984-16.

Thai, K.P., & Nguyen, Q.H. (2022). How green hotel practices stimulates customer citizenship behavior? examining the role of green hotel mage and customer satisfaction in Vietnam. *Geo J. Tour. Geosites*, *40*, 274-282. https://doi.org/10.30892/gtg.40133-829

The Ministry of Tourism (2018) *Tourism in figures*. General department of information and statistics, The ministry of tourism: Egypt.

Valdez-Juárez, L.E., & Castillo-Vergara, M. (2020). Technological capabilities, open innovation, and eco-innovation: Dynamic capabilities to increase corporate performance of SMEs. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), 8. https://doi.org/10.3390/joitmc7010008

Velwin, W., Idris, G., Engkos, A., & Agustinus, B. (2024). Improving Sustainability in the Small-Medium Culinary Industry: Analyzing the Role of Open Innovation and Competitive Advantage. *Journal of System and Management Sciences*, 14(2), 172-187. https://doi.org/10.33168/JSMS.2024.0211

Xue, M., Boadu, F., & Xie, Y. (2019). The penetration of green innovation on firm performance: Effects of absorptive capacity and managerial environmental concern. *Sustainability*, *11*(9), 2455. https://doi.org/10.3390/su11092455

Yurdakul, M., & Kazan, H. (2020). Effects of eco-innovation on economic and environmental performance: Evidence from Turkey's manufacturing companies. *Sustainability*, *12*(8), 3167. https://doi.org/10.3390/su12083167

Zhang, J.A., & Walton, S. (2017). Eco-innovation and business performance: the moderating effects of environmental orientation and resource commitment in green-oriented SME s. *R&D Management*, *47*(5), E26-E39. https://doi.org/10.1111/radm.12241

Zhou, S., Zhang, D., Lyu, C., & Zhang, H. (2018). Does seeing "mind acts upon mind" affect green psychological climate and green product development performance? The role of matching between green transformational leadership and individual green values. *Sustainability*, *10*(9), 3206. https://doi.org/10.3390/su10093206

TERRITORIAL ACCESSIBILITY ANALYSIS FOR URBAN INFRASTRUCTURE FACILITY LOCATION: A CASE STUDY IN VILLAVICENCIO, COLOMBIA

Asley F. ESPEJO[*]
Universidad Nacional de Colombia, Sede Manizales. Facultad de Ingeniería y Arquitectura, Departamento de Ingeniería Civil, Grupo de investigación en Movilidad Sostenible, Manizales, Caldas, Colombia, e-mail: aespejo@unal.edu.co

Diego A. ESCOBAR
Universidad Nacional de Colombia, Sede Manizales. Facultad de Ingeniería y Arquitectura, Departamento de Ingeniería Civil, Grupo de investigación en Movilidad Sostenible, Manizales, Caldas, Colombia, e-mail: daescobarga@unal.edu.co

Carlos A. MONCADA
Universidad Nacional de Colombia, Sede Bogotá. Facultad de Ingeniería, Departamento de Ingeniería Civil y Agrícola, Programa de Investigación en Tránsito y Transporte – PIT, Bogotá, Colombia, e-mail: camoncadaa@unal.edu.co

Abstract: Territorial accessibility analysis is a crucial component of urban planning, enabling decision-makers to determine new locations for urban infrastructure facilities to enhance residents' quality of life. The objective of this paper is to propose a methodology for performing territorial accessibility analysis that integrates data analysis techniques, such as clustering, with tools like isochronous curves and percentage ogive graphs. This methodology is evaluated through a case study in Villavicencio, Colombia. Results indicate that the proposed methodology can accurately assess territorial accessibility and, in the case study, recommend investments in health and firefighting services.

Key words: territorial accessibility, isochronous curves, data analysis, clustering, transportation

* * * * * *

INTRODUCTION

Accessibility analyses are an important tool in urban planning, used, among other purposes, to shape public policies related to city infrastructure facilities (Geurs and van Wee, 2004). In essence, urban infrastructure projects and policies consider accessibility as a crucial factor in their formulation and evaluation. It is worth noting that decisions concerning urban infrastructure and transportation suppose substantial investments with short, medium, and long-term implications (Ortúzar and Willumsen, 2011), and they rely on this type of analysis as input. Through accessibility studies, it is possible to evaluate the ease (or difficulty) with which the population can reach a point of interest (e.g., healthcare centers), taking into account the available infrastructure and transportation means (Escobar et al., 2018; Gómez et al., 2018). Furthermore, this concept is related to a city's competitiveness, as cities with higher accessibility indicators tend to be more competitive (Martínez et al., 2021). Accessibility in a city can be evaluated in various ways, such as by exclusively considering access to a single service like educational institutions (Montoya et al., 2018), accessibility to food supply chains (Mejía et al., 2022), or accessibility to multiple services (Shen et al., 2020).

For this work, we employ integral accessibility and global accessibility as analytical methods. These methods are based on the city's infrastructure because they consider the city's road network, operational speeds, and transport infrastructure. Furthermore, integral accessibility introduces an additional perspective, focusing on facility-based accessibility by measuring access to specific points within the city. Additionally, this study assesses accessibility by considering the Primary Activity Nodes (PANs) included in the analysis of (Escobar et al., 2017) which are health, education, security and recreation as they represent the principal needs of the communities. Examples of such PANs are healthcare facilities such as hospitals or educational centers such as schools or universities.

To do so, this work proposes a three-phase methodology as follows. In the first phase, we gather data related to population, road infrastructure, and the location of the infrastructure facilities of the PANs that are included in the analysis. The second phase involves calculating travel times and distances for the population to access the infrastructure facilities. The third phase focuses on studying travel times and distances through isochronous curves and population ogive graphs. This analysis helps evaluate territorial accessibility and prioritize zones for new urban infrastructure development. To validate the performance and practicality of this approach, we utilize a case study inspired by data of Villavicencio City, Colombia.

Related works

Over the last decades, there has been interest from researchers in conducting studies on urban accessibility in various

---

* Corresponding author

contexts. An example of this is (Gibbons and Vignoles, 2012), where the authors studied territorial accessibility in a community in England concerning educational facilities. In their study, the authors considered public transportation as the mode of transport for young people accessing educational opportunities in the city. They geographically referenced the residents and found, through the accessibility study, that distance to educational institutions significantly influences their selection. Another example of the applicability of territorial accessibility studies is (Mao and Nekorchuk, 2013).

In this work, the authors examined territorial accessibility, considering multiple modes of transportation for the population to access healthcare services. They proposed a variant of the Two-Step Floating Catchment Area Method and validated their approach using a case study inspired by the city of Florida in the United States. The authors found that considering multimodal transportation results in more realistic accessibility studies.

Other study on urban accessibility is (Wan et al., 2012). In this work, the authors investigated territorial accessibility, measured by how the population can reach healthcare services. They proposed a variation of the Two-Step Floating Catchment Area Method to plan healthcare network resources in cities. Their case study focused on the Austin-San Antonio corridor in central Texas, demonstrating that their methodology minimizes overestimation of healthcare demand by balancing spatial access to healthcare services. More recently, (Escobar et al., 2017) examined the territorial accessibility of the population in the city of Quibdó, Colombia, concerning primary services such as healthcare, education, and security. They employed the Mean Integrated Accessibility as a methodology to analyze the city's service infrastructure. The authors concluded that it is a priority for the city to invest in urban security facilities. Furthermore, in (Escobar et al., 2018), the authors studied territorial accessibility to security facilities was evaluated. The authors used geostatistical models to construct graphs and images that facilitate the interpretation of accessibility in cities. Their case study focused on the municipality of Pitalito in Colombia, a city which faced security challenges. Another related work on territorial accessibility is (Montoya et al., 2018). In this study, the authors analyzed the population's territorial accessibility to educational centers. They utilized geostatistical models supported by data from digital tools.

Additionally, in (Tahmasbi et al., 2019), a methodology is proposed to measure accessibility to public facilities while considering equity in terms of income. To do so, they employ concepts like the Gini coefficient and statistical indices. The authors test their approach using a case study in Isfahan, Iran, where the results demonstrate that low-income population groups benefit less from urban retail facilities. Another related work that studies accessibility is (Espejo-Díaz et al., 2023). This study focuses on urban accessibility to emergency medical services identifying hard-to-reach zones where there is an important delay in ambulance services. To improve the access to emergency services in hard-to-reach zones, the authors propose the location of vertiports to utilize electric vertical take-off and landing (eVTOL) vehicles for aeromedical transportation. The authors conclude that aeromedical transportation using eVTOL vehicles requires vehicles of minimum 120km of range. Another recent work on territorial accessibility is (Quijada-Alarcón et al., 2023). The authors evaluated the territorial accessibility and connectivity by proposing a three-stage methodology that includes spatial analysis. The authors tested the methodology in the province of Coclé in Panama, concluding that the improvements of the road network impact positively the access to health services and education. The aim of this paper is to propose a methodology for performing territorial accessibility analysis that integrates data analysis techniques, such as clustering, with tools like isochronous curves and percentage ogive graphs. Additionally, our methodology incorporates the use of data collected through digital devices and available in technological applications like Google Maps, which can provide a more accurate territorial analysis. The proposed methodology is validated using a case study addressing accessibility challenges in the city of Villavicencio.

Description of the case study

Villavicencio is located in the foothills of the Eastern Cordillera, in the northwest of the Meta department, on the left bank of the Guatiquía River, 82 km from the capital of the country, Bogotá (Alcaldía de Villavicencio, 2023). According to the latest political-administrative update of Villavicencio in 2021, the city now consists of 10 communes, as shown in Figure 1. The population of the municipality for the year 2018 (the latest census) was 531,275 inhabitants, with an estimated 90% of the population residing in the urban area (Departamento Administrativo Nacional de Estadística – DANE, 2018). It is noteworthy that half of the population is not originally from the municipality, as they come from other cities in the department, possibly emigrating from nearby cities and settling on the city's outskirts. These migrating individuals are generally from low-income backgrounds and often occupy illegal properties, resulting in disorderly and random growth of the city that does not align with the municipality's territorial planning.

Figure 1. Administrative division of Villavicencio
(Source: Adapted from Alcaldía de Villavicencio, 2023)

A preliminary analysis of the location of urban infrastructure projects in the city reveals a concentration of Primary Activity Nodes (PANs) in the old town of the municipality, specifically in communes 2, 3, and 6. This centralization of
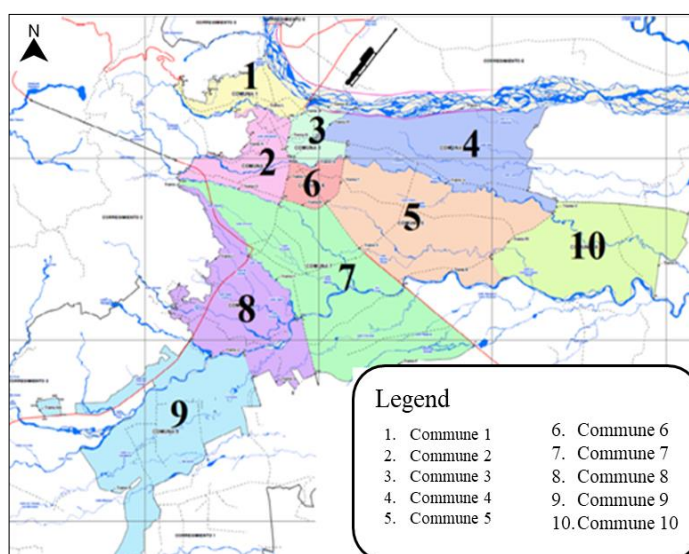
PANs hinders access to these services for the population living farther away, particularly on the outskirts of the city, where PAN coverage decreases. This, in turn, leads to a decreased quality of life for residents in these areas. For this reason, it becomes necessary to assess the coverage of different Primary Activity Nodes (health, security, education, and recreation) in the municipality of Villavicencio through an analysis of territorial accessibility.

This analysis aims to determine the areas of the city with the best coverage, as well as the population truly impacted by them. Furthermore, it allows for the identification of locations within the city where new infrastructure projects of various kinds can be situated, benefiting a larger number of residents.

METHODOLOGY

This section develops the three-phase methodology for conducting the territorial accessibility analysis and proposing new locations for urban infrastructure. Figure 2 presents the methodology which is divided into three phases that are detailed next.

1. Information collection

The first phase of the methodology involves collecting information related to the PANs, the population's location and distribution over the city, and the road infrastructure as follows:

Demand: The initial step involves locating and understanding the distribution of the city's residents. This necessitates geo-referencing the inhabitants, considering their concentration in various city areas. For example, in some Colombian municipalities, such georeferencing data is accessible through open data portals. Typically, this data is presented in the form of cartographic maps featuring layers representing city blocks or sectors. Each layer is equipped with attributes specifying the population count within its boundaries. By extracting the centroid of each

Figure 2. Proposed methodology for territorial accessibility assessment (Source: Authors)

layer and associating it with specific geographic coordinates, it becomes feasible to model the demand using coordinates, each with parameters indicating the number and demographic characteristics of the population in that location. Road Infrastructure: Information about the location of roads within the urban perimeter and in rural areas of the city should be collected. This information should cover roads, intersections, road directions, and other components of urban mobility.

PANs distribution: In addition to the previous information, the location of the infrastructure facilities of the principal activity nodes (PANs) is also needed. For instance, for studying the PAN of education services, the location of the schools must be collected. To do so, each PAN infrastructure facility should be represented by a pair of coordinates.

For this case study, population information for Villavicencio was extracted from the portal of the Instituto Geográfico Agustín Codazzi (IGAC), available in ESRI Shapefile format (*.shp) (IGAC, 2023). This data, apart from containing cartographic layers of the city blocks in Villavicencio, also includes information on the population residing in each city block. In total, 5441 city blocks were identified, representing the location of all urban residents in Villavicencio. To analyze and manipulate the shp files, we used the open-source software QGIS in its version 3.20.0-Odense.

Furthermore, with the assistance of the cartographic database of the municipality of Villavicencio available on the IGAC portal, information regarding the city's road network was extracted. Since the cartographic database from IGAC was found to be outdated, and in the last 5 years, the municipality of Villavicencio has made significant investments in its primary roads, including the opening of new corridors and the expansion of the urban area, the information was manually supplemented with cartography from technology providers, in this case, Google Maps. Finally, information regarding the Primary Activity Nodes (PANs) of the city was collected, either manually or with the assistance of the DANE portal (Departamento Administrativo Nacional de Estadística – DANE, 2023). In this study, we analyzed the following PANs:

Education: The analysis included 163 official primary and secondary education institutions.

Health: The analysis included 13 medical institutions, including health centers, clinics, and the departmental hospital located in the city.

Security: The security analysis was divided into two parts. The first sub-analysis pertains to police security forces, which are available in 13 facilities consisting of police stations and Immediate Response Commands (CAI). The other security sub-analysis was conducted concerning the fire department, with one station located in the city.

Recreation: This final analysis focused on parks, sports facilities, and courts available in the city for recreational activities for the public. In total, there are 315 facilities.

2. Determination of travel times between population and PANs

The second phase in the methodology involves determining the travel times and distances from the population to the
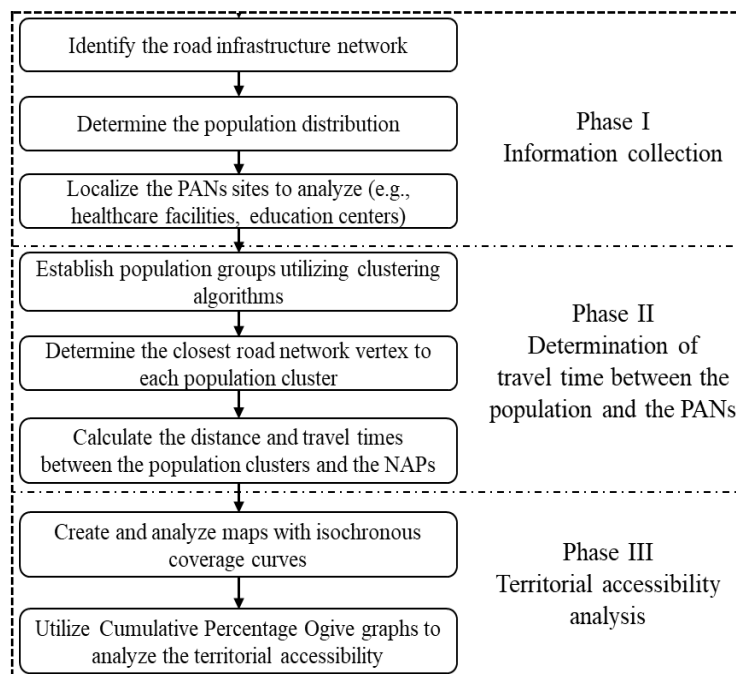
PANs. To do this, we first group the population based on their locations. This is necessary because the number of household or block locations in a city can be quite extensive, reaching thousands of locations. Therefore, to reduce dimensionality, a certain number of clusters are generated to represent groups of households or blocks. Multiple studies, such as (Espejo-Díaz et al., 2023; Wang et al., 2020) have utilized clustering algorithms to aggregate geographic coordinates. In this study, we implemented the k-means clustering algorithm presented in (Manning et al., 2009) as follows.

Let $\mathbf{X_C}$ be the center of the potential cluster C, then,

$$X_c = \frac{1}{|k|} \sum_{x \in k} \vec{x} \qquad (1)$$

The purpose of the k-means algorithm is to minimize the average Euclidian distance between n groups or clusters and z data points. The squared Euclidian distance is given by the summation of the residual sum of squares as shown in Eq. (2).

$$RRS_k = \sum_{x \in k} |\vec{x} - x_c|^2 \qquad (2)$$

Finally, Eq. (3) minimizes the overall sum of squares of all data points.

$$Min \ RRS = \sum_{k=1}^{K} RRS_k \qquad (3)$$

The next step in this phase is to determine the nearest road vertex to each population cluster. In this study, we assume that the population within each cluster starts its journey from this vertex. Once each cluster is associated with its corresponding nearest vertex, the next step is to determine the travel time from the vertex to or from the infrastructure facility locations of the PAN under study. In this work, we utilized the Google Maps Distance Matrix application programming interface (API) to determine the travel times and travel distances. This API provides travel times and distances for a matrix of origins and destinations, considering historical traffic condition data (Google Maps Plataform, 2023). Additionally, it allows for the utilization of new data sources, such as mobile phone geolocation or GPS data, which have the potential to enhance the accuracy of urban planning proposals (García-Albertos et al., 2019).

3. Analysis of territorial accessibility.

Once we have obtained the travel times of the population to the infrastructure facilities, the next phase of the methodology involves conducting a territorial accessibility analysis. This is done with the aim of identifying which areas of the city should be prioritized for investments in facilities to enhance territorial accessibility.

This analysis is carried out by generating isochronous curve maps. These are graphical representations that display the areas of the city that are within a specific time interval from a infrastructure facility. Each curve or zone on the map represents a time interval within which an infrastructure facility can be reached. For example, in an isochronous curve map used for analyzing security, if 5-minute intervals are considered, areas where a security infrastructure facility can be reached in 5 minutes or less will be identified with one color, areas within 5 to 10 minutes with another color, and so on.

It is worth noting that isochronous curve maps are valuable tools for decision-making not only in transportation infrastructure planning but also in the location of public services within cities. Finally, we conclude the territorial accessibility analysis by generating population coverage ogives. These graphs depict the distribution of the population in relation to travel distance coverage. The horizontal axis represents travel time intervals, while the vertical axis represents the accumulated population. These graphs are generated to assess the current state of territorial accessibility for the population and to compare them with similar graphs generated considering the proposed new facilities in the next subsection.

RESULTS AND DISCUSSION

The determination of distances and travel times was performed using the API Google Maps Distance Matrix. To do so, first a preprocessing of the information was conducted using the Python general programming software. Subsequently, the clustering step was performed using the K-means algorithm, generating $k = 200$ clusters. This was done with the assistance of the Python sklearn library. As a result, 200 clusters were obtained, with an average distance of 164 meters from each block to the nearest cluster and a standard deviation of 8.3 meters. The next step in the methodology is to determine the nearest road vertex to each cluster. In this work, it is assumed that the population grouped in that cluster begins their journey from there. This is done using the municipal road network, which contains the georeferencing of 58,283 vertices in the city. Due to the large number of vertices, establishing the closest distance between each vertex and each cluster involves a significant number of calculations. To lower the computation time, the spatial. KDTree class from the Scipy library was used. Once the nearest vertex to each cluster is determined, the next step is to determine travel times using the Google Maps Distance Matrix API. To do this, an API key must be generated from the Google Developers platform. With the key, the coordinates of the origins and destination coordinates can be used to create a URL with which requests are made. The response to the request is a JSON-formatted dictionary containing the estimated travel time and distance between the origin and destination. The information provided corresponds to the estimated travel time by vehicle (car) at the time the query is made. This information is then decoded to obtain the distance and travel time. For further information, interested readers can refer to the documentation available at (Google Maps Plataform, 2023). Figure 3 presents an example of a manual request made on the Google Maps platform through a web browser and a request made to the Google Maps API. It can be observed that the time reported by the API is the same as the manual request. Using the API, thousands of queries can be performed in a short period of time.
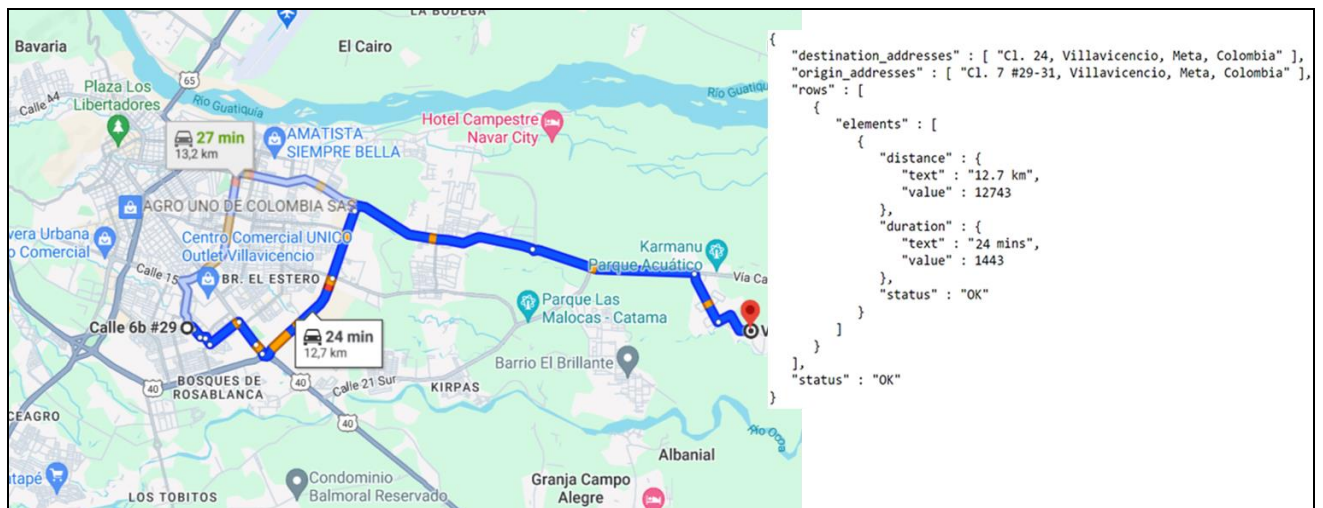
Figure 3. Example of a request of travel times between two locations to Google Maps Distance Matrix API (Source: Authors)

The requests were made for the PANs under study as follows:

1. Education: A total of 32,600 requests were made, corresponding to the travel times and distances from each population cluster to the 163 educational institutions. These queries were conducted on a business day during the peak hours of the city, from 7:00 am to 8:00 am, to capture the city's rush hours.

2. Health: A total of 2,600 requests were made, corresponding to travel times and distances from each population cluster to the 13 healthcare facilities identified in the city. The queries were made during the peak hours of a business day in the city.

3. Security: First, 2,600 requests were made to determine travel times and distances from the 13 police force facilities to each population cluster. Next, 200 requests were made to determine travel times and distances from the fire station to the population clusters.

4. Recreation: For the analysis of this PAN, a total of 36,000 requests were made to determine the distance and travel time from each cluster to the 316 recreational facilities in the city. The above requests result in 5 distance and time matrices, each of size 200 (total clusters) by the number of facilities in each category or PAN. It is important to note that for the Security PAN, two matrices were generated because it includes analyses for both the police and firefighters. Finally, the nearest facility was determined for each population cluster, and with this information, the isochrone maps and population coverage ogives were created, which are presented in the following subsection.

Territorial accessibility analysis

To perform the territorial accessibility analysis, isochrone maps were constructed for each PAN. Figure 4 present the isochrone maps for the Education PAN, Health PAN, Security (Police) PAN, Security (Firefighters) PAN, and Recreation PAN, respectively. Additionally, in the territorial accessibility analysis, the cumulative percentage of population ogive was calculated for the PANs under study, which is depicted in Figure 5. Subsequently, an analysis of the individual results for each PAN and an integrated analysis are conducted. The objective of this analysis is to establish priorities for investments in the services under study. It is worth noting that, to calculate the isochrone map for recreation, the calculation matrix is in meters. In other words, for each population cluster, the distance to the nearest park in meters is requested to the API Google Maps Distance Matrix. Assuming an average walking speed of 4 km/h, the travel times between the households and the recreational nodes were obtained. The analysis of isochrone curve maps and cumulative percentage population ogive for each PAN category is presented below.

Education: From Figure 4 A), corresponding to the isochrone map for public education (official schools), it can be concluded that the city's infrastructure for schools is sufficient. The results indicate that 84.74% of the population is within a 5-minute drive of an official school. Regarding the cumulative percentage population ogive shown in Figure 5, it performed the best among the studied PANs. This curve exhibits significant growth in the first interval (0-5 minutes), while in the second interval (5-10 minutes), it covers over 98% of the population. If the city decides to invest in new public education facilities, it should review issues related to installed capacity, as territorial accessibility for the population is sufficient.

Health: Figure 4 B), corresponds to the health isochrone map. This figure confirms the preliminary analysis conducted earlier, which concluded that the PANs are centralized in the old urban area of the city, corresponding to communes 2, 3, and 6. Although 84.56% of the population is within the first two intervals (0-10 minutes), approximately 101,000 inhabitants need more than 10 minutes to reach a health center. This can have life-threatening consequences in the case of vital emergencies for that population. Additionally, from Figure 4 B), it can be concluded that health coverage in districts 5 and 7 is deficient.

Security: This PAN category analyzed both police security and firefighters. It is noteworthy that in these cases, travel times were calculated from the infrastructure facilities to the vertices representing the population's locations. This is because, unlike the PANs for education and health, in almost all cases, the police and firefighters are directed towards the population. Figure 4 C) presents the isochrone map for the police. According to this figure and the cumulative coverage ogive in Figure 5, it is observed that over 90% of the population is within 10 minutes, and in comparison, to the other categories, this represents good performance. Conversely, the results for firefighters are not as positive.

327

Figure 4 D) presents the isochrone map for fire services. From this map, communes 4, 5, 7, 8, 9, and 10 have areas where the isochrone curves extend beyond 10 minutes. This is confirmed by the population coverage ogive graph. This ogive performs the worst among those studied. Approximately 40% of the population is in the rightmost intervals, i.e., those over 15 minutes. There is even a small percentage of the studied population that is over 30 minutes away. These times can be very high in the case of fires and require action from the firefighters.
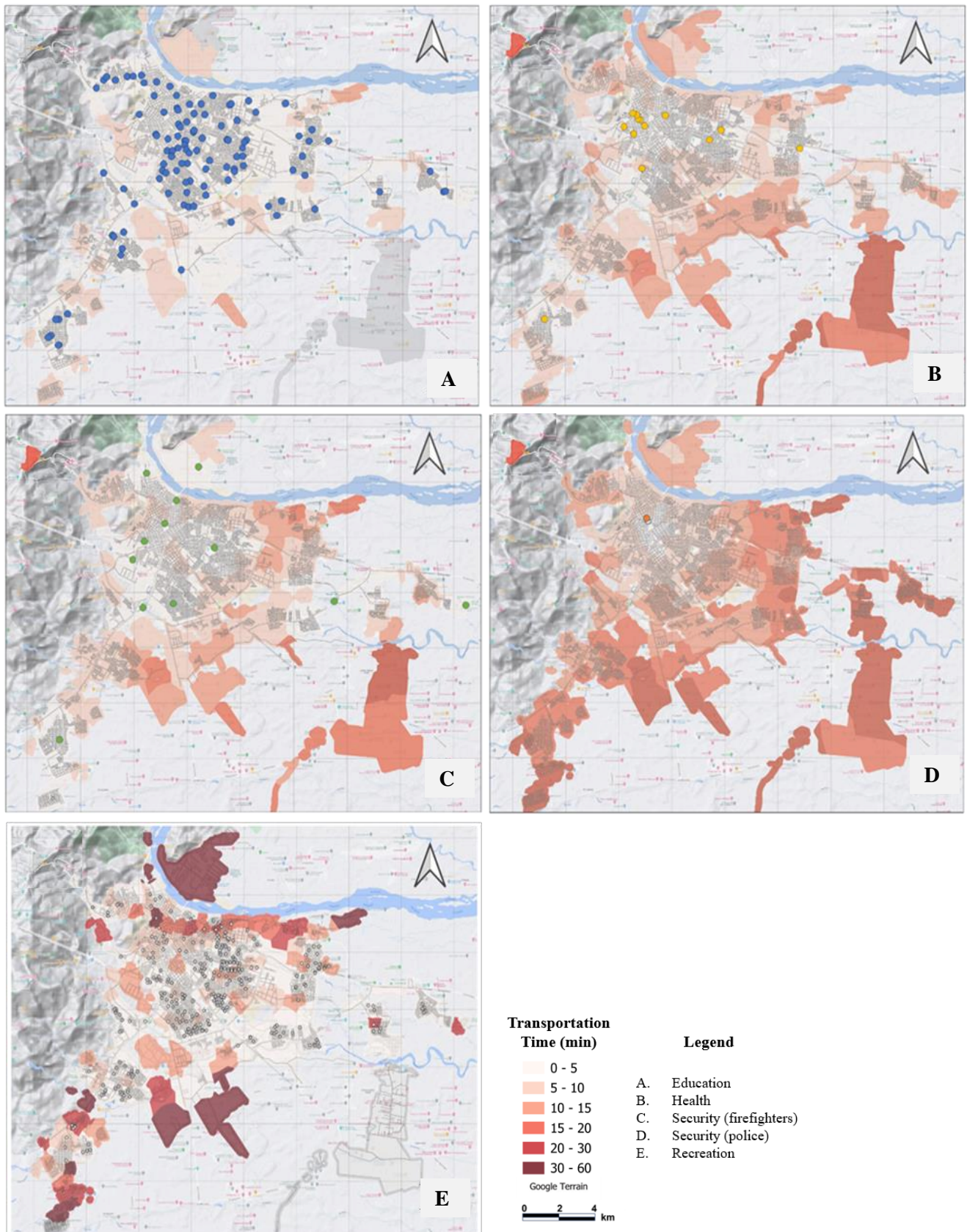
Figure 4. Isochrone maps for the PANs under study (Source: Authors)

Recreation: The last PAN category addressed in this study is recreation. Figure 4 E) presents the isochrone map for recreation. From this Figure 4 E) and the cumulative percentage population ogive of Figure 5, it can be concluded that the city has good recreational facilities. Approximately 80% of the population is within a 10-minute walk of a park, and approximately 90% are within 15 minutes or less.
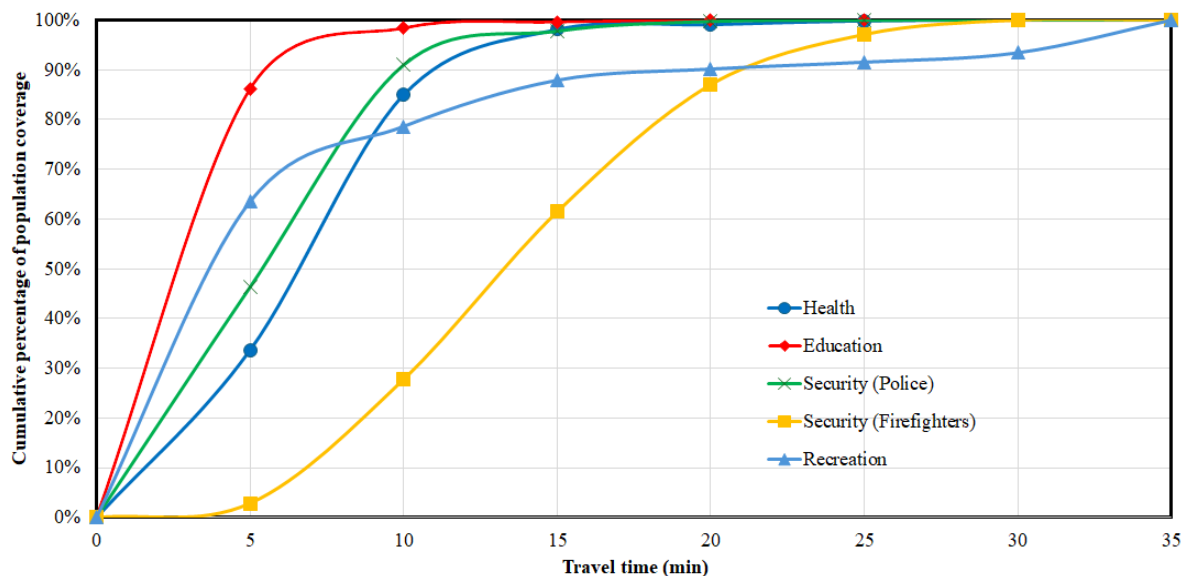

Figure 5. Cumulative percentage of population coverage for the PANs under study (Source: Authors)

CONCLUSIONS

From the analysis carried out, it is possible to conclude that the assessment of accessibility towards the PAN allows us to characterize the condition and coverage of the population with respect to the location of the facilities, thus allowing us to identify areas with access difficulties in search of possible solutions. It is possible to affirm that the current distribution of equipment in Villavicencio guarantees excellent access coverage to the population except for Health and Fire equipment, which due to their priority status should have significantly less time. Finally, it is possible to affirm that the proposed methodology allows for a concise approach to accessibility assessments, thus allowing users from other cities to make use of the methodology and replicate it for the benefit of the population.

REFERENCES

Alcaldía de Villavicencio. (2023). [Villavicencio Major]. https://villavicencio.gov.co/

Departamento Administrativo Nacional de Estadística – DANE. (2018). Censo Nacional de Población y Vivienda 2018 Colombia [National Census of Population and Housing 2018 Colombia]. https://sitios.dane.gov.co/cnpv

Departamento Administrativo Nacional de Estadística – DANE. (2023). Estadísticas por tema [Statistics by Topic]. Retrieved from https://www.dane.gov.co/index.php/estadisticas-por-tema

Escobar, D.A., Montoya, J.A., & Galindo, J.A. (2018). Coverage evaluation for recreational and cultural facilities through accessibility in Pitalito, Colombia. *Contemporary Engineering Sciences*, *11*(84), 4147–4158. https://doi.org/10.12988/ces.2018.87334

Escobar, D.A., Montoya, J.A., & Moncada, C.A. (2018). Analysis of coverage for armed force land use in Pitalito (Colombia), through territorial accessibility. *Contemporary Engineering Sciences*, *11*(65), 3233–3244. https://doi.org/10.12988/ces.2018.87326

Escobar, D.A., Urazán, C.F., & Moncada, C.A. (2017). Análisis de Cobertura Urbana de los Nodos de Actividad Primaria Mediante un Estudio de Accesibilidad Territorial en Quibdó (Colombia) [Analysis of Urban Coverage of Primary Activity Nodes Through a Territorial Accessibility Study in Quibdó (Colombia)]. Información Tecnológica, 28(5), 177–190. https://doi.org/10.4067/S0718-07642017000500018

Espejo-Díaz, J.A., Alfonso-Lizarazo, E., & Montoya-Torres, J.R. (2023). Improving access to emergency medical services using advanced air mobility vehicles. *Flexible Services and Manufacturing Journal*. https://doi.org/10.1007/s10696-023-09507-9

García-Albertos, P., Picornell, M., Salas-Olmedo, M.H., & Gutiérrez, J. (2019). Exploring the potential of mobile phone records and online route planners for dynamic accessibility analysis. *Transportation Research Part A: Policy and Practice*, *125*, 294–307. https://doi.org/10.1016/j.tra.2018.02.008

Geurs, K.T., & Van Wee, B. (2004). Accessibility evaluation of land-use and transport strategies: review and research directions. *Journal of Transport Geography*, *12*(2), 127–140. https://doi.org/10.1016/j.jtrangeo.2003.10.005

Gibbons, S., & Vignoles, A. (2012). Geography, choice and participation in higher education in England. *Regional Science and Urban Economics*, *42*(1–2), 98–113. https://doi.org/10.1016/j.regsciurbeco.2011.07.004

Gómez, J.N., Loures, L., Castanho, R., Cabezas, J., & Panagopoulos, T. (2018). Assessing the feasibility of GIS multimethod approach to ascertain territorial accessibility to hemodynamics rooms in Spain mainland. *Habitat International*, *71*, 22–28. https://doi.org/10.1016/j.habitatint.2017.11.001

Google Maps Platform. (2023). Distance Matrix API. https://developers.google.com/maps/documentation/distance-matrix

IGAC. (2023). Consulta Catastral [Cadastral Inquiry]. https://geoportal.igac.gov.co/contenido/consulta-catastral

Manning, C., Raghavan, P., & Schütze, H. (2009). *Introduction to Information Retrieval*. Cambridge University Press.

Mao, L., & Nekorchuk, D. (2013). Measuring spatial accessibility to healthcare for populations with multiple transportation modes. *Health & Place*, *24*, 115–122. https://doi.org/10.1016/j.healthplace.2013.08.008

Martínez, M., Rojas, C., Condeço-Melhorado, A., & Carrasco, J.A. (2021). Accessibility Indicators for the Geographical Assessment of Transport Planning in a Latin American Metropolitan Area. *Geographies*, *1*(2), 124–142. https://doi.org/10.3390/geographies1020008

Mejía, G., Aránguiz, R., Espejo-Díaz, J.A., Granados-Rivera, D., & Mejía-Argueta, C. (2022). Can street markets be a sustainable strategy to mitigate food insecurity in emerging countries? Insights from a competitive facility location model. *Socio-Economic Planning Sciences*, 101456. https://doi.org/10.1016/j.seps.2022.101456

Montoya, J.A., Escobar, D.A., & Younes, C. (2018). Coverage of educational centers from territorial accessibility in the municipality of Pitalito - Huila, Colombia. *Contemporary Engineering Sciences*, *11*(61), 3021–3033. https://doi.org/10.12988/ces.2018.87310

Ortúzar, J. de D., & Willumsen, L.G. (2011). *Modelling Transport*. Wiley. https://doi.org/10.1002/9781119993308

Quijada-Alarcón, J., Rodríguez-Rodríguez, R., González-Cancelas, N., & Bethancourt-Lasso, G. (2023). Spatial Analysis of Territorial Connectivity and Accessibility in the Province of Coclé in Panama. *Sustainability*, *15*(15), 11500. https://doi.org/10.3390/su151511500

Shen, G., Wang, Z., Zhou, L., Liu, Y., & Yan, X. (2020). Home-Based Locational Accessibility to Essential Urban Services: The Case of Wake County, North Carolina, USA. *Sustainability*, *12*(21), 9142. https://doi.org/10.3390/su12219142

Tahmasbi, B., Mansourianfar, M.H., Haghshenas, H., & Kim, I. (2019). Multimodal accessibility-based equity assessment of urban public facilities distribution. *Sustainable Cities and Society*, *49*, 101633. https://doi.org/10.1016/j.scs.2019.101633

Wan, N., Zou, B., & Sternberg, T. (2012). A three-step floating catchment area method for analyzing spatial access to health services. *International Journal of Geographical Information Science*, *26*(6), 1073–1089. https://doi.org/10.1080/13658816.2011.624987

Wang, Y., Deng, Y., Ren, F., Zhu, R., Wang, P., Du, T., & Du, Q. (2020). Analysing the spatial configuration of urban bus networks based on the geospatial network analysis method. *Cities*, *96*, 102406. https://doi.org/10.1016/j.cities.2019.102406

FACTORS AFFECTING WORKING HAPPINESS AND ORGANIZATIONAL COMMITMENT AT TOURISM ENTERPRISES IN THE CENTRAL REGION, VIETNAM

Le Tran Bao HAN
Industrial University of Ho Chi Minh City, Faculty of Business Administration,
Ho Chi Minh City, Vietnam, e-mail: letranbaohan@iuh.edu.vn

Nguyen Thanh LONG[*]
Industrial University of Ho Chi Minh City, Faculty of Business Administration,
Ho Chi Minh City, Vietnam, e-mail: nguyenthanhlong@iuh.edu.vn

Pham Ngoc Kim KHANH
Industrial University of Ho Chi Minh City, Faculty of Business Administration,
Ho Chi Minh City, Vietnam, e-mail: phamngockimkhanh@iuh.edu.vn

Abstract: This study aims to identify factors affecting working happiness and organizational commitment at tourism enterprises in the Central region, Vietnam. This study used combination method of qualitative and quanitative methods. A 703-tourism-employee survey was conducted at the tourism enterprises, destinations or organizations in the Central region, Vietnam. This research results showed that there were 5 factors affecting directly on working happiness and organizational commitment, including (1) Working environment, (2) Job characteristics, (3) Colleague relationship, (4) Work-life balance, and (5) Income and benefits. This study also examined and showed impact of the 4 factors on organizational commitment through working happiness as mediator factor, excluding working environment. From these results, the study proposed some managerial implications for tourism enterprises in the Central region, Vietnam improve human resource quality through working happiness and organizational commitment.

Key words: working happiness, organizational commitment, tourism enterprises, human resource, employees

* * * * * *

INTRODUCTION

The tourism industry is highly regarded in economic development because it reduces unemployment, improves living standards for local communities, and promotes economic growth and social welfare, which is currently the most crucial service industry in the world (Brătucu et al., 2017). In addition, there were many empirical studies that illustrated tourism industry had brought benefits for country image, local image, and their competitiveness in the global business ecosystem (Tien et al., 2019). According to Qiu and Wu (2004), the tourism industry was one of industries having high turnover rate. Tourism employees had faced pressure related to job instability, negative impacts affecting working and psychological health (Medina-Garrido et al., 2023). He et al. (2019) stated that employees working in the tourism industry were less happy and more likely to fail than in other industries. However, the tourism industry was seemed as one of the most special industries while it requireS employees always were professional, cheerful, happy and committed to develop and operate well (Ghaderi et al., 2023). On the other hand, happiness was considered be very important and was a key role for organization success, hence the organizations should be interested in the working happiness of employees, which it was a crucial thing for development (Al-Shami et al., 2023). Fisher (2010) also concluded in his research that happiness at work could be a factor to be retained, motivated, and encouraged professional employees in the future. From these reasons, human resource is one of the most important factors in the sustainable develoment of tourism enterprises. Baum et al. (2020) stated that the tourism human resource topic was to attract interests from society, scholars, experts, however this topic has been lacked studies discussing and pointed out solutions.

Nowadays, to manage highly skilled and specialized employees has become one of the most challenging issues, especially in the post-Covid-19 pandemic while the human resource is seemed a competitive advantage of tourism enterprises. According to Vietnam National Administration of Tourism (2022), the turnover rate of tourism industry in Vietnam was one of the highest turnover rated countries around the world during the post-Covid-19 pandemic. On the other hand, the World Tourism Organization (2023) stated Vietnam tourism would be the most attractive tourism in the Asia region. Hence, every year, Vietnam welcomes millions of tourists in both domestic and foreign aspects. In the first eight months in 2023, there were over 7.8 millions tourists coming to destinations along from South region to North region in Vietnam (Ministry of Culture, 2023). Vietnam tourism has been divided into 7 key areas, but one of the most important area is the Central region, Vietnam. There are 19 provinces located in the region, including Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, Thua Thien Hue, Kon Tum, Gia Lai, Daklak, Daknong, Lam Dong, Da Nang, Quang Nam, Quang

---

[*] Corresponding author

Ngai, Binh Dinh, Phu Yen, Khanh Hoa, Ninh Thuan and Binh Thuan with over 100 destinations. Hence, the number of tourists coming to the Central region, Vietnam is the majority rate of Vietnam tourism. According to Government News (2023), tourism in the Central region, Vietnam had been prospered rapidly among 19 provinces, especially Quang Nam, Da Nang, Thua Thien Hue or Khanh Hoa. Therefore, the Central region should plan and develop tourism industry as main industry for region sustainable economy. One of the solutions for this strategy is to take interests in human resoure development by training, improving working environment, or improving policies for increasing organizational commitment and working happiness. Happiness at working relates to improve working effectiveness and efficiency. Organizational commitment is acceptance and trust in organization. In recent years, working happiness and organizational commitment has been taking interests of scholars and managers, especially service industries as tourism.

However, there is no study which examies both working happiness and orgainizational commitment. The previous studies were conducted to identify only factors affecting working happiness or orgainizational commitment, such as Januwarsono's (2015), Chaiprasit and Santidhiraku (2011), Atan et al. (2021). In addition, tourism topic in Vietnam has attracted and conducted at other regions in Vietnam such as the Southeast region, the Highland Central in many aspects relating tourism competitiveness or tourism marketing (Khanh and Long, 2023; Long et al., 2023a; Long et al., 2023b). However, there is no study relating to tourism human resources especially working happiness or orgainizational commitment conducting in the Central region, Vietnam. Therefore, this study aims to identify factors affecting on working happiness and organizatinal commitment at tourism destinations in the Central region, Vietnam. Moreover, managerial implications would be proposed so that the enterprises improve human resource for sustainable development.

LITERATURE REVIEW
1. Working happiness

Working happiness is becoming increasingly important in human resource management research. Working happiness was not a static or fixed state but a continuous process over time (Fisher, 2010). According to Fisher (2010), some previous studies underestimated the importance of happiness at work, however, working happiness was a key goal that everyone and every organization was looking for, relating to both the environment and the individual. Employees could feel happy while working at a particular time, but sometimes they may feel unhappy (Simmons, 2013). According to Gavin and Mason (2004), employee happiness and positivity at work would contribute to organizational success and commitment. Happiness at work was a general concept, not only a specific motivating factor for high productivity and efficiency (Salas-Vallina et al., 2020), but also the most critical factor in encouraging employees to be ready or willing to face new challenges (Galván Vela et al., 2022). On the other hand, working happiness played an essential role because employees had to take time for working and activity or event complexity related to work (Basinska and Rozkwitalska, 2022). Kun and Gadanecz (2022) stated experience of employees feeling energized and enthusiastic, finding meaning and purpose in their work, having good working relationships, and feeling committed to the organizations.

2. Organizational commitment

Organizational commitment had the following three characteristics: an acceptance and trust in the organization's goals and values, a willingness to make significant efforts to support the organization, and a belief to continue engaging with organizations (Gyensare et al., 2017). Organizational commitment occurred when employees committed with an organization where they could achieve company goals, demonstrate better performance than others, and would be willing to stay (Herhausen et al., 2020). Organizational commitment was the relative level of employee involvement and awareness in an enterprise. The previous researches showed that organizational commitment was predicted by personal factors, experience, work, context and organization (Lo et al., 2024; Nazir et al., 2018).

3. Hypotheses and research model

Based on theoretical approaches, referring to existing foreign research on aspects related to happiness at work and organizational commitment by Chaiprasit and Santidhiraku (2011), Januwarsono's (2015), Baba Rahim et al. (2020), Atan et al. (2021), Karim (2023), and Al-shami et al. (2023), authors found that factors such as: Working environment, Job characteristics, Colleague relationship, Work-life balance, Income and benefits would affect on happiness at work and organizational commitment at tourism enterprises in the Central region of Vietnam.

Working environment

According to Tandler et al. (2020), working environment included the primary working conditions and organization (e.g., assets, procedures, and rules of organization) as well as daily experiences, or short-term, and social interactions could promote a happy life. A good work environment in the service industry could be clean, attractive, inspiring, and supportive workplace that would have positively impacts on organizational commitment (AlBattat and MatSom, 2014). According to Şahin et al. (2019), working environment was happy when employees regularly experienced positive emotions, because employees's bodies, minds, and spirits were related to the physical environment, a good working environment would make them feel happier, which led them to be more productive work (Abouelela, 2022). Therefore, the hypotheses were proposed as following:

H1: Working environment has a positive influence on working happiness.

H2: Working environment has a positive influence on organizational commitment.

H3: Working environment has a positive influence on organizational commitment through working happiness as mediator factor.

Job characteristics

According to Katz et al. (2023) an employee's positive status changed significantly as job characteristics changed with opportunity. However, a lack of understanding of job characteristics at the job level and activity level could affect their happiness (Bakker, 2015). Junça-Silva and Menino (2022) pointed out, factors such as autonomy, feedback, job variety, identity, and work meaning would be job characteristics that would generate motivate, affect internally, and make employees feel happier. Job characteristics was stated to affect on motivation, satisfaction, and performance (Karim, 2023). Zaman et al. (2020) stated that the job characteristics affected enjoyment of work. Therefore, the hypotheses were proposed as following:

H4: Job characteristics has a positive influence on working happiness.

H5: Job characteristics has a positive influence on organizational commitment.

H6: Job characteristics has a positive influence on organizational commitment through working happiness as mediator factor.

Colleague relationship

According to Haitao (2022), colleague was an individual or a group of people working in the same company or organization, interacting with each other, and expressing their reactions to colleagues in the organization, and the relationship with colleagues related to job satisfaction. Coworker supported positive emotion increasing, which it made employees to feel be accepted as part of the organization (Watson et al., 1992). In addition, relationships with colleagues at work could create positive emotions such as joy, gratitude, and satisfaction, which were pleasant feelings that every individual desired (Diener et al., 2017). Therefore, the hypotheses were proposed as following:

H7: Colleague relationship has a positive influence on working happiness.

H8: Colleague relationship has a positive influence on organizational commitment.

H9: Colleague relationship has a positive influence on organizational commitment through working happiness as mediator factor.

Income and benefits

Chen and Hsu (2024) stated working happiness increased with income. Hwang (2019) also found working happiness levels depending on salary levels. Income or other proxy indicators, such as assets and financial status were examined a positive relationship with happiness (Journal et al., 2016; Lim et al., 2020). Employee awareness could increase when they would feel respected and recognized from organizations throughout the increased income, which it could affect the organizational commitment (Li et al., 2021). Moreover, (Jaworski et al., 2018) stated that both part-time and full-time employees would commit with organizations when they would receive benefits or welfare such as health insurance, annual leave, or health care. Therefore, the hypotheses were proposed as following:

H10: Income and benefits has a positive influence on working happiness.

H11: Income and benefits has a positive influence on organizational commitment.

H12: Income and benefits has a positive influence on organizational commitment through working happiness as mediator factor.

Work-life balance

Baba Rahim et al. (2020) stated that maintaining a balance between work and personal life significantly enhanced working happiness, and the research also illustrated a positive impact of work-life balance work on woking happiness. Zheng et al. (2015) stated establishing organizational policies relating work-life balance could rise employee satisfaction. Additionally, high employee satisfaction would lead them to commit closely and limit their turnover intention (Karatepe and Karadas, 2015). According to Dhingra and Dhingra (2021), job flexibility would help employees could be work-life balance such as good family obligation, be lower rate of family conflicts and other relationships. Therefore, the hypotheses were proposed as following:

H13: Work-life balance has a positive influence on working happiness.

H14: Work-life balance has a positive influence on organizational commitment.

H15: Work-life balance has a positive influence on organizational commitment through working happiness as mediator factor.

Working happiness

Working happiness has a positive influence on organizational commitment in the tourism industry, which it was illustrated through the previous studies. Those findings showed when employees felt to satisfy and be happy with their jobs, they tended to be more committed with organization where they was working for (Atan et al., 2021; Field and Buitendach, 2011). When employees would feel happy with current job, which it would help motivate, encourage them to be more commited with organizations, also increase innovation and creation during working (Al-shami et al., 2023). Therefore, the hypothesis was proposed as following:

H16: Working happiness has a positive influence on organizational commitment.

From these hypothesis, authors decided to propose a research model with 16 hypothesis (Figure 1).

RESEARCH METHOD

The research was conducted in the following order of steps:

Step 1, qualitative method was used via expert interview with 10 managers working at tourism enterprises to complete research model and scale, modify slightly items of factors to appropriate with the study context scale. The scale was adopted

from the previous studies, including Dhyan Parashakti et al. (2017), Hanaysha (2016), Abdulaziz et al. (2022), Abou-Moghli (2018), Azmy (2022), Limpanitgul et al. (2014), Klaus et al. (2014). Liker 5 with 1 – strongly disagree, 5 – strongly agree was used in this study. According to Bentler and Chou (1987), sample size must be greater or equal 5 times of the number of variables.
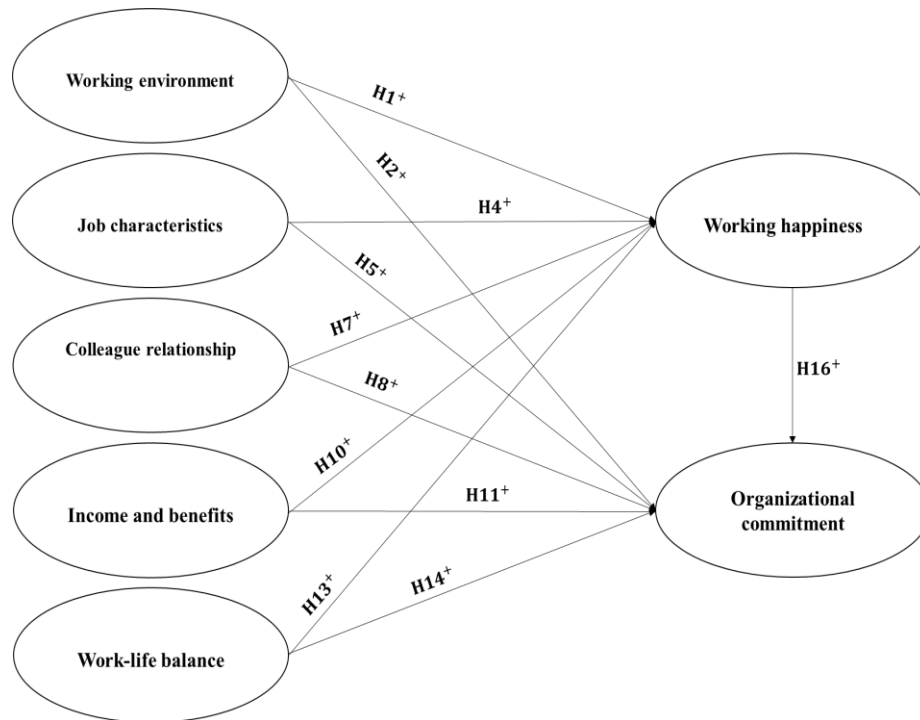

Figure 1. Research model

However, because of the Central region size with over 100 tourism destination and hundreds tourism enterprises, authors decided the larger sample size in order to increase representative level. Authors delivered a 1200-questionnaires for employees working at tourism enterprises in the Central region, Vietnam via online and offline.

Step 2, the quanitative method was used to analyze the data for examining reliability, convergent validity, discriminant validity, test hypotheses and examine model fit through the bootstrapping results with P-Value ≤ 0.05. This step was conducted via SmartPLS software.

RESEARCH RESULT
1. Respondent Demographic Profile
This study distributed 1200 questionnaires, but authors collected back only 834 questionnaires. However, among them, only 703 questionnaires were valid. Among 703 valid answers, there were 334 men and 369 women. Regarding to age, 18-30 years old was 259 respondents, from 31-45 years old was 186 people, 153 people was in 46-60 years old and the remainder for over 60 years old. Regarding income, there were 167 people – income under 10 million VND, 280 respondents – income from 10 million VND to 15 million VND, the income greater than 15 million VND to 20 million VND with 140 answers, and the ramainder for group of income 20 million VND.

2. Scale Reliability Tests
Cronbach's alpha coefficients are all greater than 0.7, the highest being α = 0.898 (colleague relationship) (Table 1). In addition, the composite reliability coefficient (CR) must be greater than 0.7, and table 1 illustrated no CR coefficient less than 0.7, hence the structure is highly reliable.

Table 1. Reliability and the result of CFA (Note: WE: working environment; JC: Job charateristics; CL: Colleague relationship; WB: Work-life balance; IB: Income and benefits; WH: Working happiness; OC: Organizational commitment; Others are variables of each factor)

Factor	Variables	Outer Loading	Cronbach's alpha	CR	AVE
Working environment (WE)	WE1	0.801	0.823	0.883	0.654
	WE2	0.779			
	WE3	0.816			
	WE4	0.837			
Job characteristics (JC)	JC1	0.810	0.809	0.875	0.636
	JC2	0.780			
	JC3	0.794			
	JC4	0.805			
Colleague relationship (CL)	CL1	0.878	0.898	0.929	0.767
	CL2	0.887			
	CL3	0.870			
	CL4	0.868			
Work-life balance (WB)	WB1	0.799	0.825	0.878	0.642
	WB2	0.772			
	WB3	0.818			
	WB4	0.815			
Income and benefits (IB)	IB1	0.801	0.814	0.877	0.589
	IB2	0.733			
	IB3	0.734			
	IB4	0.762			
	IB5	0.803			
Working happiness (WH)	WH1	0.837	0.861	0.900	0.642
	WH2	0.780			
	WH3	0.781			
	WH4	0.790			
	WH5	0.818			
Organizational commitment (OC)	OC1	0.828	0.866	0.908	0.713
	OC2	0.837			
	OC3	0.874			
	OC4	0.837			

The results in Table 1 also show the factors that ensure convergence when the AVE indexes are all higher than 0.5. Table 2 shows that the criteria for discriminant validity have also been met when the square root of the variance between the construct and its indicators represented on the main diagonal is larger than the rest of the matrix.

Table 2. The reliability and validity Fornell-Larcker Criterion

	CL	IB	JC	OC	WB	WE	WH
CL	0.876						
IB	0.441	0.767					
JC	0.337	0.321	0.797				
OC	0.745	0.514	0.424	0.844			
WB	0.403	0.301	0.272	0.441	0.801		
WE	0.372	0.396	0.352	0.420	0.236	0.809	
WH	0.527	0.706	0.407	0.582	0.408	0.426	0.801

Note: WE: working environment; JC: Job charateristics; CL: Colleague relationship; WB: Work-life balance; IB: Income and benefits; WH: Working happiness; OC: Organizational commitment; Others are variables of each factor.
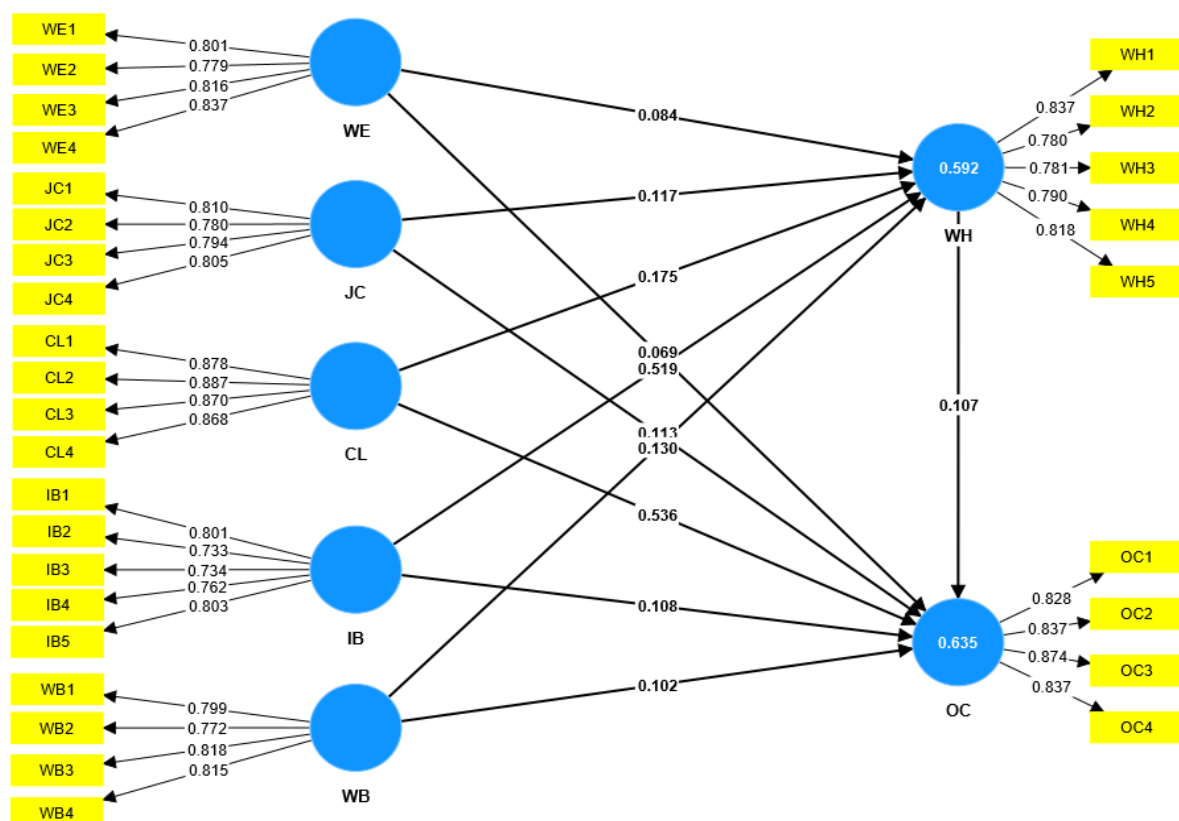

Figure 2. PLS-SEM (Note: WE: working environment; JC: Job charateristics; CL: Colleague relationship; WB: Work-life balance; IB: Income and benefits; WH: Working happiness; OC: Organizational commitment; Others are variables of each factor)

In Figure 2, in the model, there are two dependent variables: happiness at work and organizational commitment. From the results of PLS - SEM algorithm analysis, the result of the adjusted R-squared of working happiness was 0.592 (R^2 = 59.2%). As a result, the independent variables (work environment, job characteristics, colleague relationship, work-life balance, and income and benefits) explain 59.6% the variation of the working happiness. The adjusted R-squared of organizational commitment equals to 0.635 (R^2 = 63.5%). Consequently, the independent variables of work environment, job characteristics, colleague relationship, organizational justice, work-life balance, and income and benefits explain 65.1% of the variation in organizational commitment.

3. Hypothesis testing

Then, this study test hypotheses through bootstrapping 5000 samples to resample with replacement where the original sample acts as a crowd. Table 3 showed all hypotheses from H1 to H16 are accepted with P-values < 0.05. The importance of the six factors affecting organizational commitment in this study are arranged from high to low as follows: (1) Colleague relationship (β = 0.499), (2) Job characteristics (β = 0.113), (3) Income and benefits (β = 0.108), (4) Working happiness (β = 0.107), (5) Work-life balance (β = 0.102), (6) Working environment (β = 0.069). Besides, the importance of five factors affecting happiness at work in this study is arranged from high to low as follows: (1) Income and benefits (β = 0.519), (2) Colleague relationship (β = 0, 175), (3) Work-life balance (β = 0.13), (4) Job characteristics (β = 0, 117) and (5) Working environment (β = 0.084). Moreover, the study also examined mediating hypotheses H3, H6, H9, H12 and H15. All these

results are accepted with P-values < 0.05, excluding the impact of working environment on organizational commitment through mediating of working happiness – Hypothesis H3 (P-values is 0.109 > 0.05) (Table 4).

Table 3. Path coefficients

	Coefficients	SE	T-value	P-value	Note
WE->WH	0.084	0.083	0.032	0.009	Accepted H1
WE -> OC	0.069	0.068	0.03	0.023	Accepted H2
JC -> WH	0.117	0.116	0.028	0.000	Accepted H4
JC -> OC	0.113	0.113	0.028	0.000	Accepted H5
CL -> WH	0.175	0.174	0.035	0.000	Accepted H7
CL -> OC	0.536	0.538	0.039	0.000	Accepted H8
IB ->WH	0.519	0.521	0.043	0.000	Accepted H10
IB -> OC	0.108	0.107	0.042	0.01	Accepted H11
WB -> WH	0.13	0.13	0.029	0.000	Accepted H13
WB ->OC	0.102	0.102	0.025	0.000	Accepted H14
WH -> OC	0.107	0.106	0.042	0.011	Accepted H16

Note: WE: working environment; JC: Job charateristics; CL: Colleague relationship;
WB: Work-life balance; IB: Income and benefits; WH: Working happiness; OC: Organizational commitment

Table 4. Mediating results

	Coefficients	SE	T-value	P-value	Note
WE->WH -> OC	0.009	0.009	1.601	0.109	Rejected H3
JC -> WH -> OC	0.012	0.012	2.143	0.032	Accepted H6
CL -> WH -> OC	0.019	0.018	2.296	0.022	Accepted H9
IB -> WH -> OC	0.056	0.055	2.530	0.011	Accepted H12
WB -> WH -> OC	0.014	0.014	2.188	0.029	Accepted H15

Note: WE: working environment; JC: Job charateristics; CL: Colleague relationship;
WB: Work-life balance; IB: Income and benefits; WH: Working happiness; OC: Organizational commitment

CONCLUSION AND PRACTICAL IMPLICATIONS
1. Discussion
This study aims to identify which factors affecting working happiness and organizational commitment at tourism enterprises in the Central region, Vietnam. This study had proposed 10 direct hypotheses examining the influence of 5 factors on working happiness and organizational commitment, including working environment; work-life balance; job characteristics; colleague relationship; income and benefits; and another hypothesis for the impact of working happiness on organizational commitment. Finally, all direct results were appropriated with the previous studies of Şahin et al. (2019) and Abouelela (2022), AlBattat and MatSom (2014) for the impact of working environment on working happiness and organizational commitment; Zaman et al. (2020) and Karim (2023) stated that job charateristics had influences on working happiness and organizational commitment; Diener et al. (2017), Haitao (2022) for colleague relationship affecting on working happiness and organizational commitment; Chen and Hsu (2024), Hwang (2019), Journal et al. (2016) and Lim et al. (2020) for hypothesis 10 and 11 of income and benefits factor; Baba Rahim et al. (2020) and Karatepe and Karadas (2015) for hypothesis 13 and 14; and Atan et al. (2021); Field Buitendach (2011) for the influence of working happiness and organizational commitment. In addition, 5 indirect hypotheses were proposed to examine the influence of 5 factors on organizational commitment through working happiness as mediator factor, which no previous study mentioned or examined this mediator relationship between the factors. All indirect results were accepted excluding hypothesis of the impact of working environment on organizational commitment through working happiness.

2. Managerial implications
Firstly, colleague relationship was the most significant influence on organizational commitment. Tourism managers in the Central region, Vietnam need to create more opportunities to share information, projects, and new opportunities among organization members and need to pay attention to expressing the positive supports for colleagues such as knowledge, experience, and skills. In addition, it can simply be a word of encouragement day by day. Managers must respect employees' opinions, job satisfaction or working happiness because the colleague relationship has the greatest effect on employee happiness at work. Secondly, job characteristics are the second most important factor in influencing organizational commitment and the fourth most important factor influencing happiness at work.

The characteristics of the tourism industry are very diverse in business types and activities. Tourism enterprises need to design jobs and manage employees well so that they can feel happier and commit to their work. Managers need to design according to job position, without boring repetition so that employees can develop their personal and creative abilities. In addition, managers or enterprises should allow the employees to develop themselves and think independently, learn many new things and face challenges at work. Employees will also feel more positive, happy and committed to the business when work is interactive, involves teamwork, and involves mutual support.

Thirdly, income and benefits factors ranked third in importance in influencing organizational commitment and first in influencing working happiness. It can be assessed that income and benefits play an important role in organizational

commitment and working happiness, so managers need to pay attention and propose some strategies to improve this aspect. First, since the service industry is very diverse and competitive, enterprises must ensure competitive salaries and attractive benefits to retain talented employees, which it is to ensure employee benefits such as health insurance, leave benefits, bonuses, holiday benefits, etc. They should build an effective compensation policy to find and motivate excellent employees. Managers must know how to praise, suggest, provide, and communicate opportunities for development and advancement into good job positions, enhancing each employee's happiness and ensuring their long-term commitment to the organization.

Fourthly, work-life balance influenced both organizational commitment and happiness at work. Tourism managers can propose some actions to improve balance in this work, such as setting flexible policies for employees while still ensuring time and efficiency of work, depending on the job position. They should also encourage employees to balance work and life, such as promoting rest, spending time with their family, etc. In addition, managers also need to pay attention and listen to their personal issues, thoughts, and aspirations to guide them in using their leave benefits for recharging their energy. In addition, providing some programs on time management skills and timetable design to ensure work-life balance is essential.

Finally, the working environment also affected working happiness and organizational commitment. Managers can enhance commitment by building a positive, mutually supportive, comfortable, safe working environment and stronger and happier employees in the tourism industry through small ways such as paying attention to amenities in rest areas, creative rooms, office rooms.

3. Conclusion

To help enterprises manage their human resources, create a positive working environment, and increase tourism working happiness and organizational commitment, the study aims to examine the impact of factors on working happiness and organizational commitment. After conducting qualitative and quantitative research, the results showed that there are five factors affecting working happiness and organizational commitment, including (1) Working environment; (2) Job characteristics, (3) Colleague relationship, (4) Income and benefits, (5) Work-life balance. The research results also illustrated the mediating influence of Job characteristics, Colleague relationship, Income and benefits, and Work-life balance on organizational commitment through working happiness. Based on these results, the author proposes some managerial implications to improve the working happiness and organizational commitment for tourism enterprises in the Central region, Vietnam.

4. Limitations and future research directions

Research on working happiness and organizational commitment is a broad topic with many different aspects. The data collected on service industry employees may limit the coverage of working happiness and organizational commitment of employees working in other industries. Next studies will not only focus on the tourism industry in the Central region, Vietnam but they will be expanded areas on other industries and other regions in Vietnam.

REFERENCES

Abou-Moghli, A. (2018). Using Self-Determination Theory (SDT) to Investigate the Relationship between Organizational Commitment, Happiness and Work Engagement in Service Industry. *Journal of Business Administration Research*, 8(1), 29–39. https://doi.org/10.5430/jbar.v8n1p29

Abdulaziz, A., Bashir, M., & Alfalih, A.A. (2022). The impact of work-life balance and work overload on teacher's organizational commitment: do Job Engagement and Perceived Organizational support matter. *Education and Information Technologies*, 27(7), 9641–9663. https://doi.org/10.1007/s10639-022-11013-8

Abouelela, A. (2022). The Effectiveness of the Role of Interior Design in Creating Functional and Institutional Happiness for Work Environments: King Faisal University as a Model. *Designs*, 6(3), 1–20. https://doi.org/10.3390/designs6030045

AlBattat, A.R., & MatSom, A.P. (2014). Emergency Planning and Disaster Recovery in Malaysian Hospitality Industry. *Procedia - Social and Behavioral Sciences*, 144, 45–53. https://doi.org/10.1016/j.sbspro.2014.07.272

Al-shami, S.A., Al Mamun, A., Rashid, N., & Cheong, C.B. (2023). Happiness at workplace on innovative work behaviour and organisation citizenship behaviour through moderating effect of innovative behaviour. *Heliyon*, 9(5). https://doi.org/10.1016/j.heliyon.2023.e15614

Atan, A., Ozgit, H., & Silman, F. (2021). Happiness at work and motivation for a sustainable workforce: evidence from female hotel employees. *Sustainability (Switzerland)*, *13*(14). https://doi.org/10.3390/su13147778

Azmy, A. (2022). Effect of Compensation and Organizational Commitment on Employee Performance During WFH at Digital Company. *Jurnal Economia*, *18*(1), 70–88. https://doi.org/10.21831/economia.v18i1.44949

Baba Rahim, N., Osman, I., & Arumugam, P.V. (2020). Linking work-life balance and employee well-being:Do supervisor support and family suport moderate the relationship? *International Journal of Business and Society*, *21*(2), 588–606.

Bakker, A.B. (2015). Towards a multilevel approach of employee well-being. *European Journal of Work and Organizational Psychology*, *24*(6), 839–843. https://doi.org/10.1080/1359432X.2015.1071423

Basinska, B.A., & Rozkwitalska, M. (2022). Psychological capital and happiness at work: The mediating role of employee thriving in multinational corporations. *Current Psychology*, *41*(2), 549–562. https://doi.org/10.1007/s12144-019-00598-y

Baum, T., Mooney, S., & Robonson, R. (2020). Tourism employment paradoxes, 1946-2095: a perspective article. *Tourism Review*, *75*(1), 252–255.

Brătucu, G., Băltescu, C.A., Neacşu, N.A., Boşcor, D., Ţierean, O.M., & Madar, A. (2017). Approaching the sustainable development practices in mountain tourism in the Romanian Carpathians. *Sustainability (Switzerland)*, *9*(11). https://doi.org/10.3390/su9112051

Chaiprasit, K., & Santidhiraku, O. (2011). Happiness at Work of Employees in Small and Medium-sized Enterprises, Thailand. *Procedia - Social and Behavioral Sciences*, *25*, 189–200. https://doi.org/10.1016/j.sbspro.2011.10.540

Chen, W.Y., & Hsu, L.Y. (2024). Is income catch-up related to happiness catch-up? Evidence from eight European countries. *Heliyon*, e26544. https://doi.org/10.1016/j.heliyon.2024.e26544

Dhingra, V., & Dhingra, M. (2021). Who doesn't want to be happy? Measuring the impact of factors influencing work–life balance on subjective happiness of doctors. *Ethics, Medicine and Public Health*, *16*. https://doi.org/10.1016/j.jemep.2021.100630

Dhyan Parashakti, R., Nashar, M., & Usliawati, D. (2017). The Effect of Compensation and Organization Commitment towards Turnover Intention. Case Study in ILC (International Language Center) Jakarta. *International Conference on Organizational Innovation, 131*, 112–122.

Diener, E., Heintzelman, S.J., Kushlev, K., Tay, L., Wirtz, D., Lutes, L.D., & Oishi, S. (2017). Findings all psychologists should know from the new science on subjective well-being. *Canadian Psychology*, *58*(2), 87–104. https://doi.org/10.1037/cap0000063

Field, L.K., & Buitendach, J.H. (2011). Happiness, work engagement and organizational commitment of support staff at a tertiary education institution in South Africa. *SA Journal of Industrial Psychology*, *37*(1), 1–10. https://doi.org/10.4102/sajip.v37i1.946

Fisher, C.D. (2010). Happiness at Work. *International Journal of Management Reviews*, *12*(4), 384–412. https://doi.org/10.1111/j.1468-2370.2009.00270.x

Galván Vela, E., Mercader, V., Arango Herrera, E., & Ruíz Corrales, M. (2022). Empowerment and support of senior management in promoting happiness at work. *Corporate Governance (Bingley)*, *22*(3), 536–545. https://doi.org/10.1108/CG-05-2021-0200

Gavin, J.H., & Mason, R.O. (2004). The virtuous organization: The value of happiness in the workplace. *Organizational Dynamics*, *33*(4), 379–392. https://doi.org/10.1016/j.orgdyn.2004.09.005

Ghaderi, Z., Tabatabaei, F., Khoshkam, M., & Shahabi Sorman Abadi, R. (2023). Exploring the Role of Perceived Organizational Justice and Organizational Commitment as Predictors of Job Satisfaction among Employees in the Hospitality Industry. *International Journal of Hospitality and Tourism Administration*, *24*(3), 415–444. https://doi.org/10.1080/15256480.2021.1988882

Government News. (2023). *Ten Vietnamese cuisine, specialties set new Asian records*. https://en.baochinhphu.vn/ten-vietnamese-cuisine-specialties-set-new-asian-records-111231207104712204.htm

Gyensare, M.A., Kumedzro, L.E., Sanda, A., & Boso, N. (2017). Linking transformational leadership to turnover intention in the public sector: The influences of engagement, affective commitment and psychological climate. *African Journal of Economic and Management Studies*, *8*(3), 314–337. https://doi.org/10.1108/AJEMS-07-2016-0099

Haitao, N. (2022). Relationship of challenges recognition and co-workers to job satisfaction (study of human resource management literature). *Dinasti International Journal of Digital Business Management*, *3*(2), 356–364. https://doi.org/10.31933/dijdbm.v3i2

Hanaysha, J. (2016). Examining the Effects of Employee Empowerment, Teamwork, and Employee Training on Organizational Commitment. *Procedia - Social and Behavioral Sciences*, *229*, 298–306. https://doi.org/10.1016/j.sbspro.2016.07.140

He, J., Morrison, A.M., & Zhang, H. (2019). Improving millennial employee well-being and task performance in the hospitality industry: The interactive effects of HRM and responsible leadership. *Sustainability (Switzerland)*, *11*(16), 1–19. https://doi.org/10.3390/su11164410

Herhausen, D., Emrich, O., Grewal, D., Kipfelsberger, P., & Schoegel, M. (2020). Face Forward: How Employees' Digital Presence on Service Websites Affects Customer Perceptions of Website and Employee Service Quality. *Journal of Marketing Research*, *57*(5), 917–936. https://doi.org/10.1177/0022243720934863

Hwang, E. (2019). Effects of the organizational culture type, job satisfaction, and job stress on nurses' happiness: A cross-sectional study of the long-term care hospitals of South Korea. *Japan Journal of Nursing Science*, *16*(3), 263–273. https://doi.org/10.1111/jjns.12235

Januwarsono, S. (2015). Analytical of Factors Determinants of Happiness at Work Case Study on PT. PLN (Persero) Region Suluttenggo, Sulawesi, Indonesia. *European Journal of Business and Management*, *7*(8), 9–17. www.iiste.org

Jaworski, C., Ravichandran, S., Karpinski, A.C., & Singh, S. (2018). The effects of training satisfaction, employee benefits, and incentives on part-time employees' commitment. *International Journal of Hospitality Management*, *74*, 1–12. https://doi.org/10.1016/j.ijhm.2018.02.011

Journal, M., Chin Boo, M., Hwa Yen, S., & Eam Lim, H. (2016). A Note on Happiness and Life Satisfaction in Malaysia. *Malaysian Journal of Economic Studies*, *53*(2), 261–277.

Junça-Silva, A., & Menino, C. (2022). How Job Characteristics Influence Healthcare Workers' Happiness: A Serial Mediation Path Based on Autonomous Motivation and Adaptive Performance. *Sustainability (Switzerland)*, *14*(21), 1–14. https://doi.org/10.3390/su142114251

Karatepe, O.M., & Karadas, G. (2015). Do psychological capital and work engagement foster frontline employees' satisfaction?: A study in the hotel industry. *International Journal of Contemporary Hospitality Management*, *27*(6), 1254–1278. https://doi.org/10.1108/IJCHM-01-2014-0028

Karim, D.N. (2023). Do job characteristics shape academics' affective commitment and knowledge sharing behavior in the institutes of tertiary education? *Social Sciences and Humanities Open*, *8*(1). https://doi.org/10.1016/j.ssaho.2023.100663

Katz, I.M., Rudolph, C.W., Kühner, C., & Zacher, H. (2023). Job characteristics and employee green behavior. *Journal of Environmental Psychology*, *92*. https://doi.org/10.1016/j.jenvp.2023.102159

Khanh, P.N.K., & Long, N.T. (2023). Impact of destination social responsibility on destination brand equity and revisit intention at destinations in the Southeast region, Vietnam. *GeoJournal of Tourism and Geosites*, *51*(4spl), 1692–1702. https://doi.org/10.30892/gtg.514spl10-1165

Klaus, T., Lerouge, C., & Blanton, J.E. (2014). System Developers' Nature of Work Characteristics and Their Relationship with Organizational Commitment and Job Satisfaction. *Journal of Information Technology Management*, *25*(1), 1–19. https://www.

researchgate.net/publication/260106985

Kun, A., & Gadanecz, P. (2022). Workplace happiness, well-being and their relationship with psychological capital: A study of Hungarian Teachers. *Current Psychology*, *41*(1), 185–199. https://doi.org/10.1007/s12144-019-00550-0

Li, X., Guo, Y., & Zhou, S. (2021). Chinese preschool teachers' income, work-family conflict, organizational commitment, and turnover intention: A serial mediation model. *Children and Youth Services Review*, *128*, 1–9. https://doi.org/10.1016/j.childyouth.2021.106005

Lim, H.E., Shaw, D., Liao, P.S., & Duan, H. (2020). The Effects of Income on Happiness in East and South Asia: Societal Values Matter? *Journal of Happiness Studies*, *21*(2), 391–415. https://doi.org/10.1007/s10902-019-00088-9

Limpanitgul, T., Boonchoo, P., & Photiyarach, S. (2014). Coworker support and organisational commitment: A comparative study of Thai employees working in Thai and American airlines. *Journal of Hospitality and Tourism Management*, *21*, 100–107. https://doi.org/10.1016/j.jhtm.2014.08.002

Lo, Y.C., Lu, C., Chang, Y.P., & Wu, S.F. (2024). Examining the influence of organizational commitment on service quality through the lens of job involvement as a mediator and emotional labor and organizational climate as moderators. Heliyon, 10(2). https://doi.org/10.1016/j.heliyon.2024.e24130

Long, N.T., Khanh, P.N.K., Trung, N.Q., Linh, N.M., Phat, T.T., Vy, P.T.H., & Khoa, T.D. (2023a). Factors affecting destination innovation and competitiveness at destinations in the central highlands, Vietnam. *Journal of Tourism Management Research*, 10(2), 200-212. https://doi.org/10.18488/31.v10i2.3579

Long, N.T., Hai, P.H., Khoa, T.D., Khanh, P.N.K., & Danh, L.X. (2023b). Impacts of destination social responsibility on destination image and tourist revisit intention: An empirical study at tourism destinations in the Mekong delta, *Vietnam. International Journal of Applied Economics, Finance and Accounting*, 17(2), 325-336. https://doi.org/ 10.33094/ijaefa.v17i2.1167

Medina-Garrido, J.A., Biedma-Ferrer, J.M., & Bogren, M. (2023). Organizational support for work-family life balance as an antecedent to the well-being of tourism employees in Spain. *Journal of Hospitality and Tourism Management*, *57*, 117–129. https://doi.org/10.1016/j.jhtm.2023.08.018

Ministry of Culture. (2023). *The number of international visitors to Vietnam in 8 months has nearly reached the yearly target.* https://bvhttdl.gov.vn/luong-khach-quoc-te-den-viet-nam-trong-8-thang-gan-can-moc-chi-tieu-ca-nam-2023083016473952.htm

Nazir, S., Qun, W., Hui, L., & Shafi, A. (2018). Influence of social exchange relationships on affective commitment and innovative behavior: Role of perceived organizational support. *Sustainability (Switzerland)*, *10*(12), 1–20. https://doi.org/10.3390/su10124418

Qiu Zhang, H., & Wu, E. (2004). Human resources issues facing the hotel and travel industry in China. In *International Journal of Contemporary Hospitality Management*, 16(7), 424–428. https://doi.org/10.1108/09596110410559122

Şahin, F., Yenel, K., & Kılıç, S. (2019). Investigation of teachers' views on a happy work environment by perma model. *Educational Administration: Theory and Practice*, *25*(4), 773–804. https://doi.org/10.14527/kuey.2019.019

Salas-Vallina, A., Simone, C., & Fernández-Guerrero, R. (2020). The human side of leadership: Inspirational leadership effects on follower characteristics and happiness at work (HAW). *Journal of Business Research*, *107*, 162–171. https://doi.org/10.1016/j.jbusres.2018.10.044

Simmons, B.L. (2013). Organizational Characteristics of Happy Organizations. In *Wellbeing: A Complete Reference Guide*, vol. 3, Wiley. https://doi.org/10.1002/9781118539415.wbwell023

Tandler, N., Krauss, A., & Proyer, R.T. (2020). Authentic Happiness at Work: Self- and Peer-Rated Orientations to Happiness, Work Satisfaction, and Stress Coping. *Frontiers in Psychology*, *11*(1931), 1–16. https://doi.org/10.3389/fpsyg.2020.01931

Tien, Dr. N.H., Dung, H.T., & Tien, Dr. N. Van. (2019). Branding building for Vietnam tourism industry reality and solutions. *International Journal of Research in Marketing Management and Sales*, *1*(2), 63–68. https://doi.org/10.33545/26633329.2019.v1.i2a.19

Vietnam National Administration of Tourism. (2022). *Conference on linkage and cooperation in tourism development between 5 provinces/cities in the Central region with Hai Phong city and Quang Ninh province*. https://vietnamtourism.gov.vn/post/40352

Watson, D., Anna Clark, L., Mcіntyre, C.W., & Hamaker, S. (1992). Affect, Personality, and Social Activity. *Journal of Personality and Social Psychology*, *63*(6), 1011–1025.

World Tourism Organization. (2023). *American magazines call Vietnam a new attractive tourist destination in Asia*. https://vietnamnet.vn/tap-chi-my-goi-viet-nam-la-diem-du-lich-hap-dan-moi-cua-chau-a-2173336.html

Zaman, U., Nawaz, S., Javed, A., & Rasul, T. (2020). Having a whale of a time: Linking self-determination theory (SDT), job characteristics model (JCM) and motivation to the joy of gig work. *Cogent Business and Management*, *7*(1). https://doi.org/10.1080/23311975.2020.1807707

Zheng, C., Molineux, J., Mirshekary, S., & Scarparo, S. (2015). Developing individual and organisational work-life balance strategies to improve employee health and wellbeing. *Employee Relations*, *37*(3), 354–379. http://hdl.handle.net/10536/DRO/DU:30071912

SPATIAL AND TEMPORAL DISTRIBUTION OF LISTINGS ON AIRBNB AND BOOKING.COM AS SHARING ECONOMY PLATFORMS IN THE TOURISM DESTINATION OF MARAMURES LAND ROMANIA

Silviu Vasile BUMBAK[*]

Babeș-Bolyai University, Faculty of Geography, Sighetu Marmației Extention, Sighetu Marmației,
Romania, e-mail: silviu.bumbak@ubbcluj.ro

Abstract: The innovations brought by the sharing economy model through digital booking platforms have produced changes in the dynamic of the accommodation supply in many tourism destinations. The fastness with which changes occur has left this market segment either largely unaccounted for statistically, or poorly regulated, and Maramureș Land, a known cultural and rural tourism destination with inherent regional and local particularities, is no exception. The study raises the issue of evidence regarding the level of adoption and the true scale of the accommodation supply in the area by focusing on listings from two of the most popular digital booking platforms – Booking.com and Airbnb, an aspect that can support policy-making adapted to its specific characteristics. These objectives were pursued through an empirical methodological approach to map the spatiotemporal distribution of listings from the area of Maramureș Land between 2010 and 2023. The methodology assumed the creation of an M.Excel database with all listings from the area, the extraction of descriptive variables and coordinates, the conversion of coordinates into vector point data, and the subsequent analysis using vector and attribute data processing instruments in QGIS.

Key words: sharing economy, digital booking platforms, Booking.com, Airbnb, Maramureș Land, accommodation establishments, level of adoption, spatiotemporal distribution

* * * * * *

INTRODUCTION

Mapping and understanding the spatial and temporal dynamics of certain phenomena in tourism such as the spatiality of short-term accommodation establishments from a particular region can shed light on its characteristics and help improve related decision-making processes, policy, and regulations. The dynamics of short-term accommodation rentals for tourism represent a phenomenon worth investigating in this fashion, due to the amplitude and speed with which changes happen under the influences of internet technologies. This is also valid for the area of Maramureș Land, one of Romania's best-known tourist destinations, even though in some aspects, it is considered remote and deeply rural and thus, less open and developed on that spectrum. The region is witnessing changes in the way people choose to interact either as tourists or as tourist service providers when it comes to accessing tourist services in the destination. This dynamic is influenced by the global digital innovations of recent years in the information and communication technologies field of smart devices and apps and the growing and improved accessibility of the internet as a service that, in their own right, has changed the way people live, work, interact, even when vacationing (Chamboko-Mpotaringa and Tichaawa, 2023; Tom Dieck and Jung, 2018).

The internet based digitalization has a long reach in tourism and this aspect was highlighted over the years in studies and reports assessing the impact it has on the domain in various parts of the world. For example, in a report concerning the opportunities and challenges of digitalization in tourism, Dredge et al. argue that the process of digitalization can incentivize creativity, and innovation, and create new business models or business ecosystems (Dredge et al., 2019) and opportunities (George, 2023). One type of business ecosystem that can offer digital access to practically a global market, is provided by the sharing economy concept through its dedicated platforms. The concept of a sharing economy is also referred to as a collaborative economy or peer-to-peer (P2P) economy (Botsman and Rogers, 2011). The rapid development of the sharing economy model was discussed, among others, in reports published by the OECD in 2016 (OECD, 2016) and 2022 (OECD, 2022). The reports state that the development of the sharing economy model in tourism represents an effect of major shifts in tourist behavior and resource accessibility, driven by economic changes such as rising cost of living and social and economic shocks such as the impact of pandemics, political instability, wars, and recessions.

The sharing economy or collaborative economy can also be seen as an alternative economic model empowered by the Internet (Egresi et al., 2020). It assumes that all these exchanges, from basic skills and services to physical resources such as housing and transportation, are possible by connecting interested parties via digital platforms (Dillahunt and Malone, 2015) that have profoundly changed the way we do many activities (Quattrone et al., 2016). In the tourism domain, main tourism services such as accommodation or tourism-related services like transport, dining, or travel services are marketized and, according to the conceptual model, sold for profit online by private stakeholders to individuals (Dreyer et al., 2022).

The latter business model has drawn the attention of statistical and regulatory bodies at a national and international level, driving actions to cover an otherwise poorly regulated market segment. For example, the European Statistical Institute – Eurostat, has established, since 2020, an experimental methodological protocol to compile statistics on short-term accommodation stays provided by four major booking platforms – Booking.com, Airbnb, Tripadvisor, and Expedia Group (Eurostat, 2024) because this market sector was until then, not represented thoroughly in statistical evidence, and therefore, hard to legislate. Unfortunately, the spatial scale at which data on this subject are collected by the above-mentioned statistical body does not complement the purpose of this empirical paper, as the data are available, from an administrative point of view, only at national, regional, and county levels. Maramureș Land does not represent a true administrative unit, but if data were available for the NUTS 4 level (the LAUs - Local Administrative Units), like other types of statistics on tourism, it would have offered the opportunity to statistically assess the amplitude of the phenomena in the area in question with official statistical data. On the academic level, the majority of the academic work done on the subject of the impact the digital platforms, empowering the sharing economy concept, are having is focused mainly on the urban environments of countries from the Western world (Quatronne et al., 2022), since the sharing economy model is considered to be a mostly an urban phenomenon, as in the cities there are more opportunities to valorize underused goods and services (Quatronne et al., 2022). As a consequence, there are few studies with a focus on how discourse around the sharing economy model is framed outside urban regions (Sagheim and Nilsen, 2021).

Concerning rural spaces, when it comes to data infrastructure development, level of connectivity, and access to a broad range of digital instruments, even though there is a digital divide between urban and rural areas that has been observed as a constant over the years in different areas around the world (Brandano et al., 2023; Malecki, 2003; Skerratt et al., 2012), it does not mean it should be seen as a penalty. As long as in a rural area there is infrastructure that provides internet access, the local stakeholders activating in tourism or other domains, will be incentivised to make their presence known online, to access new resources and broader markets. With the innovations brought by technological development, urban-rural divides are getting thinner, especially where the rural areas experiment with increased mobility or the development of rural tourism (Sagheim and Nilsen, 2021). Therefore, empirical works focusing on other areas that urban ones are necessary, especially in regions with a strong rural character that have developed as rural tourism destinations, do not pertain to a certain administrative nomenclature or are not favored by the territorial scale at which data are available. The necessity derives from the need to add nuance to the phenomenon, to understand its implications for the tourism dynamics, and to shed light on the effects that a changing, technology-incentivized tourism can bring to the accommodation sector in areas such as Maramureș Land.

The study aims to map the level of spatial and temporal distribution and thus the level of adoption of digital booking platforms such as Airbnb and Booking among traditional and non-traditional accommodation providers from the tourism destination of Maramures Land. This endeavor can contribute to a better understanding of the dynamics and changes in the accommodation sector, both quantitative and qualitative, and the possibility of revealing the true scale of the accommodation supply, to support policy-making adapted to the specific characteristics of the area in question.

LITERATURE REVIEW

Simplistically, the sharing or collaborative economy concept is an umbrella term that tries to define an innovative business model as a decentralized environment in which most assets, but also services, are produced and temporarily exchanged through sharing practices, directly between interested parties. The exchanges take place among private individuals who engage in collaborative actions to minimize resource allocation and distribution such as to maximize their use and functionality (Miguel et al., 2022). By itself, the sharing economy or the collaborative economy concept does not represent a true innovation, since it was applied in various forms in different times and spaces and at different scales according to the cultural traits and the needs of a certain group in a certain time. The novelty resides in the build-up of a model based on internet technology (Guttentag, 2015).

The integration of digital technologies into the construct through a series of digital instruments such as smartphones and applications has revolutionized the way people interact socially and economically, by eliminating or at least reducing the impact of the limitations implied by a lack of trust among people who do not know each other, the challenges of connecting and sharing physically, and the need for traditional intermediaries. The online platforms are also providers of complementary services (Weber, 2014) and the growth of these platforms is due to characteristics such as „network effects, near zero marginal costs, and reduced search costs" (Gyódi, 2019: 536; Zervas et al., 2016).

On the large, globally, the best-known sharing services upended by digital platforms are the sharing of cars and accommodation facilities (Badulescu et al., 2022). Nowadays, many sharing economy digital platforms are tourism-related and while some authors believe in the positive impacts that the digital platforms can bring, like stimulating the development of a destination by diversifying its range of offers and bringing together more players (Cesarani and Nechita, 2017), others perceive them as "disruptive innovations" because they transform economies and the ways of doing business (Ferrell et al., 2017) through exponential growth, unfair competition and exploitation of vacuums in legislation (Quatronne et al., 2019).

The digital platforms - principles and dimensions of the sharing economy applied to tourism

In an increasingly digitalized world, people are defined by the level of sharing, level of access, reputation, and community (Leadbeater, 2010) so, ideologically, the principles of the sharing economy – trust building among strangers, the valorization of idling or latent assets, critical mass, and belief in the commons (Botsman and Rogers, 2011) are believed to work in the advantage of communities (Gyódi, 2019). For the tourism domain, these principles apply as follows: the ability to build trust among people unknown to one another, by creating complex feedback functionalities instead of using quality certificates

(Badulescu et al., 2022). This innovation was the success upon which digital platforms applying this model began to thrive in the first place. The application of this principle implies a sense of community building by creating functionalities that allow people (aka the peers) who have engaged in an exchange, either as buyers or as sellers, to express opinions about their experience. These opinions are increasingly more important as they form pools of reviews that can influence future choices. The principle of idling assets valorization is best illustrated by the tourist accommodation sector (Moreno-Izquierdo et al., 2019).

The digital booking platforms for example have permitted people to exploit their housing potential by allowing them to easily rent out some of their property that was not thought to have a „productive purpose" in the first place (Moreno-Izquierdo et al., 2019:.53), or were just underused accommodation spaces (Gyódi, 2019). The critical mass principle means that the booking platforms have allowed virtually any property owner to become a tourist accommodation host (Guttentag, 2015). The belief in the commons principle highlights the ability to create added value to a system that supports interactions and exchanges. This is explained by the exponential growth in popularity and adoption of sharing platforms.

However, there are two distinctive and dichotomized dimensions of what is considered to be a sharing economy model – the profit-oriented dimension, which encompasses monetary gains, and the altruistic one, based on non-remunerable exchanges (Miguel et al., 2022). The first one is considered a true economic model by being highly monetizable, networked oriented, transforming guests into clients (Oskam and Boswijk, 2016). From the many business models that comply with the sharing economy concept, commission-based booking platforms as a model include Airbnb and Booking.com (Ritter and Schanz, 2019). These digital platforms are fully dedicated to practically the same idea, of space sharing, but work on a commission-based philosophy by specializing in accommodation short-term rentals. The second one revolves at the core of what sharing means: exchanges based on trust that is not remunerated, such as the case of the many faces of sharing within a family household (Eckhardt and Bardhi, 2015). An early example of an online, but not-for-profit platform facilitating the share of spaces in private homes, including for tourism activities was Couchsurfing. This dichotomy raises an ethical issue highlighted by Schor in an essay published in 2014. The author states that the concept and the technology behind it have great potential in achieving the social and economic goals centered around sharing and allocating resources more fairly, but that this should not be done through platforms that capitalize them for profit (Schor, 2014).

Booking.com and Airbnb as digital booking platforms empowering the sharing economy concept

The innovative business model to which digital platforms such as Booking.com and Airbnb pertain started to take root around 2010, and in the time since, it managed to reach a wide variety of services and audiences (Quatronne et al., 2022). The model of Booking.com and Airbnb for example, assumes peers have access to commodities for a limited timespan using an intermediary. The intermediary develops flexible and efficient platform instruments that help meet the provider with the consumer expectations in a match (Badulescu et al., 2022). In exchange, the intermediary receives commissions for every successful transaction (Constantinou et al., 2017; Fink and Ranchordas, 2021; Ritter and Schanz, 2019).

The model is also focused on building a community based on reciprocal trust through rating systems and other standardized instruments such as the ability to express opinions through reviews. This aspect of digitalization opens the door to free expression and sharing of opinions online thus shaping the narratives over destinations and their people and having an impact on brand buildup and reputation for places, people, and businesses (Huerta-Álvarez et al., 2020).

On the positive side, in a study based on surveys with travelers from the US and Finland (Tussyadiah and Pesonen, 2016), the authors identified the appeal of the model impact expansion in a destination. Moreover, it was identified that travelers who buy accommodation services through such digital platforms are driven by attractive prices in otherwise cost-prohibitive destinations, have the desire to engage in more authentic experiences, tend to stay longer, travel more often, and diversify the activities they indulge themselves in in a destination. On the downside, the rise and rapid growth of these digital booking platforms have created a competitive environment with traditional accommodations (Egresi et al., 2020). The effects of the professionalization of rentals and the continued development of the platforms supporting this business model create market distress not just in the tourism and transport sectors (Eckhardt and Bardhi, 2015) but also in the real estate sector, putting pressure on the availability of long-term rental and real estate prices in many parts of the world (Grant, 2022). In academia, this type of distress was coined almost 20 years ago as a "disruptive innovation" (Christensen, 1997: 15; Christensen et al., 2015). The theory proposed by Christensen describes how a new business model can influence and shape a market (Guttentag, 2015). Some authors since have used the theoretical framework to explain perturbations associated with the sharing platforms (Ferrell et al., 2017; Ritter and Schanz, 2019), either by exploiting legislation vacuums (Gyódi, 2019) that are outdated by the pace of technological advances, or by unconstrained development. The latter is considered to have positive effects on slow-growing destinations, but harmful ones on booming destinations with a large share of professionalized accommodation providers (Oskam and Boswijk, 2016).

The importance of understanding the spatial distribution of listings on digital sharing platforms

These are some of the reasons why studies have focused on clarifying these issues (Quattrone et al., 2020; Quatronne et al., 2022). To do so, some authors have been keen to differentiate between professional and non-professional accommodation providers to better understand the impact that properties bought as second homes or just as an exploited investment (Gyódi, 2019) are having on destinations and local communities.

Another direction of academic focus is towards the empirical understanding and even modeling of the level of spatial penetration of such platforms in different countries (Adamiak, 2022), settings, and at different scales, especially large, urban areas or regions with a developed tourism sector. These studies raise the issue of evidence regarding the presence of digital booking platforms in an area to better support policy-making adapted to their specific characteristics. However, these papers have highlighted the spatial dynamics of properties listed mainly on the Airbnb platform.

For example, in an empirical study based on geolocated Airbnb listings from cities in Spain, a top tourist destination, concentrating on geographic, social, and economic variables related to neighborhoods, the authors have identified that many listings are located in working-class areas, because of the great investment potential as property prices are lower in these parts. The authors have also identified trends regarding the „commodification of housing", especially in consecrated touristic hotspots, and the effects it has on the „intensive touristification of urban areas" (Gutiérrez and Domènech, 2020: 98). In another study concentrated on the issue of spatial penetration and distribution of listings in 8 large cities around the world, the authors have identified a spatial pattern with clusters of listings aggregated near city centers and, this time, in neighborhoods described as bohemian. As in the above-mentioned paper, the authors have used geographic variables of the cities in question and historical data from other cities, to analyze the relationship of the variables with the level of spatial distribution of listings on the Airbnb platform. The authors stated that the pattern can represent a model of prediction of geographic penetration of digital booking platforms. It can be used to substantiate policy and regulatory processes, such as stimulating working schemes for anticipating development in areas that are estimated to suffer low penetration or implementing restrictions in areas with Airbnb inflation (Quattrone et al., 2018). In a similar study focused this time only on European cities, the conclusion was that the majority of listings are professional (or commercial), while the true sharing economy offer represents just a minority (Gyódi, 2019).

In empirical studies that excluded large, tourist cities, and concentrated instead, on a regional scale, on medium and small municipalities, such as in the region of Catalonia (Morales-Pérez et al., 2022) and the region of Valencia (Sagheim and Nilsen, 2021), both from Spain, the authors conclude that, the professionalization of the accommodation sector is proportional with the level of touristification of the areas in question (case of Catalonia province, excluding the city of Barcelona) and that it highlighted an older, organically grown renting phenomena that was unknown to authorities (the case of Valencia province). Studies like these highlight the fact that digital booking platforms, besides factual or relative advantages and disruptions, contribute by making the accommodation market more visible and transparent (Moreno-Izquierdo et al., 2019). This is also the case for destinations like Romania. In a comparative study regarding the usage of digital booking platforms such as Airbnb in regions from Italy and Romania, the authors stated that for the Romanian market, where many establishments run unclassified, statistical data about the listings on digital platforms can be the starting point for the evaluation of the true potential of the accommodation sector (Cesarani and Nechita, 2017).

The study area – general description

Maramureș Land represents a land-type region (Ilieș, 2007) and a known tourism brand (Ilieș and Ilieș, 2015) from the north of Romania, bordering Ukraine, one of several land-type entities from the Romanian territory.

Having no true administrative boundaries, it covers over 3200 km^2 from the predominantly mountainous, north-eastern area of the Maramureș county (Figure 1), around a central depression that concentrates 36 settlements and over 210.000 inhabitants (Tempo Online-statistical data, 2023). The area has a predominantly rural character and, due to its unique cultural heritage highlighted through agricultural landscapes, cherished traditions, wooden gates, and churches, Maramureș Land has become over the years a tourism destination.

Figure 1. Maramureș Land – geographical location

MATERIALS AND METHODS

The study concentrates on highlighting the level of adoption of digital booking platforms such as Airbnb and Booking.com among traditional and non-traditional accommodation providers from the tourism destination of Maramures Land. It focuses on the spatiotemporal distribution of listings over a period of 13 years (2010-2023), and this objective was approached through a bottom-up, empirical methodological framework (Figure 2) that comprised several working stages, described synthetically bellow.
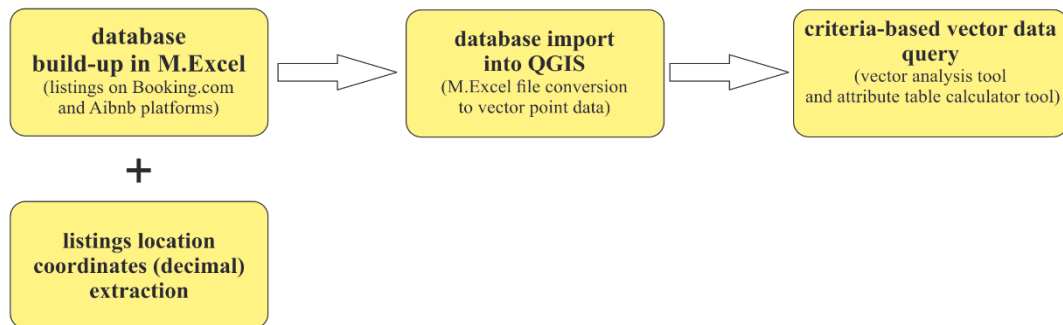
Figure 2. Flowchart presenting the methodological framework of the study

- Excel database build-up

The first methodological stage of the study assumed the compilation of an Excel database comprising statistical information about accommodation establishments from the entire region of Maramureș Land from the updated list of classified accommodation structures available on the Romanian Ministry of Economy, Entrepreneurship and Tourism website.

This was followed by the compilation of information on the accommodation establishments from Maramureș Land that were listed on Booking.com and Airbnb platforms. This triple compilation and cross-checking were important to gain insight into the true scale of the accommodation supply in the area under study and to verify, for those listings that were present in the list of classified accommodation structures, the periodicity of the information posted on the two booking platforms. Initially, for the identification of listings and the extraction of key variables, a scraping tool was selected to automate and speed up the process. However, in the end, the compilation work was done manually, as the data had to be triple-crossed to verify that the same listing was not double-counted or that it appeared under a different name. The compilation work was done between the beginning of November 2023 and the end of January 2024. For each listing, values for several key variables were noted, both quantitative and qualitative. The variables were – location (name of settlement), accommodation establishment name, location coordinates (decimal format) typology of establishment (official classification nomenclature), comfort category (official classification nomenclature), year of listing on Booking.com and Airbnb, number of rooms and bed-places (official numbers declared), number of rooms and bed-places declared on Booking.com and Airbnb.

- Location coordinates extraction

In the process of data compilation, the location data of each listing was identified using, in the case of Booking.com, the mentioned addresses, and, in the case of Airbnb, the „where you'll be" feature that pinpoints the exact location of a listing on a map. In the case of Airbnb, the location of some listings is just relatively indicated on the map, as the owners did not choose to disclose the exact location beforehand. In these situations, if the accommodation establishments appeared in the official list of classified accommodation structures, the addresses were retrieved from there. In the situation in which they were not, the location was approximated using the Airbnb map.

Next, the addresses were introduced in the Google Maps search feature, followed by the retrieving of location data (latitude and longitude) in decimal values. In the case of listings from Airbnb for which the location was approximated, the coordinates were retrieved from Google Maps using the approximation. Due to the scale of the study that covers an entire region, we consider the location error for those listings as being marginal.

- Data import into the GIS environment

The next methodological stage assumed the import of the compiled M. Excel data spreadsheet into a GIS environment for further processing and analysis. For this study, the QGIS solution was used. The spreadsheet comprising the compiled data was saved as a CSV file as this format is compatible with QGIS. The import process assumed the conversion of the Excel spreadsheet into a discrete data set by creating a vector point layer representing the geolocations of the accommodation establishments using the decimal coordinates. The resulting vector point layer had the Excel spreadsheet attached as an attribute table. All cartographic outputs were generated using the WGS 84 coordinate reference system.

- Criteria-based statistical and spatial data query

In the next stage of the study, the attribute data from the main point vector layer containing all listings was queried using the attribute table calculator with designed expressions and a vector analysis tool that extracted values based on criteria. The expressions and criteria used for the query were written to answer the following questions:

How many properties are listed on the two platforms and how many accommodation establishments are presenting their offer on Booking.com and Airbnb simultaneously? How many listings represent classified accommodation establishments?

Is there a difference in popularity between the two platforms?

How many accommodation establishments were listed each year since 2010 on the two booking platforms and where were they concentrated? Is there a spatial distribution pattern of listings?

RESULTS AND DISCUSSION

Structure of the accommodation network in Maramureș Land

At the beginning of 2024, the region's tourist accommodation network comprised 776 classified tourist establishments with a total number of 10.455 bed-places. The analysis of the breakdown of the accommodation typology (Table 1), shows that the small to medium accommodation facilities such as tourism and agrotourism boarding houses, together with the apartments and rooms-for-rent account for 92 % of the total number of accommodations establishments and 80 % of the number of bed-places.

Table 1. Breakdown on classified accommodation establishments from Maramureș Land
(Authorisation and Control-Romanian Ministry of Economy, Entreprenourship and Tourism, 2023)

typology	classified units		share (%)		bed-places		share (%)	
hotels	15		1.9%		972		9.3%	
motels	5		0.6%		160		1.5%	
hostels	9		1.2%		321		3.1%	
tourism boarding houses (including urban tourism boarding houses)	174		22.4%		2715		26.0%	
	urban 37	rural 137	urban 4.8%	rural 17.6%	urban 556	rural 2159	urban 5.3%	rural 0.7%
agrotourism boarding houses (including rural touristic boarding houses)	112		14.4%		1214		11.6%	
	urban 3	rural 109	urban 0.4%	rural 14%	urban 36	rural 1178	urban 0.3%	rural 11.3%
touristic villas	5		0.6%		101		1.0%	
touristic chalets	5		0.6%		97		0.9%	
apartments for rent	40		5.2%		262		2.5%	
	urban 19	rural 21	urban 2.5%	rural 2.7%	urban 184	rural 78	urban 1.8%	rural 0.7%
rooms-for-rent	388		50.0%		4164		39.8%	
	urban 105	rural 283	urban 13.5%	rural 36.5%	urban 1325	rural 2839	urban 12.7%	rural 27.1%
house type units	15		1.9%		170		1.6%	
Campings (including camping spaces)	6		0.8%		228		2.2%	
bungalows	1		0.1%		27		0.3%	
touristic halting places	1		0.1%		24		0.2%	
TOTAL	**776**		**100%**		**10455**		**100%**	

The tourism and agrotourism boarding houses, the traditional accommodation establishment typologies in Maramureș Land for many years since rural tourism began to develop in the area, account for approximately 37%, while a relatively new accommodation type – rooms-for-rent – account for 50% of the total number of accommodation units. Except for hotels, which dominate the urban accommodation landscape (11 units, totalizing 676 bed-places), the majority of the classified units are located in rural settlements. This aspect highlights the predominantly rural character of the tourism accommodation sector in the area and thus, of the general orientation of the tourism phenomena. It also highlights the rising popularity of the rooms-for-rent typology which can be an indicator of a shifting trend in the way owners choose to classify their properties.
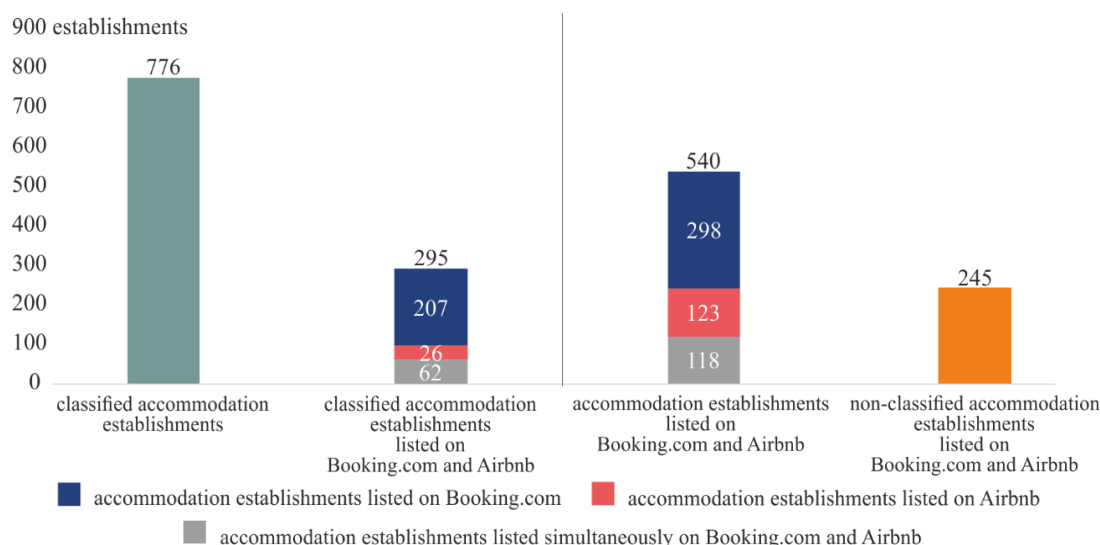

Figure 3. Breakdown of accommodation establishments from Maramureș Land with active Booking.com and Airbnb accounts
(Authorisation and Control-Romanian Ministry of Economy, Entreprenourship and Tourism, 2023; Booking.com, 2024; Airbnb, 2024)

Presence and spatial distribution of Booking.com and Airbnb classified and non-classified listings

Regarding the online presence of the accommodation establishments on the two digital booking platforms, from the 776 classified accommodation units, only 295 classified units have been listed on either one or both digital platforms (Figure 3),

even though the identification of listings showed that there were, in the interval in which the database was compiled, 540 accommodation establishments with active Booking.com and Airbnb accounts. That means there are at least 245 units that have been identified on the two platforms but were not subsequently identified in the official, updated list of classified accommodation units. These listings were tagged as non-classified accommodation establishments.

The majority of these 540 listings (Figure 4) are located in the area's tourist hotspots such as the mountain and winter destinations of Borșa (123 units), Moisei village (52 units), Vișeu de Sus (81 units) where the famous Vaser Valley steam forestry railway is located, the historical and cultural Sighetu Marmației (52 units), the spa resort of Ocna Șugatag (24 units) and the picturesque village of Breb (31 units).
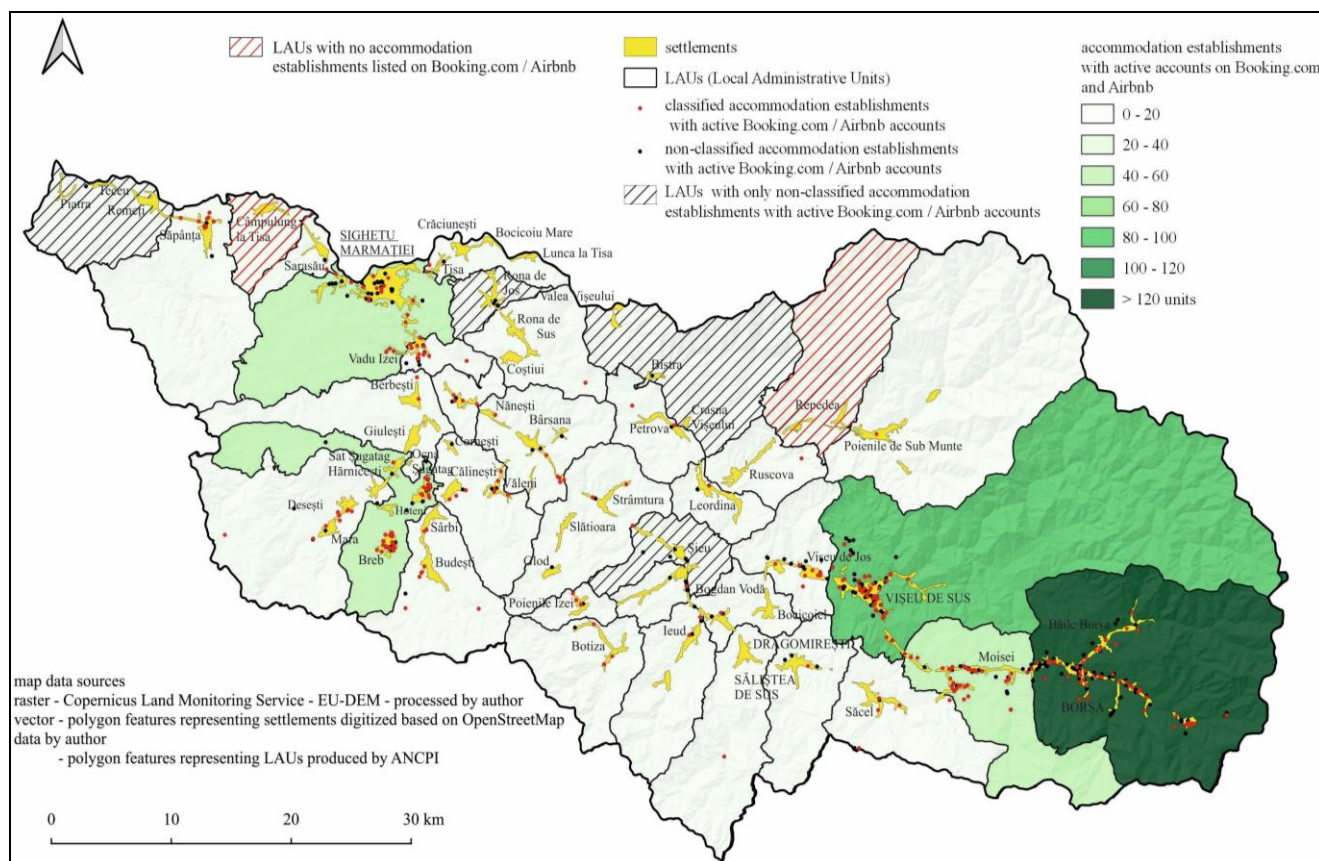
Figure 4. Accommodation establishments from Maramureș Land listed on Booking.com and Airbnb

The spatial distribution of the non-classified listings shows that there are 4 settlements where only this type of listings could be identified. In total, there are 11 listings distributed on the territory of the following villages - Remeți, Rona de Jos, Bistra, and Rozavlea. Except Rozavlea, all settlements are situated in the northern part of the area, next to or close to the Ukrainian border. In all instances, the touristic and accommodation infrastructure is poorly represented.

Table 2. LAUs with at least 5 non-classified accommodation establishments listed on Booking.com and Airbnb

LAU	classified units*	units listed on Booking and Airbnb	classified units listed on Booking and Airbnb	non-classified units listed on Booking and Airbnb
Borșa	109	123	56	67
Vișeu de Sus	80	81	44	37
Sighetu Marmației	51	52	22	30
Moisei	63	57	37	20
Ocna Șugatag**	133	59	39	20
Ocna Șugatag	*73*	*22*	*14*	*10*
Breb	*59*	*31*	*24*	*7*
Vișeu de Jos	15	19	9	10
Vadu Izei	29	18	11	7
Rozavlea	6	5	0	5
Desești	21	14	9	5
*Authorisation and Control – Romanian Ministry of Economy, Entrepreneurship and Tourism **Ocna Șugatag LAU comprises 4 villages – Ocna Șugatag, Breb, Sat-Șugatag and Hoteni				

On the other hand, there were two instances (Table 2) where the number of listed non-classified accommodation establishments was higher than the number of classified structures listed on Booking.com and Airbnb. In Sighetu Marmației, from 52 accommodation establishments with active accounts on Booking.com and Airbnb, 30 are non-classified

establishments. In Borșa, from the 123 listings on the two platforms, 56 establishments are classified, while 67 are non-classified. The non-classified accommodation listings phenomenon was observed basically in every locality with at least 3 listed accommodation structures on the two platforms, being it either a tourist hot-spot, with developed accommodation infrastructure, or in those settlements where the number of accommodation establishments is reduced. This requires further investigation to determine the exact number of such instances, and their official status. Concerning the authorization situation, if the legality of these non-classified accommodation establishments that are listed on digital platforms such as Airbnb and Booking cannot be substantiated through further research, then these numbers have the potential to indicate a short-term rental dynamic that has grown organically over the years and is potentially unknown to local authorities.

Spatial dimensions and growth of listings on Booking.com and Airbnb

The situation of accommodation establishments listed on Booking.com and Airbnb at the beginning of 2024 reflects a growth that started slowly in 2010 with one property from Sighetu Marmației city listed on Booking.com. Over the next two years, another 7 properties from Sighetu Marmației and Borșa cities were listed on the same platform, together with just 4 accommodation establishments situated in the rural area around Sighetu Marmației. By 2015, the listing on Booking.com had a predominantly urban character, with listings registered also in the city of Vișeu de Sus. These initial listings were consistent with the assumptions stated in the literature review that support the idea that this type of digital incentivization first begins in the cities, even though the three cities in question are small cities, with under 50.000 inhabitants.
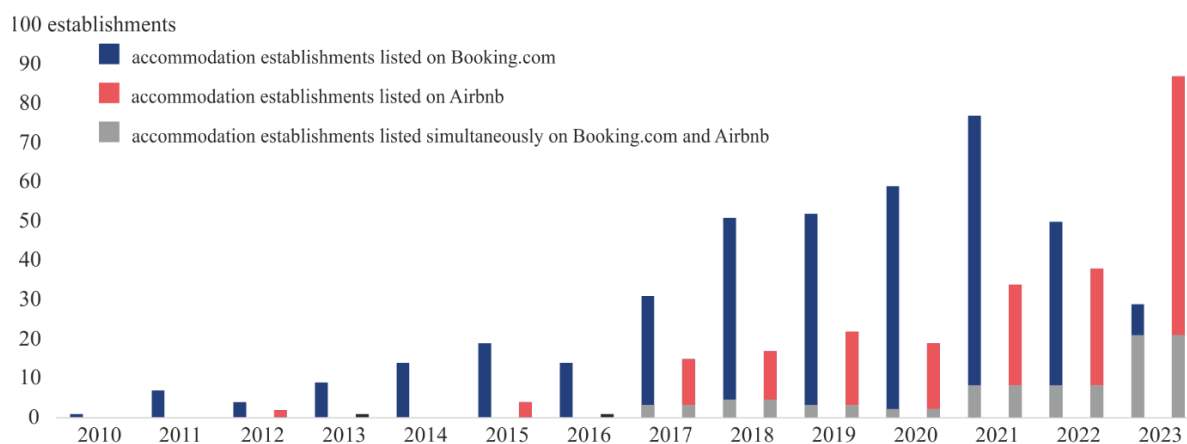

Figure 5. Yearly breakdown of growth of listings from Maramureș Land on Booking.com and Airbnb between 2010 and 2023
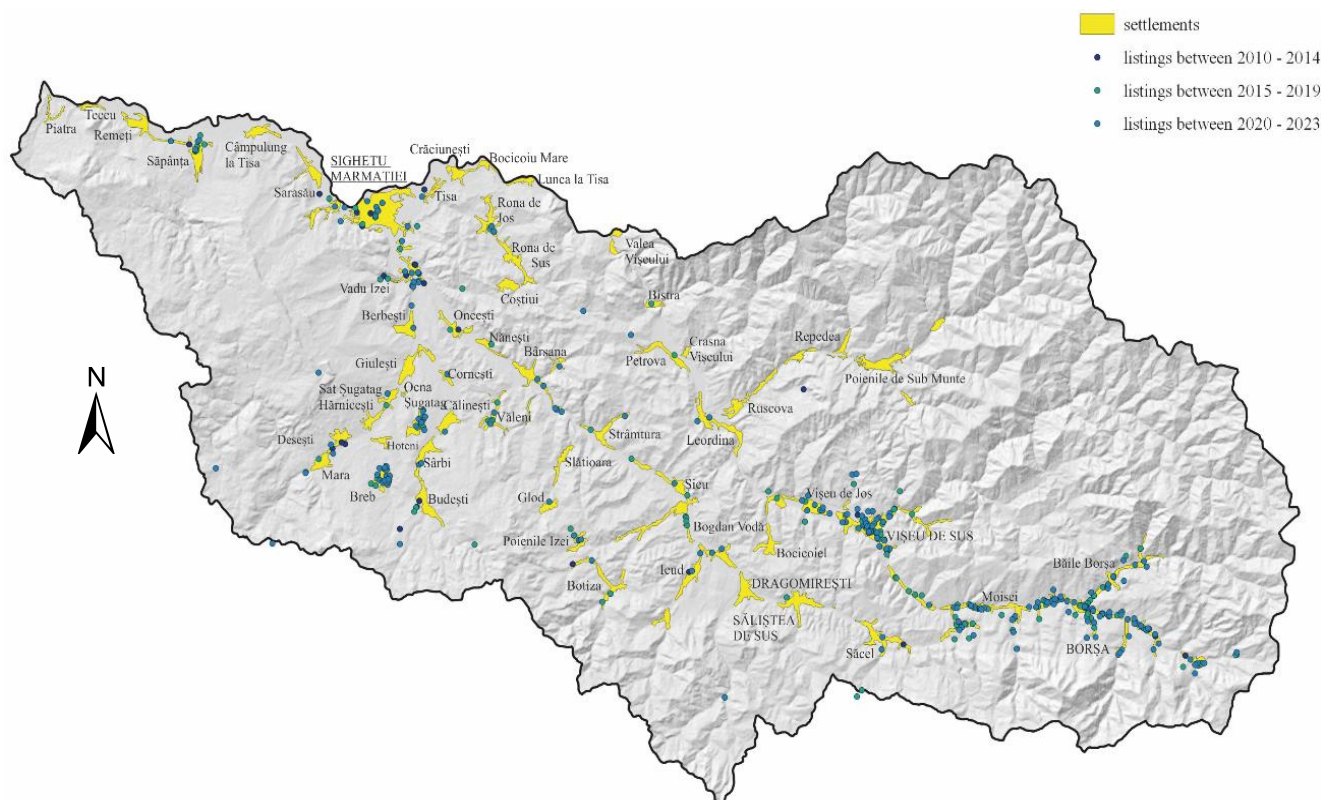(Source: Booking.com, 2024; Airbnb, 2024)

Figure 6. Adoption level and spatial distribution of accommodation establishments listed on Booking.com between 2010 and 2023
(Source: Booking.com, 2024)

On the other hand, the first listings on Airbnb appeared only in 2012 in the rural area (Figures 5 and 7), with two accommodation establishments from the village of Sarasău, a village situated a short distance from Sighetu Marmației. Until 2017, Airbnb growth was limited to just 7 listings, and was mostly a rural phenomenon, with one property listed from the city of Vișeu de Sus. After this initial period, from 2017, the number of listings began to grow steadily, with listings on Booking.com representing properties situated mostly in urban, but also rural settlements, with defined clusters of accommodation establishments and tourist attractions, such as the villages of Săpânța, Vadu Izei, Breb, Ocna Șugatag, and Moisei (Figure 6). The positive growth of listings on Booking.com culminated in 2021, with over 70 establishments listed in that year alone.

One particular situation was observed in the north-central area, comprising the village of Bârsana, another tourist brand of Maramureș Land, and the rural settlements around it. In this area, the number of listings is reduced, even though, in the case of Bârsana, there were, at the beginning of 2024, 23 classified accommodation establishments and 16 listings, out of which only 5 were for classified structures. This aspect indicates a potentially more traditional approach towards marketing and promotion, or different channels for booking reservations.
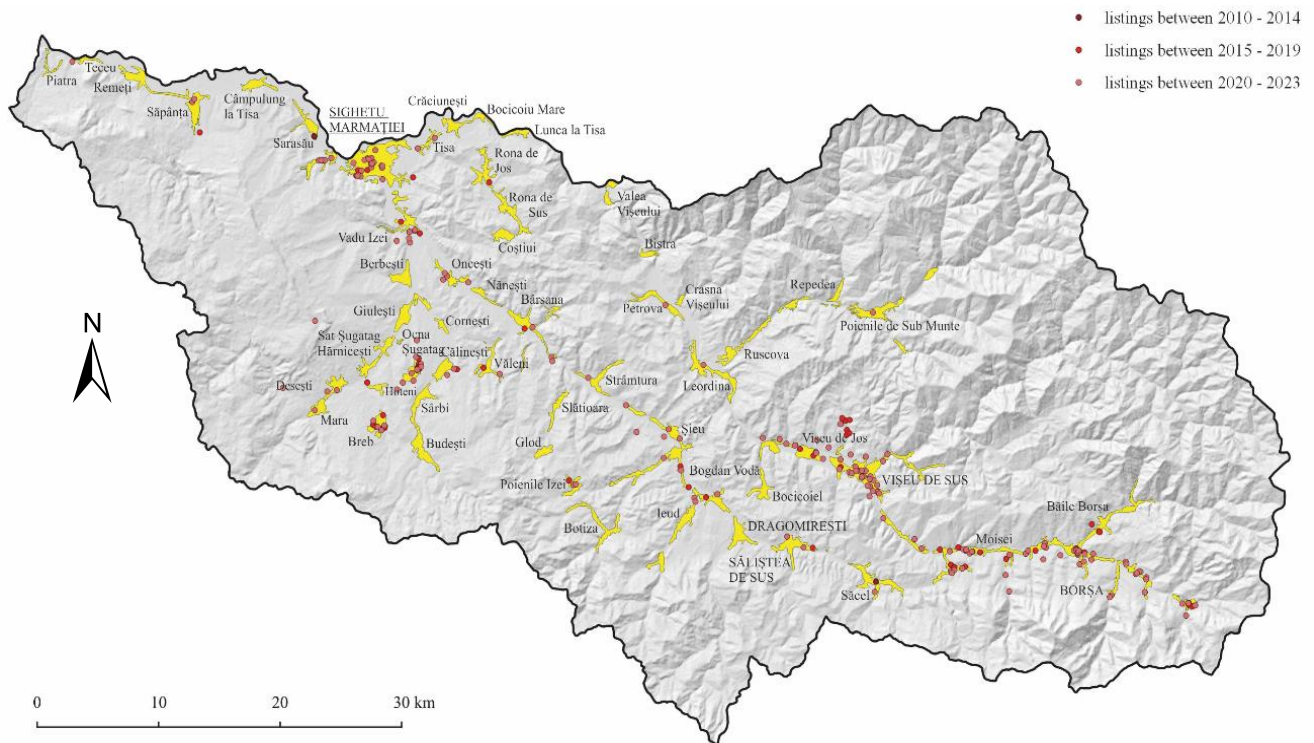

Figure 7. Adoption level and spatial distribution of accommodation establishments listed on Airbnb between 2010 and 2023
(Source: Airbnb, 2024)

As for the properties listed on Airbnb, until 2018, although number-limited, the listings were represented by rural accommodation establishments. This highlights a true particularity of the respective time frame, as it contradicted the consecrated theoretical approach that suggested that initial listings on digital sharing platforms are urban. The Airbnb urban listings have registered growth between 2020 and 2023, becoming more urban-concentrated.

The analysis of the data reveals another interesting aspect. After 2020, the number of accommodation establishments with accounts on both platforms has grown but still represents a marginal phenomenon. However, Booking.com remains the most popular choice among accommodation providers, even though 2023 was the year in which, for the first time since 2010, the number of Airbnb listings overpassed the number of listings on Booking.com.

CONCLUSION

The changes in the way accommodation service providers choose to interact with their potential clients by presenting their offer directly, on dedicated digital booking platforms developed on the principles of the sharing economy are seen almost everywhere where the tourism phenomenon is present. With the inherent regional and local particularities, Maramureș Land, a known cultural and rural tourism destination is no exception.

The study focuses on mapping the spatial and temporal dynamics of accommodation establishments from the tourism destination of Maramureș Land that were listed on two popular digital booking platforms – Booking.com and Airbnb, that subscribe to the for-profit, commision-based model of the digital economy concept. The main hypothesis of the study was that through Excel and QGIS capabilities the level of adoption of these platforms by local accommodation providers can be assessed while also revealing information about the true scale of the accommodation supply in the area in question. Covering a 13-year timeframe, from 2010 to 2023, and assuming several methodological stages, the study assesses the level of adoption and popularity of Booking.com and Airbnb among accommodation providers by highlighting the number of listings on the two platforms and their spatio-temporal evolution. The study also differentiates between officially classified

accommodation establishments with valid Booking.com and Airbnb and listings for which it was not possible to determine indirectly their authorisation status. It was found that out of 540 accommodation units listed on the two platforms, 245 accommodation establishments were not found among the total 776 authorized establishments from Maramureș Land, raising the question of the true accommodation supply in the area and the necessity for further investigation.

REFERENCES

Adamiak, C. (2022). Current state and development of Airbnb accommodation offer in 167 countries. *Current Issues in Tourism, 25*(19), 3131-3149. https://doi.org/0.1080/13683500.2019.1696758

Airbnb. (2024). Retrieved from Airbnb Official Web Site: www.airbnb.com

Authorisation and Control-Romanian Ministry of Economy, Entrepreneurship and Tourism. (2023). https://turism.gov.ro/web/autorizare-turism

Badulescu, A., Badulescu, D., Simut, R., Herte, E., Borma, A., & Pandelica, I. (2022). Digitalization and the sharing economy. A survey-based research on Airbnb in Romania. *International Journal of Computers Communications & Control, 17*(6). https://doi.org/10.15837/ijccc.2022.6.5004

Booking.com. (2024). Retrieved from Booking.com corporation Web Site: www.booking.com

Botsman, R., & Rogers, R. (2011). *What's Mine is Yours: How Collaborative Consumption is Changing the Way We Live.* Collins.

Brandano, M.G., Mastrangioli, A., & Palma, A. (2023). The digital divide and the growth of the hospitality industry: The case of Italian inner areas. *Regional Science Policy&Practice, 15*(7), 1509-1532. https://doi.org/10.1111/rsp3.12696

Cesarani, M., & Nechita, F. (2017). Ourism and the Sharing Economy. An Evidence from Airbnb Usage in Italy and Romania. *Symphonya Emerging Issues in Management*(3), 32-47. https://doi.org/10.4468/2017.3.04cesarani.nechita

Chamboko-Mpotaringa, M., & Tichaawa, T.M. (2023). Moderating effect of age on the adoption of digital marketing tools and platforms in domestic leisure travel. *Geojournal of Tourism and Geosites, 51*(4), 1636-1644. https://doi.org/10.30892/gtg.514 spl05-1160

Christensen, C.M. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail.* Boston: Harvard Business Review Press.

Christensen, C.M., Raynor, M.E., & McDonald, R. (2015). What is Disruptive Innovation? *Harvard Business Review.* https://www.innosight.com/wp-content/uploads/2018/01/Innosight_HBR_What-is-Disruptive-Innovation.pdf

Constantinou, I., Marton, A., & Tuunainen, V.K. (2017). Four models of sharing economy platforms. *JournalMIS Quarterly Executive, 16*(4), 236-251. http://misqe.org/ojs2/index.php/misqe/article/viewFile/798/474

Dillahunt, T.R., & Malone, A.R. (2015). The promise of the sharing economy among disadvantaged communities. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, 2285-2294, ACM.

Dredge, D., Phi, G., Mahadevan, R., Meehan, E., & Popescu, E.S. (2019). *Digitalisation in Tourism: In-depth analysis of challenges and opportunities.* European Commission, Executive Agency for Small and Medium-sized Enterprises (EASME). https://ec.europa.eu/docsroom/documents/33163/attachments/1/translations/en/renditions/native

Dreyer, B., Lüdeke-Freund, F., Hamann, R., & Faccer, K. (2017). Upsides and downsides of the sharing economy: Collaborative consumption business models' stakeholder value impacts and their relationship to context. *Technological Forecasting and Social Change, 125*, 87-104. https://doi.org/10.1016/j.techfore.2017.03.036

Eckhardt, G.M., & Bardhi, F. (2015). The Sharing Economy Isn't About Sharing at All. *Harvard Business Review, 28*(1), 881-898.

Egresi, I., Puiu, V., Zotic, V., & Alexandru, D. (2020). Attributes that contribute to guest satisfaction: A comparative study of reviews posted on Booking.com and on Airbnb's platform. *Acta Geobalcanica, 6*(1), 7-17. https://doi.org/10.18509/AGB.2020.01

Eurostat. (2024). Eurostat: https://ec.europa.eu/eurostat/web/experimental-statistics/collaborative-economy-platforms#expandable-example-content

Ferrell, O.C., Ferrell, L., & Huggins, K. (2017). Seismic Shifts in the Sharing Economy: Shaking Up Marketing Channels and Supply Chains. *Journal of Marketing Channels, 24*(1-2), 3-12. https://doi.org/10.1080/1046669X.2017.1346973

Fink, M., & Ranchordas, S. (2021). Sharing and the city. *Vanderbilt Law Review, 49*(5). https://scholarship.law.vanderbilt.edu/vjtl/vol49/iss5/3

George, A. (2023). A Study on the Assessment of Customer Readiness toward the Adoption of Technological Innovations in Indian Tourism Sector. *Journal of Logistics, Informatics and Service Science, 10*(1), 237-256. https://doi.org/10.33168/JLISS.2023.0113

Grant, D. (2022). *The Guardian.* https://www.theguardian.com/australia-news/2022/oct/23/to-airbnb-or-not-to-airbnb-is-it-ethical-to-rent-property-to-holidaymakers-during-a-housing-crisis

Gutiérrez, A., & Domènech, A. (2020). Understanding the spatiality of short-term rentals in Spain: Airbnb and the intensification of the commodification of housing. *Geografisk Tidsskrift-Danish Journal of Geography, 120*(2), 98-113. https://doi.org/10.1080/00167223.2020.1769492

Guttentag, D. (2015). Airbnb: disruptive innovation and the rise of an informal tourism accommodation sector. *Current issues in tourism, 18*(12), 1192-1217. https://doi.org/10.1080/13683500.2013.827159

Gyódi, K. (2019). Airbnb in European cities: Business as usual or true sharing economy? *Journal of Cleaner Production, 221*, 536-551. https://doi.org/10.1016/j.jclepro.2019.02.221

Huerta-Álvarez, R., Cambra-Fierro, J.J., & Fuentes-Blasco, M. (2020). The interplay between social media communication, brand equity and brand engagement in tourist destinations: An analysis in an emerging economy. *Journal of Destination Marketing & Management, 16*.

Ilieş, G. (2007). *Ţara Maramureşului - Studiu de geografie regională [Land of Maramureş - Study of regional geography]*. Cluj-Napoca, Romania: Cluj University Press.

Ilieş, G., & Ilieş, M. (2015). Identity based geo- and tourism branding strategies derived from rural Maramureş Land (Romania). *GeoJournal of Tourism and Geosites, 16*(2), 179-186. https://gtg.webhost.uoradea.ro/PDF/GTG-2-2015/5_Ilies_198.pdf

Leadbeater, C. (2010). *We-Think: Mass innovation, not mass production*. Profile Books.

Malecki, E.J. (2003). Digital Development in Rural Areas: Potentials and Pitfalls. *Journal of Rural Studies, 19*(2), 201-214. https://doi.org/10.1016/S0743-0167(02)00068-2

Miguel, C., Martos-Carrión, E., & Santa, M. (2022). A Conceptualisation of the Sharing Economy: Towards Theoretical Meaningfulness. In V. Česnuitytė, A. Klimczuk, C. Miguel, & G. Avram, (Eds.), *The sharing economy in Europe*, 21-40, Palgrave Macmillan. https://doi.org/10.1007/978-3-030-86897-0_2

Morales-Pérez, S., Garay-Tamajón, L., & Troyano-Gontá, X. (2022). Beyond the big touristic city: nature and distribution of Airbnb in regional destinations in Catalonia (Spain). *Current Issues in Tourism, 25*(20), 3381-3394. https://doi.org/10.1080/13683500.2020.1780201

Moreno-Izquierdo, L., Ramón-Rodríguez, A.B., Such-Devesa, M.J., & Perles-Ribes, J.F. (2019). Tourist environment and online reputation as a generator of added value in the sharing economy: The case of Airbnb in urban and sun- and-beach holiday destinations. *Journal of Destination Marketing & Management, 11*, 53-66. https://doi.org/10.1016/j.jdmm.2018.11.004

OECD. (2016). *OECD Tourism Trends and Policies 2016*. Paris: OECD Publishing. https://doi.org/10.1787/tour-2016-en

OECD. (2022). *OECD Tourism Trends and Policies 2022*. Paris: OECD Publishing. https://doi.org/10.1787/a8dd3019-en

Oskam, J., & Boswijk, A. (2016). Airbnb: the future of networked hospitality businesses. *Journal of Tourism Futures, 2*(1), 22-42. https://doi.org/10.1108/JTF-11-2015-0048

Quatronne, G., Kusek, N., & Capra, L. (2022). A global-scale analysis of the sharing economy model – an AirBnB case study. *EPJ Data Science, 11*(36). https://doi.org/10.1140/epjds/s13688-022-00349-3

Quattrone, G., Greatorex, A., Quercia, D., Capra, L., & Musolesi, M. (2018). Analyzing and predicting the spatial penetration of Airbnb in U.S. cities. *EPJ Data Science, 7*(31). https://doi.org/10.1140/epjds/s13688-018-0156-6

Quattrone, G., Nocera, A., Capra, L., & Quercia, D. (2020). Social interactions or business transactions? What customer reviews disclose about Airbnb marketplace. *WWW'20*, 1526-1536, Taipei: ACM Digital Library. https://doi.org/10.1145/3366423.3380225

Quattrone, G., Proserpio, D., Quercia, D., Capra, L., & Musolesi, M. (2016). *Who Benefits from the "Sharing" Economy of Airbnb?* WWW '16: Proceedings of the 25th International Conference on World Wide Web, 1385-1394, ACM Digital Library. https://doi.org/10.1145/2872427.2874815

Ritter, M., & Schanz, H. (2019). The sharing economy: A comprehensive business model framework. *Journal of Cleaner Production, 213*, 320-331. https://doi.org/10.1016/j.jclepro.2018.12.154

Sagheim, K.B., & Nilsen, T. (2021). Blessing or curse for regions and firms? Narratives of the sharing economy as an innovative practice in a rural region in Norway. *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography, 75*(3), 127-141. https://doi.org/10.1080/00291951.2021.1918759

Schor, J. (2014). Debating the Sharing Economy. *Great Transition Initiative*. http://www.greattransition.org/publication/debating-the-sharing-economy

Skerratt, S., Farrington, J., & Ashmore (Hessen), F. (2012). *Next generation broadband in rural Scotland: mobilising, meeting and anticipating demand. In: rural Scotland in focus report 2012*. SRUC rural policy centre publications.

Tempo Online-statistical data. (2023). Retrieved from http://statistici.insse.ro:8077/tempo-online/

Tom Dieck, M., & Jung, T. (2018). A theoretical model of mobile augmented reality acceptance in urban heritage tourism. *Current Issues in Tourism, 21*(2), 154-174. https://doi.org/10.1080/13683500.2015.1070801

Tussyadiah, I.P., & Pesonen, J. (2016). Impacts of Peer-to-Peer Accommodation Use on Travel Patterns. *Journal of Travel Research, 55*(8), 1022-1040. https://doi.org/10.1177/0047287515608505

Weber, T.A. (2014). Intermediation in a Sharing Economy: Insurance, Moral Hazard, and Rent Extraction. *Journal of Management Information Systems*, 31(3), 35-71. https://ssrn.com/abstract=2439110

Zervas, G., Prosepio, D., & Byers, J.W. (2017). The Rise of the Sharing Economy: Estimating the Impact of Airbnb on the Hotel Industry. *Journal of Marketing Research, 54*(5), 687-705. https://doi.org/10.2139/ssrn.2366898

DEVELOPMENT OF A GEOGRAPHICAL INFORMATION SYSTEM FOR OPTIMIZING TOURIST ROUTES IN THE ULYTAU NATIONAL NATURAL PARK

Darken A. SEIDUALIN
L.N. Gumilyov Eurasian National University, Tourism Department, Astana, Kazakhstan, e-mail: darken68@mail.ru

Aidar H. MUKANOV
L.N. Gumilyov Eurasian National University, Tourism Department, Astana, Kazakhstan, e-mail: aidar81hamzauli@mail.ru

Rina Y. AGYBETOVA
L.N. Gumilyov Eurasian National University, Tourism Department, Astana, Kazakhstan, e-mail: r.agybetova@gmail.com

Kamshat P. MUSSINA
L.N. Gumilyov Eurasian National University, Tourism Department, Astana, Kazakhstan, e-mail: kamshatmussina@mail.ru

Zharas G. BERDENOV[*]
L.N. Gumilyov Eurasian National University, Faculty of Natural Sciences, Astana, Kazakhs, e-mail: berdenov-z@mail.ru

Lazzat T. BABKENOVA
L.N. Gumilyov Eurasian National University, Department of Geodesy and Cartography,
Astana, Kazakhstan, e-mail: ltbabkenova@gmail.com

Nazgul Zh. ZHENSIKBAYEVA
Sarsen Amanzholov East Kazakhstan State University, Department of Ecology and Geography,
Ust-Kamenogorsk, Kazakhstan, e-mail: naz_zanibek@mal.ru

Abstract: This article analyzes the development of ecotourism in the Ulytau Nature Park using innovative Geographic information systems technologies. The main purpose of the study is to create a favorable and innovative environment for the development of the tourist experience, including the search and discovery of historical sites, the development of optimal routes and infrastructure improvements. The use of GIS maps in ecological tourism contributes to the development of optimal routes, improvement of tourist infrastructure and provision of informative services. The analysis of the study makes it possible to identify recommendations for public and private organizations in the field of using GIS technologies for the sustainable development of ecotourism. The created GIS map provides information about the park's territory, the location of objects and routes, which contributes to a more informative and oriented tourist experience. The experience of working with GIS technologies enhances the ability of tourists to navigate, discover and obtain information about historical sites and attractions in ecotourism and help enrich the tourist experience.

Key words: Geographic Information System (GIS), tourist routes optimization, Ulytau National Nature Park, sustainable tourism, resource management, tourism potential, tourist maps.

* * * * * *

INTRODUCTION

Creation of GIS maps of tourist routes in the Ulytau Natural Park is a unique and multifaceted approach to organizing and managing the tourist flow in this significant region. Ulytau is not only a representation of natural wealth and ecosystems, but also a place of historical and cultural value for the Kazakh people (Kadirbayeva and Tuleshova, 2015).

Ulytau was of great importance on the Silk Road, the ancient trade route between China and Europe, providing travelers with fresh water and food, as one of the most important links in the network of goods and culture exchange between different regions. It highlights the rich historical heritage of Ulytau, providing tourists with the opportunity to visit and explore places associated with important events and periods in the history of the country. The purpose of this study is to develop and implement innovative technologies based on geographic information systems (GIS) in the Ulytau Nature Park using world experience and best practices in the field of tourism. The main objectives of the research are the creation of GIS infrastructure and the development of interactive GIS maps containing information about natural and cultural attractions, tourist routes and services and their subsequent integration into the global GIS system (Berdenov et al., 2017).

---

[*] Corresponding author

The study will analyze the best international practices in the field of GIS technologies and their use in tourism. Successful approaches and methods used to create GIS maps and innovative technologies in tourism will be studied and applied to achieve the goals and objectives of the research in the Ulytau Nature Park. As a result of the research, it is planned to develop and implement GIS technologies that will improve information accessibility and management of tourist resources in the park. The created interactive GIS maps will provide tourists with relevant and useful information about natural and cultural sites, routes and services necessary for a better and more comfortable tourist experience.

In the process of developing and applying GIS technologies, the study will take into account and analyze world experience and best practices in the field of tourism. Successful approaches to the creation of GIS maps and the use of innovative technologies in tourism will be analyzed in order to apply relevant and effective methods in the Ulytau Nature Park. The application of geographic information systems (GIS) in the development of tourist routes makes it possible to harmoniously combine travel and exploration with the conservation of nature and cultural heritage (Vuković, 2022).

An important prerequisite for creating GIS maps of tourist routes in the Ulytau Nature Park is the systematization of data and directions related to the history, culture, and natural resources of the region (Zhuspekova and Maymurunova, 2015). The structuring of tourist routes included consideration of the development of metallurgy in the Kazakh steppes, analysis of the Golden Horde khanates, the study of petroglyphs, natural resources, and the history of the space harbor. These destinations add depth and content to the itineraries, making the travel experience more interesting and cognitive.

The integration of GIS technologies into the development of tourist route maps gives them a new dimension. The creation of interactive maps and virtual tours provides visitors with the opportunity to familiarize themselves with the area and attractions of the park in advance. This contributes to a deeper understanding of the territory and allows tourists to plan their route based on their interests and preferences (Omarzadeh et al., 2022). One of the key benefits of using GIS in tourism is route personalization. Tourists can choose routes and attractions according to their preferences and physical fitness. Accurate maps and navigation through mobile apps enable confident navigation and help avoid confusion, thus enriching the travel experience (Chlachula, 2019). Additionally, GIS allows to create interactive educational programs. Visitors can explore the biodiversity, geology, climate, and other aspects of nature in the reserve in a playful and entertaining way. This promotes environmental awareness and helps tourists interact more deeply with the environment.

However, in addition to tourism benefits, the application of GIS technologies in the Ulytau Nature Park has environmental significance. Monitoring and managing the load of tourist flows can prevent congestion and overload in certain areas, minimizing negative impacts on nature and biodiversity (Seidaliyeva et al., 2021). In addition, GIS allows you to quickly respond to threats such as forest fires or floods, which ensures the safety of visitors and preserves the integrity of ecosystems. This is important for the long-term sustainability of tourism and the conservation of the region's natural resources. The creation of GIS maps of tourist routes in the Ulytau Natural Park also contributes to the popularization and preservation of cultural heritage. The region has a special meaning for the Kazakhs, symbolizing their history, traditions, and national identity. GIS highlights key historical and cultural points of interest, enriching travel itineraries and allowing visitors to better understand and connect with the region's heritage.

One of the notable features of GIS technologies in this context is their ability to continuously evolve. The system can be constantly updated and supplemented with new data, as well as adapted to the changing needs of tourists and environmental conditions. This keeps itineraries relevant and efficient, providing a better experience for future generations of visitors (Ruda, 2016). The creation of GIS maps of tourist routes in the Ulytau Natural Park is of great importance for the development of sustainable tourism, and conservation of natural and cultural heritage. This technological innovation combines historical, cultural, and natural aspects of the region into one harmonious tourist experience. GIS technologies provide visitors with the opportunity to better understand and interact with the environment, as well as contribute to the effective management of tourist flows and the protection of natural resources. Thus, the creation of GIS maps of tourist routes in the Ulytau Natural Park is becoming a key element of modern tourism infrastructure, contributing to the development of the region and enriching the tourist experience.

The study is focused on identifying the tourism potential and promising areas for the development of natural tourism. At the same time, the results obtained can be used to develop recommendations and strategies in the leisure and tourism industry, including winter tourism at the regional level. The research methodology includes employing of field, descriptive and cartographic methods, which allows for a comprehensive assessment and analysis of the tourism opportunities in this region. Based on the data obtained, a winter route was developed that embodies the potential of the territory into a sustainable tourist destination. An important part of the work is represented by the created three-day route map, which serves as a planning and orientation tool for future tourists. This study is aimed at studying the prospects for the development of winter tourism in the Karkaraly Mountains and providing analysis and planning methods for the effective use of tourism potential (Keukenov et al., 2023). The authors (Sumarmi et al., 2021) in their work analyze the ecological environment, the interests of tourists and the opportunities of the local community in Peravan Beach using GIS and data on natural places. The main goal is to create a tourist map covering natural attractions. The publication by the authors (Agybetova et al., 2023) considers the recreational potential of Lake Alakol in the Urdzhar region. The methodology evaluates the possibilities of developing a variety of recreational activities. The results of the work resulted in recommendations for improving infrastructure, stimulating border tourism with China, constantly monitoring the environmental situation, creating landfills for solid and liquid household waste, and organizing systematic cleaning of beaches. Based on a comprehensive understanding of sustainability principles, the authors of the article, Boers and Cottrell, 2007, focus on the development of a GIS-based STIP (Sustainable Tourism Infrastructure Planning) model that contributes to the harmonious interaction of tourism with the environment and cultural aspects (Boers and Cottrell, 2007).

The structure of STIP includes the stages of visitor segmentation, zoning and transport infrastructure planning. Applying the model to a trail planning example in the Sinharaja Nature Reserve (Sri Lanka) using sustainability criteria and GIS methodology identified optimal locations for trails, ensuring balanced tourism and minimizing environmental impact. The integration of GIS into sustainable tourism infrastructure planning ensures the efficient use of resources and the conservation of natural and cultural values (Suleimenov et al., 2022). The application of GIS in tourism research is a methodological approach with significant potential for enhancing analytical capabilities in the study of the spatial aspects of tourism phenomena. GIS provides the means to efficiently collect, manage, analyze and visualize spatial data, which provides a deep understanding of tourism dynamics, environmental impacts and social interactions (Mason, 2015).

Geographic Information Systems (GIS) (Bozdağ, 2022) play a key role in tourism research, covering a wide range of important aspects. They are used to optimize routes and place tourist infrastructure, taking into account the preferences of tourists and environmental restrictions. GIS is also being used to assess the impact of tourism on the environment and develop mitigation measures. The interaction of tourists and local communities is also explored through GIS (Bennett and Armstrong, 2001), analyzing socio-cultural aspects. These systems help develop marketing strategies, analyze the behavior of tourists, as well as coordinate crisis situations and ensure security. Geostatistics, on the other hand, enriches the analysis of spatial data (Burrough, 2001). It allows you to evaluate the structure, correlations and distribution of quantities on the geographical surface. The combined use of GIS and geostatistics allows more accurate analysis of geographic data, considering spatial dependencies and interpolation of values. The article "Methodology for Developing Cultural Tourist Routes using Geographic Information Systems (GIS)" (Calderón-Puerta and Arcila-Garrido, 2020) presents a methodology for developing cultural tourist routes using Geographic Information Systems (GIS).

The work focuses on the theoretical analysis of the role of GIS in tourism and the distinction between the concepts of "tourist routes" and "cultural routes". The methodology includes two stages: a quantitative study of the cultural heritage of the late Middle Ages and an analysis of the potential for tourism using GIS. The study was conducted in the Spanish province of Cadiz. The results confirm the effectiveness of the methodology and justify the choice of places to include in the route, considering accessibility and cultural values. The work of Kazakh researchers (Taukebayev et al., 2021) is devoted to the problem of developing a map-scheme of routes and infrastructure along the Ayusai Gorge for the sustainable development of tourist and recreational activities in the Ile-Alatau National Park using GIS technologies, to stimulate tourism activity and support cultural development, based on a common history spanning several centuries.

Several authors (Da Silva and Da Rocha, 2012; Karas et al., 2021) have dedicated their research to the use of web-enabled mobile applications, which are gaining new and important significance for the tourism industry (Zharkenova et al., 2023). The authors believe that a more detailed analysis of mobile applications in the tourism sector: accommodation, ticketing, vehicle rental, route planning navigation will contribute to a more efficient and comprehensive improvement of the tourism experience, as well as enriching the functionality of the tourism industry.

Spatial Route Modeling in GIS (Iovanovis and Negush, 2008) presents a methodology for spatial route modeling using Geographic Information Systems (GIS). The model allows us to analyze the density of the tourist flow in different areas and periods of time, and determine the peaks of the load and demand for services. The basis is geographic data, road infrastructure, attractions. Parameters, including travel time and modes of transport, are weighted by importance. Routing algorithms (such as Dijkstra or A*) calculate the best routes given the particular parameters. The resulting routes are available to tourists through applications or web services. The methodology contributes to the optimization of movement between points, improving the quality of the tourist experience and the efficiency of transport infrastructure.

Research (Nieto et al, 2014) considers a methodology for spatial route modeling in GIS using network applications for tourism promotion. The model aims to optimize the attractiveness and effectiveness of tourism offerings by integrating geographic data and network technologies. GIS analysis is based on spatial data, including geographic parameters and the creation of predictive models. The application of GIS analytical methods reveals hidden spatial patterns, contributing to a deeper understanding of the geographical environment and optimization of tourism aspects.

The model also emphasizes the importance of integrating modern networked applications, ensuring active interaction between tourists and local resources. This provides tourists with navigation functions, route planning and access to up-to-date information about local attractions. All this helps to optimize the tourist experience and improve the interaction between visitors and the surrounding geographical environment. The use of GPS technology in studying the behavioral aspects of individual travelers has revolutionary potential. GPS allows to accurately track routes, timeslots and locations, enriching analysis with real-time data. This eliminates the disadvantages of traditional data collection methods such as limited coverage and inaccuracy. In the context of assessing the impact of transport management strategies and technologies on travel behavior, the authors propose a new approach based on the use of GPS, personal mobile phone system (PHS) and geographic information system (GIS) (Ohmori et al., 2000). The analysis of information obtained using GPS and PHS allows a deeper assessment of how effective these technologies are in the field of collecting information on travel behavior and reveals the potential for improving the quality of the analysis of behavioral patterns in this context.

"Smart Tourism: foundations and developments" (Gretzel, 2015), published in the journal "Electronic Markets", analyzes the concept of smart tourism and its evolution in the context of modern information and communication technologies. The authors (Matos et al., 2019) highlight the role of digital innovation in changing the travel experience, looking at the impact of information technologies such as mobile apps and geolocation systems on infrastructure renewal and service customization. Examples of practical applications are given, including interactive maps and mobile guides, and challenges and prospects for implementing smart tourism are discussed, including aspects of privacy and standardization. The essence of this study is to analyze the significance of smart tourism in the modern world and its

contribution to the tourism industry. GPS technology has significantly changed the collection of movement data (Wu et al., 2016). The use of built-in GPS sensors in smartphones makes it possible to accurately measure spatial and temporal characteristics, overtaking the limitations of traditional methods. This provides new perspectives for research (Shen and Stopher, 2014). Despite the availability of literature, reviews of methods for determining movement modes based on smartphone GPS data remain limited. Rahayuningsih et al., 2016 explores GIS to assess cultural resources and their distribution in tourism activities. The methodology includes the collection of data on natural and socio-cultural objects, geocoding, and visualization. The developed GIS structures the spatial distribution into seven categories: a) high attractiveness and accessibility, b) high attractiveness and medium accessibility, c) high attractiveness and low accessibility, d) medium attractiveness and high accessibility, e) medium attractiveness and accessibility, f) medium attractiveness and low availability, g) low attractiveness and availability. The application of GIS reveals patterns in site placement and potential for tourism infrastructure. The paper presents a methodological approach to the use of GIS for the analysis and management of resources, considering the potential for tourism development and emphasizing the importance of planning based on spatial resource data. The work (Ghorbanzadeh et al., 2019) analyzed the geographical factors in Iran, divided into four clusters: "water attractions", "forest attractions", "mountain attractions" and "scenic places". The GIS made it possible to visualize the data, identifying places with high attendance (red) and areas with low tourist significance (dark). The results can be used to identify sustainable tourist sites and classify them according to their level of importance, taking into account economic, social and environmental aspects.

Chhetri and Arrowsmith, 2008 analyze the use of GIS to assess the recreational potential of natural tourist destinations. The applied method was developed for the Grampians National Park in Australia. The use of regression modeling made it possible to create scenic attractiveness predictors based on data obtained from student surveys. The results are integrated with the "potential of recreational opportunities" in the region. A spatial model of "recreational potential" was formed, identifying areas of high potential around popular hiking trails. Alternate strategic points are also highlighted to reduce congestion on heavily used routes. Despite sampling limitations, the method provides a tool for predicting recreational opportunities in parks for tourism management.

MATERIALS AND METHODS

The methodology of this study is based on the method of geographical information analysis. This method involves the use of geospatial data and geographic information systems (GIS) to analyze the spatial characteristics of tourist sites and their interaction with the environment. Two stages were carried out in the research process: field research and digitization of analog tour routes into a GIS system. Field research included the collection of data from primary sources such as observations, interviews with local residents and experts, questionnaires, as well as the collection of geographical information on the spot, using photographs, geolocation devices (GPS) and mobile devices with applications for recording routes. At the stage of creating spatial databases, geographical and attribute data on tourist sites were noted, which allowed structuring information for subsequent analysis and visualization. The data obtained made it possible to classify tourist sites and determine their distribution, accessibility, potential for development and interrelation with other factors (Kvamme, 1999). Graphical maps and diagrams created using a geographic information system were used to analyze and visualize the results. GIS provides opportunities for creating and editing maps, managing geodata, conducting spatial analysis, modeling, 3D visualization and time series analysis. Digitization of the maps has made it possible to create a spatial representation of routes and provide ease of use and navigation opportunities for tourists.

Thus, the use of the method of geographical information analysis and GIS technologies allowed researchers to analyze the spatial characteristics of tourist sites, the distribution and interrelationships between them, as well as to determine the potential for the development of the tourism sector. The research report is presented in the form of graphic maps and diagrams that allow you to visually present the results obtained. For the development of GIS maps of tourist routes of the Ulytau National Natural, geospatial data such as topographic geodata, satellite imagery and digital elevation models were integrated to accurately determine the geographical situation and characteristics of the routes.

Modern technological solutions, such as mobile devices, geolocation services, virtual and augmented reality, QR codes, contribute to the addition of interactive elements to the map, thereby enriching the visual and informational experience of tourists (Mínguez, 2020). The methodology includes three key stages: the first is a detailed study of the geographical area, including the collection and analysis of a variety of data on cultural, environmental, and infrastructural aspects; the second is the analysis of the potential of the territory using geographic information and a contrasting potential index; the third is the development of tourist routes based on the integration of data and previously calculated tourist potential.

For the successful implementation of the project to create GIS maps of tourist routes of the Ulytau National Natural Reserve, the following sources were used: Official maps, topographic data, satellite images and aerial photographs of the Ulytau territory provided by government organizations and international sources, data on biological diversity, ecosystems, geological features, climate and other aspects of nature obtained through research and scientific sources. Information about cultural attractions, ethnographic features, historical facts, and customs of the local population, available from archives, scientific research and local sources. State-of-the-art GIS software ArcGIS, QGIS for creating and analyzing maps, as well as geodata processing tools, and collaborating with local governments, scientists, experts, and the community to get up-to-date data and actionable information. To build a digital elevation model (DEM), an open geoinformation system QGIS (Borràs et al., 2014) is used. As a basic tool for the final visualization of cartographic data, the vector graphics editor Adobe Illustrator is used. When preparing a tourist map of the Ulytau Natural Reserve, a set of cartographic image methods was used. The main method was the sign method (Tikunov and Eremchenko, 2015), used to display objects of historical

and cultural significance, historical and cultural monuments, other buildings and structures. The database of the system for monitoring the tourist activity of the Ulytau Natural Park was structured and is a systematic set of tourist routes (Figure 1).
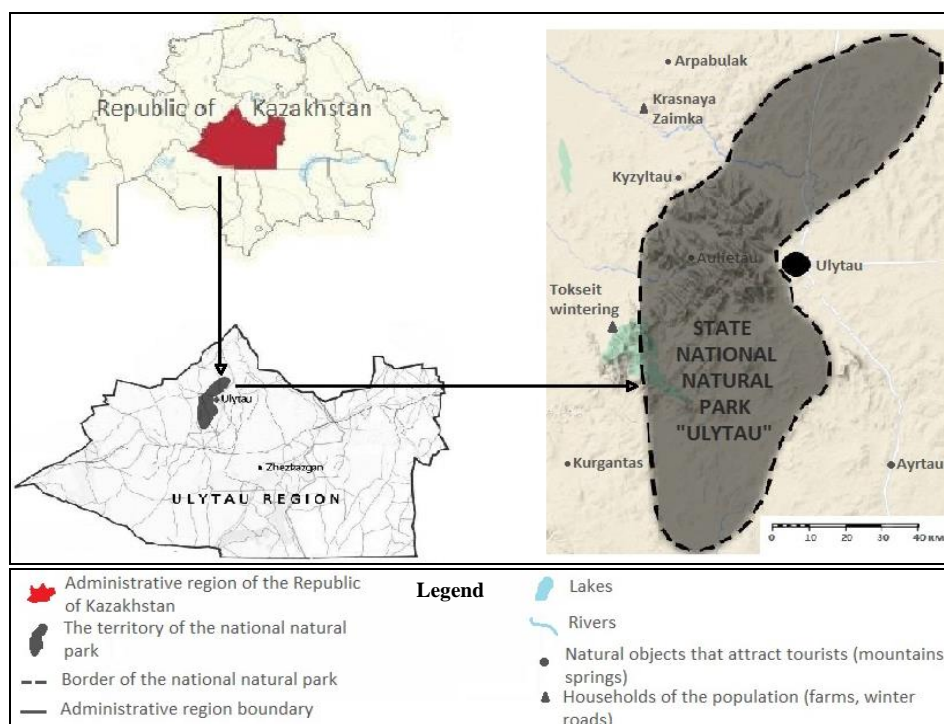

Figure 1. Map of the State National Natural Park "Ulytau" Note: the figure was compiled by the authors based on the ARGIS program

Tour route 1 (Figure 2): Zhezkazgan - Terekty village - Terekty rock paintings (94 km). Geographic coordinates of the Terekty tract: N48°12'46.02" E68°37'08.07".

Tourist route 2 (Figure 3): The historical and cultural part of the route is represented by tourist route 2.

Tour route 3 (Figure 4): Zhezkazgan - Ulytau village - Aulietau peak - Edyge peak.

Tour route 4: Route "Zhezkazgan-Zhezdy-Karsakpai-Baikonur".

Important sources of information in the preparation of the tourist route are represented by the documents of the Ulytau National Natural Park: data from the Historical and Industrial Museum named after K.I. Satpayev Corporation "Kazakhmys" (Zhezkazgan), Historical and Archaeological Museum with the exhibition hall "History of the Development of Cosmonautics" (Zhezkazgan), Museum of the History of Mining and Smelting named after M. Toregeldin (Zhezda), House-Museum of Kanysh Satpayev (Karsakpay), Museum school number 17 (Baikonyr). The map shows tourist resources and cultural heritage sites.

RESULTS AND DISCUSSION

The need to study the tourist routes of the Ulytau Natural Park and create GIS maps is due to several factors that have a significant impact on the management of natural resources and the tourism infrastructure of this territory.

Firstly, the existing tourist routes have not been studied enough and are little systematized. This leads to inconvenience for visitors who face insufficient information and limited options for choosing and planning routes. The lack of a clear system of signage and orientation in space creates difficulties for tourists and can negatively affect their visiting experience. Secondly, the creation of GIS maps of tourist routes allows to collect, aggregate, and visualize a variety of data, such as geographic information, environmental parameters, cultural heritage and other key factors. This provides a completer and more accurate picture of the area's unique aspects and its potential for tourism.

Thirdly, GIS maps make it possible to more effectively manage tourist flows and infrastructure. They allow to optimize routes, evenly distribute visitors, and prevent negative impacts on vulnerable ecosystems and biodiversity. This contributes to the sustainable development of tourism, minimization of environmental impact and conservation of natural resources. Fourth, the creation of GIS route maps promotes research and knowledge sharing. It provides a platform for data collection, trend analysis and development strategies. GIS-based research can provide valuable information about the impact of tourism on the environment, socio-cultural aspects, and economic performance (Singh, 2015).

In the process of structuring tourist routes in the Ulytau National Natural Park, data were systematized in several key areas (Shuptar, 2016). One of these areas was the study of the development of metallurgy in the Kazakh steppes, which is a significant aspect of the historical and cultural heritage of the region. This study allows a deeper understanding of the evolution of metallurgical technologies and their impact on the appearance of the region in different historical periods.

Another important aspect of the structuring of tourist routes was the analysis of the Golden Horde khanates, which played a significant role in shaping the cultural and socio-economic aspects of the territory. This direction enriches the understanding of historical events and the dynamics of power in this area.

Also, the inclusion of natural resources of the Ulytau Park into the route structure gives them additional depth and significance. The analysis of petroglyphs, archaeological research and art objects reveals the unique artifacts of ancient civilizations and contributes to the understanding of the historical dynamics of the region.

An equally important direction was the study of the space harbor, associated with a historical event, when the first cosmonaut visited the Kazakh land for the first time. This direction allows to understand the modern connections of mankind with space and the introduction of innovations in the field of tourism more deeply. Thus, the structuring of tourist routes in the Ulytau National Natural Park based on these directions provides a unique opportunity for a comprehensive study of the cultural, historical, natural and innovative heritage of the region, enriches the experience of tourists and contributes to the preservation and promotion of its unique aspects (Aldybayev et al. 2021).
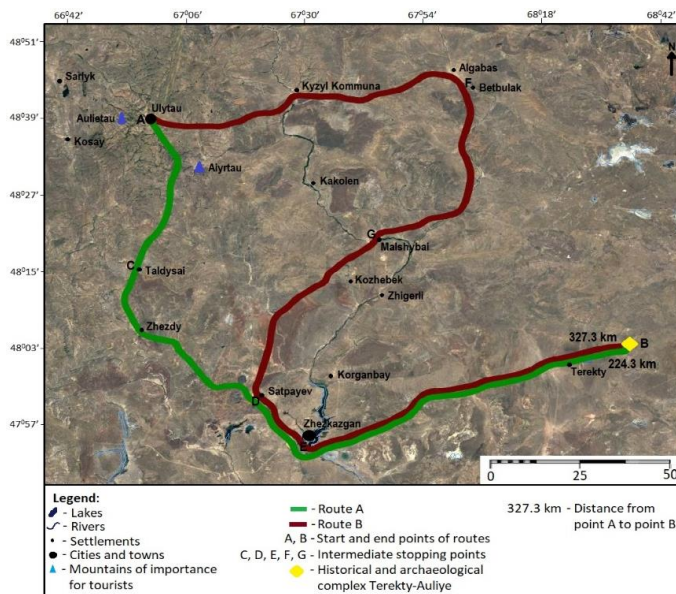

Figure 2. Tour route 1: Zhezkazgan
- the archaeological complex of Terekty-Aulie
Note: the figure was compiled
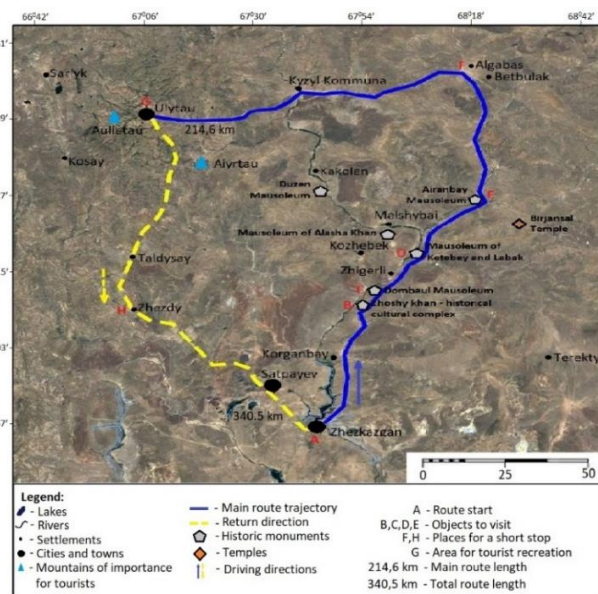by the authors based on the ARGIS program

Figure 3. Route 2: Zhezkazgan - Zhoshy Khan mausoleum
(50 km), - Dombauyl mausoleum (5 km) - Ketebay and Labak
mausoleum (20 km) - Alasha Khan mausoleum - Duzen Sandybay
necropolis (23 km) - Aiyrtau village - Ulytau village (58km)

Tour route 1 (Figure 2): Zhezkazgan - Terekty village - Terekty rock paintings (94 km). Geographic coordinates of the Terekty tract: N48°12'46.02" E68°37'08.07". The historical and archaeological complex of Terekty-Aulie consists of a gallery of rock paintings - a Neolithic site, settlements and necropolises of the Bronze Age, burial mounds of the early Iron Age, the remains of horizontal and vertical adits, in which ores and semi-precious minerals were mined, mazars of the 9th-19th centuries. Petroglyphs of the Terekty are located on the tops of three granite hills, stretched in a chain from west to east. Images of animals are carved on the stones, which can be attributed to the Saka animal style, to the Bronze Age (III - I millennium BC), early Iron Age (IX century BC - III century AD) and to the Middle Ages.

Tour route 2 (Figure 3): "Zhezkazgan - the mausoleum of Zhoshy Khan (50 km), - the mausoleum of Dombauyl (5 km) - the mausoleum of Ketebay and Labak (20 km) - the mausoleum of Alasha Khan - the Duzen Sandybay necropolis (23 km) - the village of Aiyrtau - the village of Ulytau (58 km)". For the first time, the mausoleum of Zhoshi Khan was mentioned in the notes of Hafiz Tanysh (XVI century). In 1946, an archaeological expedition led by A. Margulan during excavations discovered two burials in the mausoleum. According to scientists, one of them belongs to Zhochi Khan, the other - to his elder wife Bektumysh. Mausoleum of the Hun period Dombauyl (5 km). One of the largest stone structures in Kazakhstan, built in the pre-Islamic period, VIII - IX centuries. The mausoleum is a tall cone-shaped structure on a base close to a square. The Labak mausoleum was built in 1874, it is a portal-dome structure with dimensions in terms of 7.25 × 8.25 m, height 6.45 m. Here is also the mausoleum of Ketebay (XIX century). The mausoleum of Ketebay was built of raw brick and lined with burnt bricks. This is one of the best examples of mausoleums of the 19th century in Central Kazakhstan. The dome is destroyed, restoration work was not carried out. The Mausoleum of Alasha Khan (15 km), erected in the first half of the 13th century, was built of good-fired square bricks, has a portal-dome structure. The outer laying of the mausoleum imitates a carpet with alai patterns. According to folk legend, Alasha Khan was a fair ruler, a brave leader of the Kazakh tribes. The mausoleum of Duzen Sandybayuly was built in the middle of the 19th century in 1863 - 1866 by the Kazakh master Seraly Elamanuly, commissioned by a large feudal lord Erdyn from the Naiman clan, over the grave of his brother Zhuzden. It is a poor copy of the mausoleum of Alasha Khan. The mausoleum was built of burnt bricks on clay-adobe mortar. According to the stories of old-timers, sheep's milk was added to make bricks for its strength. The building is cubic with a hemispherical dome.

Tour route 3 (Figure 4) Zhezkazgan - Ulytau village - Aulietau peak - Edyge Peak. Aulietau summit is located 2 km west of Ulytau village. Oral creativity of the local population brings us that the top of Mount Aulietau (1133 m) is closest to the sky, it is there that Heaven and Earth meet, therefore, since ancient times, the mountain was considered a sacred place, the abode of gods and spirits, a place of constantly operating sacred forces and rituals a place of connection between man and nature.
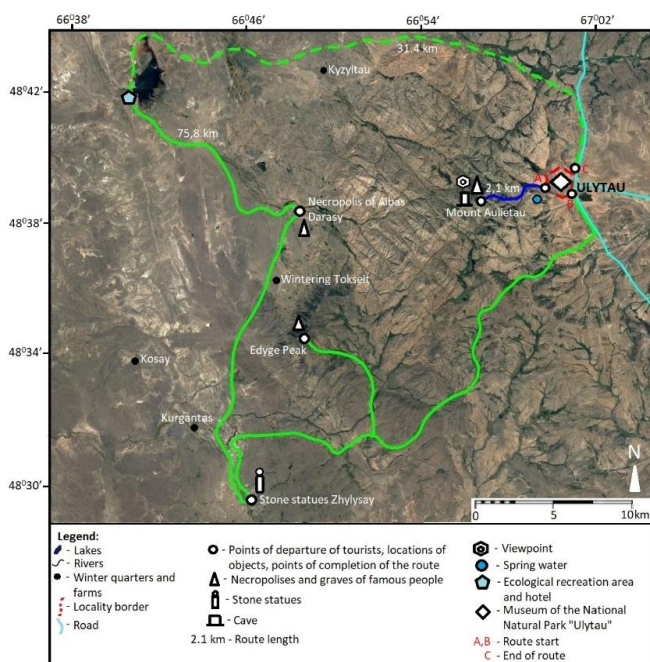
Figure 4. Tour route 3: Zhezkazgan - Ulytau village - Aulietau Peak - Edyge Peak (Note: the figure was compiled by the authors based on the ARGIS program)
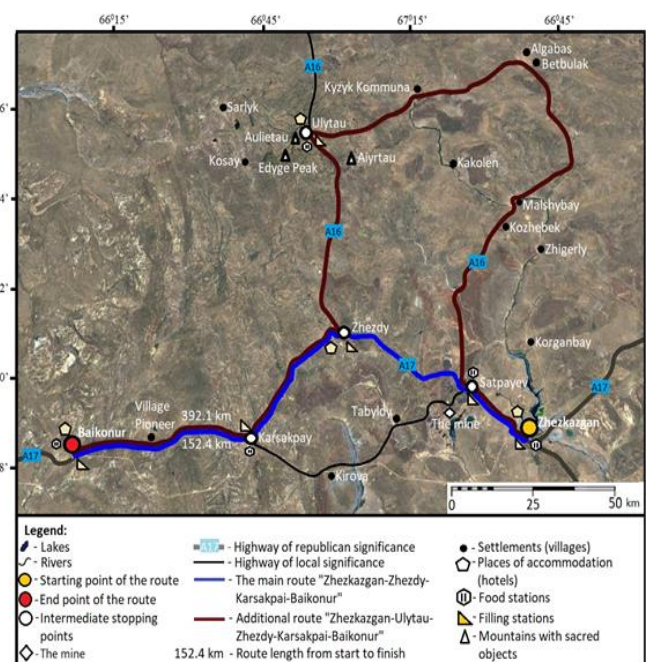

Figure 5. Tour route 4: Zhezkazgan-Zhezdy-Karsakpai-Baikonur (Note: the figure was compiled by the authors based on the ARGIS program)

Edyge Peak, located 35 km west of the village of Ulytau. At its top is the burial place of the famous Khan of the Golden Horde Tokhtamysh (Toktamys). At the top of the sacred Ulytau, the respected Edyge hakim was buried, whose name the mountain later began to be called. He was a contemporary of Tokhtamysh Khan, who ruled the Golden Horde in 1380-1395, the cities of Sauran and Syganak were considered the central cities. Edyge's body was buried in the Ulytau mountains, setting a tombstone over the grave. Since then, the places "Mountain Edyge", "Edyge Grave" have appeared here. The birthplace of Edyge himself is the Ulytau area, namely Kishitau (a small mountain).

Route 4: (Figure 5) Route Zhezkazgan-Zhezdy-Karsakpai-Baikonur (Bakytova and Medeuova, 2023). Tour route 4 is interesting because the history of the space harbor and the development of smelting in the steppes of Ulytau are intertwined in this direction (Figure 5). The route includes the following points of visit:

Zhezkazgan - "Dzhezkazgan - a space harbor" (Zhezkazgan Historical and Archaeological Museum, Exhibition Hall "History of the Development of Cosmonautics", Garyshkerler (Spacemen) Boulevard, Walk of Fame, House with Greetings, Houses with Panels on Garyshkerler (Spacemen) Boulevard Street, Monument to the Conquerors of Space, Historical - Production Museum named after K.I. Satpayev at Kazakhmys Corporation LLP), the Monument to "Three Heroes" in the village of Shalginsky, Terekty district, presumably 9 km away was the measuring point 7-T, which was the base for tracking space rockets before its departure into outer space.

Zhezdy - the village of Zhezdy, and earlier the village of Marganets, where the Museum of the History of Mining and Smelting named after Maken Toregeldin, the museum exposition reveals the history of the development of the mining and smelting industry in the Kazakh steppes are located (Baipakov, 1998).

Karsakpai - Karsakpai copper plant, House-Museum of K.I. Satpaeva, Baikonur - (school museum in the village of Baikonyr, petroglyphs of Baikonyr and Bileuti, the historical landscape of the Battle of Bulanty, Uytas, Batyrlar Korymy, Tandai, Kokalazhar, the historical working settlement of Baikonyr).

Mosque Dulygaly (on request) 90 km from the village of Baikonyr, "Dulygaly". Geographic coordinates of the Dulygaly mosque: N48°32'12.30" E65°42'34.69". Mosque. It is located on the right bank of the Dulygaly River, 170 km west of the village of Ulytau. Built at the end of the 19th century. The well-known traditional healer Kazi Ishan, who lived in the 70s of the XX century, rests in the necropolis next to the mosque.

Ulytau Natural Park occupies a special place among nature reserves due to its outstanding significance and uniqueness. This park has a rich biodiversity, including a variety of plant, animal, and ecosystem species, which makes it an exceptional site for research and conservation of rare and endangered species.

But the significance of the Ulytau Natural Park extends far beyond biodiversity. This place also has a deep historical and cultural heritage that reconnects us with ancient times and allows us to better understand the evolution of our planet and the shape of the region throughout history. Archaeological monuments, petroglyphs and sacred places reveal their secrets right here, giving us a look into the past. Ulytau Park also plays a key ecological role in conserving natural resources and maintaining ecosystems. Its significance becomes especially relevant in the context of biodiversity conservation and the balance of natural processes in the modern world, which is exposed to many threats.

Ecotourism and educational programs offered in Ulytau Park promote awareness of natural issues and inspire people to learn and care for the environment. Tourists can immerse themselves in natural beauty while exploring unique ecosystems and supporting the region's sustainable development. Thus, the Ulytau Natural Park combines the richness of

nature, deep cultural heritage, and importance for environmental sustainability. It is a place where history, nature and mankind meet in harmony, continuing to inspire and delight generation after generation.

CONCLUSION

The study and structuring of tourist routes in the Ulytau National Natural Park are a complex and multifaceted task, which was solved by systematizing data in several key areas. The analysis of the conducted studies allows us to draw the following conclusions. Firstly, the study of the metallurgy development in the Kazakh steppes is an important component of structured routes. It allows a deeper understanding of the technological and economic progress of the region throughout history, as well as its impact on the appearance and cultural heritage of the area.

Secondly, the analysis of the Golden Horde khanates reveals to researchers and tourists a wealth of cultural and socio-economic aspects of the past. This direction contributes to a deep understanding of historical processes, the influence of rulers and the dynamics of power on the formation of social structure. Thirdly, the inclusion of the natural resources of Ulytau Park in the routes enriches the experience of visitors. The analysis of petroglyphs and archaeological objects reveals to them the unique artifacts of the history, nature, and culture of this area.

And, finally, the exploration of the space harbor testifies to the connection of the region with the space history of mankind. This destination opens new horizons for the tourist experience, allowing visitors to better understand and appreciate humanity's role in space exploration. Thus, the systematization of tourist routes in the Ulytau National Natural Park within the framework of the above directions contributes to a deeper and more comprehensive understanding of the historical, cultural, and natural heritage of the region. It enriches the experience of tourists, helps to preserve the unique aspects of the place, and promotes it among visitors, leaving an unforgettable mark on their memories and perceptions.

REFERENCES

Agybetova, R., Zhakupov, A., Berdenov, Z., Abishov, N., Ylemessov, A., & Gizzatzhanova, A. (2023). Assessment of recreational suitability of lake Alakol in the Republic of Kazakstan on hydrological indicators. *GeoJournal of Tourism and Geosites,* 46(1), 118–123. https://doi.org/10.30892/gtg.46113-1007

Aldybayev, B., Gubarenko, A., Imangulova, T., Ussubaliyeva, S., & Abdikarimova, M. (2021). Popularization of Objects of the Cultural and Historical Heritage of the Republic of Kazakhstan as a Factor for the Development of Ethnocultural tourism of the country. *GeoJournal of Tourism and Geosites,* 39(4spl), 1450–1460. https://doi.org/10.30892/gtg.394spl16-789

Bachri, S., Sholeha, A.W., Kurniawati, E., Hakiki, A.R., & Hidiyah, T.M. (2023). Dopment strategy for special interest tourism through community – based ecotourism (CBET) in Perawan beach to promote a sustainable economy. *GeoJournal of Tourism and Geosites*, 48(2spl), 696-708. https://doi.org/10.30892/gtg.482spl03-1069

Baipakov, K.M. (1998). Srednevekovye goroda Kazahstana na Velikom Shelkovom puti [Medieval cities of Kazakhstan on the Great Silk Road]. Almaty: Gylym, 235. ISBN: 5-628-02237-3 (In Russian)

Bakytova, L., & Medeuova, K. (2023). «Kosmos» v muzejno-memorial'nom landshafte Zhezkazgana ["Cosmos" in the museum and memorial landscape of Zhezkazgan]. *Anthropological Forum,* 57, 151–186, (In Russian). https://doi.org/10.31250/1815-8870-2023-19-57-151-186

Bennett, D., & Armstrong, M. (2001). Fundamentals of Geographic Information Systems (GIS). *Manual of geospatial science and technology,* 411-430. http://doi.org/10.1201/9780203305928.ch25

Berdenov, Z., Mendibaev, E., Salihov, T., Akhmedenov, K., & Ataeva, G. (2017). Geoecological analysis of industrial cities: On the example of Aktobe agglomeration. *Chemistry,* 26(6), 890–902.

Boers, B., & Cottrell, S. (2007). Sustainable tourism infrastructure planning: A GIS-supported approach. *Tourism Geographies,* 9(1), 1-21. doi.org/10.1080/14616680601092824

Borràs, J., Moreno, A., & Valls, A. (2014). Intelligent tourism recommender systems: A survey. *Expert systems with applications,* 41(16), 7370-7389. https://doi.org/10.1016/j.eswa.2014.06.007

Bozdağ, A. (2022). A spatial analysis for sustainable planning of tourism impacts using GIS: Çesme (Cyssus), İzmir, Turkey. *Environment, Development and Sustainability,* 107-113. https://doi.org/10.1007/s10668-022-02464-7.

Burrough, P.A. (2001). GIS and geostatistics: Essential partners for spatial analysis. *Environmental and ecological statistics,* 8(4), 361-377. http://doi.org/10.1023/A:1012734519752.

Calderón-Puerta, D.M., & Arcila-Garrido, M. (2020). Proposal for the Design of Cultural Tourist Routes through the Use of GIS: An Applied Case. *Revista de Estudios Andaluces, 39*, 134-148. http://doi.org/10.12795/rea.2020.i39.07

Chhetri, P., & Arrowsmith, C. (2008). GIS-based modelling of recreational potential of nature-based tourist destinations. *Tourism Geographies*, 10(2), 233-257. https://doi.org/10.1080/14616680802000089

Chlachula, J. (2019). Geo-tourism perspectives in East Kazakhstan. *Geography, Environment, Sustainability, 12*(2), 29-43. https://doi.org/10.24057/2071-9388-2018-7

Da Silva, A.C., & Da Rocha, H.V. (2012). M-traveling: Mobile applications in tourism. *International Journal for Infonomics, 5*(3/4), 618-630. https://doi.org/10.20533/iji.1742.4712.2012.0071

Ghorbanzadeh, O., Pourmoradian, S., Blaschke, T., & Feizizadeh, B. (2019). Mapping potential nature-based tourism areas by applying GIS-decision making systems in East Azerbaijan Province, Iran. *Journal of Ecotourism, 18*(3), 1-23. https://doi.org/10.1080/14724049.2019.1597876

Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: foundations and developments. *Electronic Markets, 25*(3), 179-188. https://doi.org/10.1007/s12525-015-0196-8

Iovanovis, V., & Negush, A. (2008). Primenenie GIS i ee komponentov v turizme [Application of GIS and its components in tourism]. *Yugoslav Journal of Operations Research, 18*(2), 261-272. https://doi.org/10.2298/YUJOR0802261J (In Russian)

Kadirbayeva, D.A., & Tuleshova, K.A. (2015). Osobennosti razvitija jekoturizma v Ulytau [Peculiarities of development of ecotourism in Ulytau]. *International Scientific Research Journal, 10*(41), 127-133. https://doi.org/10.18454/IRJ.2015.41.040 (In Russian)

Karas, I.R., Ben Ahmed, M., Boudhir, A.A., & Ane, B.K. (2021). The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences. *The sixth international conference on smart city applications: preface,* 1–6. https://doi.org/10.5194/isprs-archives-XLVI-4-W5-2021-1-2021

Keukenov, Y., Dzhanaleeva, K., Kurbaniyazov, A., Shakirova, N., Orazymbetova, K., & Berdenov, Z. (2023). Prospects for developing winter tourism in the Karkaraly mountains, Kazakstan. *GeoJournal of Tourism and Geosites, 47*(2), 493–498. https://doi.org/10.30892/gtg.47216-1048

Kvamme, K. (1999). Recent trends and developments in geographic information systems. *Journal of Archaeological Research, 7*, 153-201. https://doi.org/10.1007/S10814-005-0002-9.

Mason, P. (2015). Tourism impacts, planning and management. *Routledge, 272*. hhttps://doi.org/10.4324/9781315781068

Matos, A., Pinto, B., Barros, F., Martins, S., Martins, J., & Au-Yong-Oliveira, M. (2019). Smart cities and smart tourism: What future do they bring? *In New Knowledge in Information Systems and Technologies*, 3, 358-370. https://doi.org/10.1007/978-3-030-16187-3_35

Mínguez, C. (2020). Teaching tourism: urban routes design using GIS Story Map. Investigaciones *Geográficas, 75*, 25-42. https://doi.org/10.14198/INGEO2020.M

Nieto, Y.V., Romero, O.A., & Gallo, K.J. (2014). GIS model of analysis to promote tourism through the use of a web application. *Tecciencia*, 9(17), 29-36. https://doi.org/10.18180/tecciencia.2014.17.4

Ohmori, N., Muromachi, Y., Harata, N., & Ohta, K. (2000). Travel behavior data collected using GPS and PHS. *In Traffic and Transportation Studies, 2000*, 851-858. https://doi.org/10.1061/40503(277)130

Omarzadeh, D., Pourmoradian, S., Feizizadeh, B., Khallaghi, H., Sharifi, A., & Kamran, K.V. (2022). A GIS-based multiple ecotourism sustainability assessment of West Azerbaijan province, Iran. *Journal of Environmental Planning and Management, 65*(3), 490-513. https://doi.org/10.1080/09640568.2021.1887827

Rahayuningsih, T., Muntasib, E.H., & Prasetyo, L.B. (2016). Nature-based tourism resources assessment using geographic information system (GIS): Case study in Bogor. *Procedia Environmental Sciences*, 33, 365-375. https://doi.org/10.1016/j.proenv.2016.03.087

Ruda, A. (2016). Exploring tourism possibilities using GIS-based spatial association methods. *Geographia Technica, 11*(2), 87-101. https://doi.org/10.21163/GT_2016.112.09

Seidaliyeva, A.B., Niyazova, G.B., Kopishev, E.E., Vitulyova, E.S., Kabdushev, S.B., Baipakbayeva, S.T., Bakirov, A.S., & Suleimenov, I.E. (2021). Small Green Energy: Implementation through Gamification of the Educational Process. *Proceedings of the 7th World Congress on New Technologies,* 1–7. https://doi.org/10.11159/icert21.117.

Shen, L., & Stopher, P.R. (2014). Review of GPS travel survey and GPS data-processing methods. *Transport reviews*, 34, 316–334. https://doi.org/10.1080/01441647.2014.903530

Singh, P. (2015). Role of geographical information systems in tourism decision making process: a review. *Information Technology & Tourism, 15*, 131-179. https://doi.org/10.1007/s40558-015-0025-0

Shuptar, V.V. (2016). Turistskij putevoditel' - Ulytau [Tourist guide - Ulytau]. Karaganda: Historical and Geographical Society "Avalon", 100. ISNB 978-601-7373-65-8 (In Russian)

Suleimenov, I., Kadyrzhan, K., Kabdushev, S., Bakirov, A., & Kopishev, E. (2022). New Equipment for Aromatherapy and Related Mobile App: A Tool to Support Small Peasant Farms in Kazakhstan in Crisis. *Smart Innovation, Systems and Technologies. Springer Nature Singapore Pte Ltd,* 347–355. https://doi.org/10.1007/978-981-16-3844-2_32.

Sumarmi, S., & Tjahjono, H.K. (2021). Organizational citizenship behavior as antecedents and outcome in era technology. *Journal of Physics: Conference Series*, 1823(1). https://doi.org/10.1088/1742-6596/1823/1/012005

Taukebayev, O., Seitkazy, M., Salmurzauly, R., Sakhariyev, B., Aktymbayeva, A., Tussupkanova, A., & Batay, G. (2021). Creating a schematic map of tourist routes and infrastructure of Ayusai Gorge (Ile-Alatau National Park). *Bulletin of KazNU. Geography of the series,* 3(62), 78-91. https://doi.org/10.26577/JGEM.2021.v62.i3.07

Tikunov, V.S., & Eremchenko, E.N. (2015). Cifrovaja zemlja i kartografija [Digital earth and cartography]. *Geodesy and cartography,* 11, 6-15. https://doi.org/10.22389/0016-7126-2015-905-11-6-15 (In Russian)

Vuković, M. (2022). The application of GIS in sustainable tourism management. *Economics of Sustainable Development, 6*(2), 53-62. https://doi.org/10.5937/ESD2202053V

Wu, L., Yang, B., & Jing, P. (2016). Travel mode detection based on GPS raw data collected by smartphones: a systematic review of the existing methodologies. *Information, 7*(4), 67. https://doi.org/10.3390/info7040067

Zharkenova, B., Mukanov, A., Mussina, K., Mutaliyeva, L., Sagatbayev, Y., & Pashkov, S. (2023). Branding of tourist cluster systems: case of Almaty Mountain cluster in the Republic of Kazakhstan. *GeoJournal of Tourism and Geosites, 49*(3), 1152–1164. https://doi.org/10.30892/gtg.49330-1114

Zhuspekova, A.K., & Maymurunova, A.A. (2015). Use of gis-technologies in Kazakhstan and abroad. Scientific result. *Business and Service Technologies,* 4(6), 105-109. https://doi.org/10.18413/2408-9346-2015-1-4-24-28

MAPPALILI CEREMONY IN SUPPORTING UNESCO VERSION OF CULTURAL TOURISM IN MAROS- PANGKEP GEOPARK

Badrizal AL HAZAR[*]

Department of Geography, Universitas Negeri Malang, Malang, Indonesia, e-mail: badrizalalhazar@gmail.com

Sumarmi SUMARMI

Department of Geography, Universitas Negeri Malang, Malang, Indonesia, e-mail: sumarmi.fis@um.ac.id

I Komang ASTINA

Department of Geography, Universitas Negeri Malang, Malang, Indonesia, e-mail: komang.astina.fis@um.ac.id

Rajendra Prasad SHRESTHA

School of Environment, Asian Institute of Technology, Pathum Thani, Thailand, e-mail: rajendra@ait.ac.th

Abstract: Traditional ceremonies are one of the cultural representations that are passed down from generation to generation. The public's interest in traditional ceremonies has declined over time, especially for the younger generation. As part of the Maros-Pangkep Geopark, it needs special attention by UNESCO's vision and mission. This study aims to: (1). Know the difference of Mappalili Ceremony as cultural tourism in the perspective of Arajang and Balla Kalompoang, (2). know the sustainability of the Mappalili Ceremony in supporting the Maros-Pangkep Geopark according to UNESCO's vision and mission. This research uses qualitative research with an ethnographic approach. Data was collected through in-depth interviews, documentation, and Tudang Sipulung. Data analysis using the Miles and Huberman model, namely: 1). Data collection is done through in-depth interviews and documentation, 2). Data reduction to generalize data from in-depth interviews, 3). Presentation of data to classify the results of interviews and process them, and 4). The Verification is done by pouring and making the final results according to the objectives. The results of the research obtained by the Mappalili Ceremony are a command ceremony to descend the rice fields. The Mappalili Ceremony has the potential to become cultural tourism because in the process there are several unique series of each tribe in managing agricultural land, especially rice fields. The Mappalili Ceremony is cultural tourism that can support the Maros-Pangkep Geopark according to UNESCO's vision and mission. Therefore, efforts to preserve cultural sustainability in the future need to be considered properly to support the development of cultural tourism in South Sulawesi.

Key words: Mappalili Ceremony, UNESCO, cultural tourism, sustainability, geopark

* * * * * *

INTRODUCTION

South Sulawesi is one of the provinces in Indonesia that is rich in ethnicity, culture, and customs. The majority of the people of South Sulawesi are inhabited by the Bugis and Makassar tribes (Bandung, 2020). These tribes have special characteristics in social unity, regional background, cultural traditions, religion, and beliefs (Syarifuddin et al., 2022). The cultural diversity that exists in each region produces a lot of potential local wisdom and traditions (Fuad et al., 2020) in the form of language and literature systems, technology, livelihoods, social organization, knowledge, religion, and art (Syamsuddin and Purnama, 2021). South Sulawesi Province also has amazing exocars and endocars phenomena and is considered the most complete in Indonesia, that is the Maros-Pangkep karst area towering like a (tower kars) (Nuhung, 2016). Geoparks contain a variety of geological entities that have great scientific value, rarity, and beauty, reflecting geological history, events, and activities. Given the recent years, there is a strong interest in visiting areas with extraordinary natural beauty (Papadopoulou et al., 2022). UNESCO's seriousness until now is still consistent in supporting and maintaining all forms of beauty on the earth's surface (UNESCO, 2023). UNESCO especially the cultural perspective is strongly emphasized in the vision and mission of UNESCO Body & Mind Wellness. Efforts to preserve and maintain all forms of geological heritage to obtain sustainable benefits through the development of an Earth Park or Geopark.

Culture as one of the Geopark indicators in supporting and elevating an area intotourism is expected to be able to be passed on to the younger generation (Hazar, 2023) and supported the independent economy of the local community, as is the case in the Gunung Sewu Geopark Area produced by various sectors of Gross Regional Domestic Product (GRDP) from year to year GRDP in Gunung Kidul Regency, Wonogiri Regency and Pacitan Regency has increased significantly between 15-20% (Bappenas, 2023). Through tourism, many benefits are obtained both by the government and the local community (Kodir et al., 2020). Furthermore (Hironimus et al., 2019) said that the development of the number of

---

* Corresponding author

tourists has a positive influence on the growth of regional Original Revenue. One of the sources of foreign exchange including many that contribute to the Staterevenue budget in the tourism sector is the tourism potential in South Sulawesi Province. For details on the view of the Maros-Pangkep Geopark, it is shown in the following Figure 1.

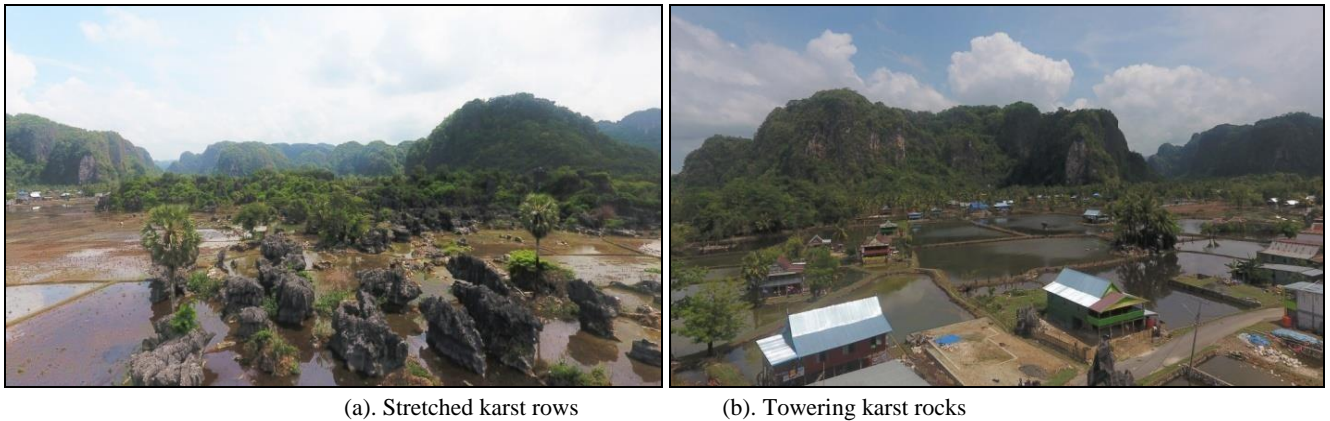(a). Stretched karst rows   (b). Towering karst rocks

Figure 1. Maros-Pangkep Karst Tower (Source: Research, Rammang-Rammang, 2023)

One of the factors causing the decline in tourist interest is that tourism in South Sulawesi Province is underutilized because the government only focuses on several well- known tourism objects without looking at other tourism objects (Putri, 2020), especially the aspect of cultural tourism. Whereas culture is very important because around 80% of the earth's population has local wisdom (Sufia et al., 2016). In addition, culture or local wisdom teaches about a way for people to survive by environmental conditions (Sumarmi and Amirudin, 2014). The following data on the number of tourists in the province of South Sulawesi is shown in Table 1 and The front view of the Maros-Pangkep Geopark office is shown in Figure 2.

Figure 2. Front Look of Maros-Pangkep Geopark Office
(Source: Research, Bungoro, 2023)

Table 1. Number of tourists in
South Sulawesi Province 2018-2022
Source: (Data processed by the Ministry of
Education, Culture and South Sulawesi Province, 2023)

Years (2018-2022)	Tourist 2022		
	Foreign Tourists	Archipelago Travelers	Total
2018	0	0	0
2019	0	0	0
2020	10	11.539	11.549
2021	0	14.385	14.385
2022	6	42.407	42.413
Average	3,2	13.666,2	13,669.4

Table 2. Area of Raw Rice Fields 2022 Pangkajene and Islands on Sustainable FoodAgricultural Land
(Source: Interview results of the Pangkep Regency Agriculture Office, 2023)

Number	District	Raw Rice Fields (ha)		Status
		2019	2022	
1	Balocci	1271.56	1309.19	Increased
2	Bungoro	2080.57	2052.75	Reduced
3	Labbakkang	3253.32	3439.49	Increased
4	Mandalle	1476.94	1443.99	Reduced
5	Ma'rang	1620.90	1528.64	Reduced
6	Minasate'ne	2135.06	2129.92	Reduced
7	Pangkaje'ne	948.45	921.54	Reduced
8	Segeri	2214.47	2264.75	Increased
9	Tondong Tallasa	1818.10	1777.04	Reduced
Total		16819.37	16867.31	Increased

Pangkep Regency is one of the two districts in the Geopark, hereditary rituals held by the people of Pangkep Regency with Bugis and Makassar tribal areas essentially have similar views and lives (Syarif et al., 2016b) and are difficult to separate (Abdullah, 1985). The ritual has a very unique and different procession but the good values have the same meaning as a form of thanksgiving to be protected from various things that threaten both pests and diseases, disasters on rice fields, or regulate the procession on rice fields called the *Mappalili* Ceremony (Adhani, 2020); (Liswati, 2016). Pangkaje'ne and Islands Regency or abbreviated as Pangkep is also one of the districts of South Sulawesi

Province as the title of national food barn in Eastern Indonesia has an important role in receiving regional income because the main occupation of the Pangkep community in the agricultural sector. Distribution of raw rice field in the Pangkajene and island as sustainable food agricultural land is presented as follow in Table 2.

Based on data recorded at the Agriculture Office of Pangkep Regency, land conversion from rice fields to non-fields continues to increase. Changes based on researcher observations converted into housing, this is supported by (Fajriany, 2017) the conversion of agricultural land into non-agricultural areas with the erection of concrete buildings, and landfilling into housing. From that, whether the *Mappalili* Ceremony at this time still exists or not in accordance and whether in the future Pangkep Regency will still be one of the rice suppliers in the eastern part of Indonesia or the contrary become a recipient of rice aid. The value in the *Mappalili* Ceremony is education based on interviews with *Bissu* Eka in the form of environmentally friendly knowledge in managing agricultural land and increasing agricultural yields can be used as learning. Furthermore (Adhani, 2020); said that the *Mappalili* Ceremony in Labakkang and Segeri sub-districts experienced degradation from the implementation period process used to be seven days and seven nights to two days and two nights for Labakkang sub-district and three days and three nights for Segeri sub-district. *Mappalili* or down in the fields has become an agenda of routine activities or traditions of thecommunity every year carried out during the planting season or entering the rainy season, always providing hope for the community, especially farmers (Cathrin, 2017).

The implementation of the *Mappalili* culture has existed since before Islam came to Indonesia which has been carried out by their ancestors or ancestors (Syaidah, 2022). Introducing, improving and developing the *Mappalili* Ceremony to support the geopark based on the results of interviews, there are several problems including the lack of information related to *Mappalili* and only focusing on the process in terms of culture without looking at the scientific side, lack of attention from the government due to ignorance from policy makers in this case the Tourism and Culture Office of Pangkep City (Nugraha et al., 2020), lack of human resources who want to continue regeneration as in *Mappalili* in segeri bissu who perform the ceremony and are dominated by the older generation or old age (Astina et al., 2021). Furthermore Syarif, 2016a; Junaidin et al., 2019; Mena et al., 2020 public interest and attention to traditional ceremonies is decreasing (Kurniawan et al., 2019). Furthermore (Invanni and Zhiddiq, 2023) Maros Pangkep Geopark also has obstacles in the form of a lack of professional guides, lack of coordination with tourism industry players at the regional, national and global levels, geotourism concepts that have not been widely socialized, lack of promotion, and insufficient information in the form of print (leaflets, booklets, maps). Data on tourist visits in Pangkep Regency are shown in Table 3.

These problems have had a significant impact on tourists visiting in the past five years. The implementation of the *Mappalili* Ceremony is expected to provide abundant harvests for the people of Pangkep Regency, especially Segeri District and Labakkang District. The two sub-districts are very firm in their beliefs and believe that if the *Mappalili* Ceremony is not held, there will be a disaster on the cultivated rice fields. Based on the results of interviews with community leaders there is a lot of evidence that occurs when the *Mappalili* Ceremony is not carried out, including crop failure, and the landowner diesinstantly in the place where the land will be cultivated. A number of crop in four years yields in Pangkep Regency is shown in Table 4.

Table 3. Number of Tourist Visits to Pangkep Regency 2018-2022 (Source: Processed data from the Directorate of Youth Tourism and Sports, 2023)

Year 2018-2022	Number of Tourists
2018	58.735
2019	35.045
2020	11.550
2021	14.385
2022	1.288

Tabel 4. Harvest Area, Productivity and Production Year 2019-2022
(Source: Interview results of the Pangkep Regency Agriculture Office, 2023)

Year	Harvest Area(ha)	Rice		Information
		Provis (kw/ha)	Production (Ton)	
2019	28.106	58,97	165.741	Rice Fields = Plant (SP) :23.724 ha = Harvest (SP) :28.106 ha
2020	27.897	64,00	187.602	Rice Fields = Plant (SP) :30.919 ha = Harvest (SP) :27.879 ha
2021	29.174	67,87	198.010	Rice Fields = Plant (SP) :32.404 ha = Harvest (SP) :29.174 ha
2022	27.847	68,01	189.387	Rice Fields = Plant (SP) :29.153 ha = Harvest (SP) :27.847 ha

The beliefs held in the *Mappalili* Ceremony have an impact on the results of increased production has increased every year in the last four years as shown in the table has an average of 185,185 tons per year. Agricultural management in the frame of local wisdom owned by the Bugis-Makassar Tribe, especially Pangkep Regency, provides great benefits to agriculture in this region. However, agricultural knowledge has its own charm for the people of Pangkep and tourists. The increase in agricultural production every year in the *Mappalili* Ceremony symbolizes the increase in the economy of the people of Pangkep Regency so that their daily needs can be more prosperous. This is also supported by Central Agency of Statistics data of Sulsel, 2023. The following data on the increase in the economy of Pangkep Regency is shown in Table 5.

Tabel 5. Economy of the People of Pangkep Regency Year 2020-2022 (Source: BPS, 2023)

Description	Unit	2020	2021	2022
Gross Regional Domestic Bruto(GRDP) at Current Price	Billion Rupiahs	25.662,55	27.574,74	30.481,86
Economic Growth Rate	%	-1.69	3.46	4.93

Based on this table from 2020 to 2022 the Gross Regional Domestic Product (GRDP) and theEconomic Growth Rate have increased significantly. Taking the *Mappalili* Ceremony more seriously it can improve the economy of the Pangkep community. Not only that, the existence of the *Mappalili* Ceremony can improve emotional and familial relationships

between people, especially farmers. The preservation and sustainability of the value of the *Mappalili* Ceremony in the futurecan be realized by instilling it early through the younger generation. Furthermore (Sumarmi, 2016) revealed that local cultural wisdom that works to build not only for the older generation, but for the younger generation of the nation's successors deserves and must be applied as one of the formal and project education. A sense of awareness and responsibility must be owned by the younger generation because technological advances do not guarantee a country/region to be more responsible for culture and the environment (Sufia et al., 2016). The sustainability of the *Mappalili* Ceremony in the Maros-Pangkep Geopark is the concept of restoring and protecting all identities in it (Farsani et al., 2012). So that the principle of sustainability that is instilled can pay attention to the preservation and continuity of the *Mappalili* culture that continues to grow, improving the economy of the local community and a wiser environmental condition (Cottrell et al., 2007). Based on these problems and uniqueness, the objectives of this study: to find out the differences in the *Mappalili* Ceremony as cultural tourism from the perspective of *Arajang* and *Balla Kalompoang*, to find out the sustainability of *the Mappalili* Ceremony in supporting the Maros-Pangkep Geopark.

METHODS

Researchers use qualitative research methods with an ethnographic approach. Qualitative research is to understand the phenomena experienced by research subjects, for example, behavior, perceptions, motivations, actions and others holistically by describing words and language in a special context in natural conditions (Mayasari, 2021). Meanwhile, the ethnographic approach is carried out to illustrate, analyze, and interpret group culture over time to understand the attitudes, beliefs, concepts, behaviors, and languages that belong to the group by going directly to the environment and feeling the activities carried out (Bakry, 2017). The following stages of Spradley's ethnographic approach in obtaining data are shown in Figure 3. The research location is in

Figure 3. Stages of Ethography (Source: Spradley, 2007)

Bontomatene Village, *Segeri* District, *Arajang* house. And the second location is *Balla Kalompoang* traditional house, Labakkang District, Pangkaje'ne and Islands Regency. Based on this location, researcher will obtain data related to main information, processes, objectives, local wisdom education that implied through the stakeholders involved in it. The existence of the two kind of Mappalili ceremonies separated by a sub-district namely Ma'rang, and every each of them having their own characteristic of implementation. For details on the research location, it is shown in the following Figure 4.
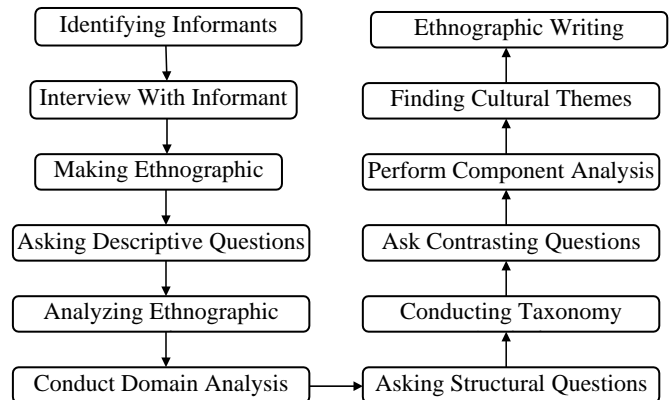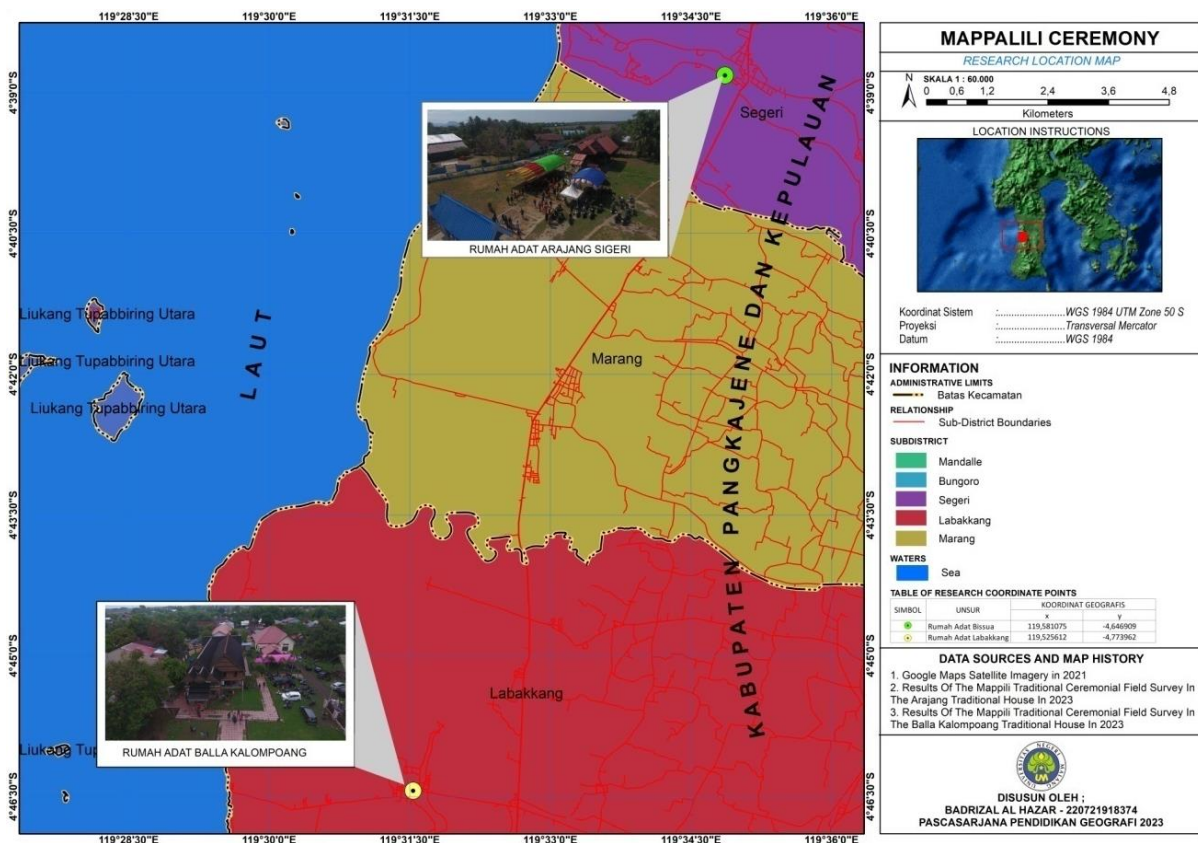

Figure 4. Map of Research Location (Source of Research, 2023)

Data analysis is used in pouring the final results using the Miles and Huberman stages, with 4 steps, namely: Data collection is carried out to complete the results of in-depth interviews and documentation, data reduction to generalize the data from in-depth interviews, data presentation to classify the results of interviews, processing, verification is done to pourand make the final results according to the objectives. Miles and Huberman analysis is used in this study which follow some stages as presented in Figure 5 as follow.

```
┌─────────────────────┐        ┌─────────────────────┐
│   Data Collection   │ ═════▶ │   Data Reduction    │
└─────────────────────┘        └─────────────────────┘
                                          ║
                                          ▼
┌─────────────────────┐        ┌─────────────────────┐
│ Conclusion Drawing/ │ ◀═════ │  Data Display       │
│     Verifying       │        │  (Presentation)     │
└─────────────────────┘        └─────────────────────┘
```
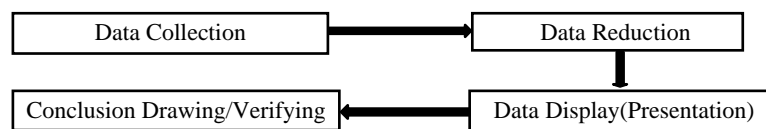
Figure 5. Stages of Data Analysis by Miles and Huberman (1984)

The data collection techniques used are: 1). Observation is done to see the problems thatoccur in the field and the existing conditions; 2). In-depth interviews were conducted with the Head of Bontomatene Village, The Head of Segeri Sub-District, Education and Culture Office, Segeri Sub-District customary leaders, Puang Matoa Bissu Nani, (Bissu Eka) who is a *Bissu* assistant, *Bontomatene* Village Elders, *Karaeng* Pinati, Labakkang Village Head, Labakkang Sub-District Head, *KaKaraengan* Labakkang, Pangkep Regent, Tourism and Sports Office, Maros-Pangkep Geopark Information Center and *Balla Lompoa Kalompoang* customary members; 3). Documentation was conducted to view existing archives or information to add references to the research; 4). *Tudang Sipulung* is conducted to voice their interests in finding solutions to the problems faced by the community can speak and express their hopes as well as provide criticism to the authorities or institutions.

RESULTS AND DISCUSSION
Process of *Mappalili* Ceremony in Pangkep Regency

Traditional ceremonies are closely related to religious rituals or rites (Atmadja, 2020; Sumarmi et al., 2019). Ritual is a certain behavior that is formal and carried out at a certain time in a different way (Gazali and Widodo, 2023). Traditional ceremonies are determined by four factors: place, time, objects and equipment used, and the people involved in the implemen-tation. The potential of the *Mappalili* Ceremony is unique so that it can become cultural tourism. The following are the series and differences of the *Mappalili* Ceremony.

Arajang Segeri

An overview of the attendance of the community and tourists at the peak of the *Mappalili* Ceremony at Arajang can be seen in Figure 6. The process and stages of the Mappalili *Ceremony* at the Arajang Traditional House as a community belief in Segeri District, Pangkep Regency before going down to the rice fields are as follows.

Figure 6. The Atmosphere of *Mappalili* in Arajang (Source of Research, Segeri, 2023)

1. Language as a means of communication between fellow *bissu* in terms of ceremonies for several rituals is the language of the gods or known as torilangi language. This language is only understood and can be understood by fellow *bissu* themselves. While communication between *bissu* and the surrounding community is bugis language, especially Segeri bugis.

2. The people who play a role in the ceremony the local government to support financially partly and provide space and place at the ceremony.

3. Food and customs that must be present are: *a. Sokko* (squeezing glutinous rice that is colored red, yellow, white, and black, which is placed in small plates. The meaning of red is fire, yellow is wind, white is water, and black is earth. *b. Palopo* (Coconut and Sugar). Coconut which has the meaning of a plant whose entire part has benefits for human life. And Sugar means that everything that is done or intended will produce sweetness as well. *c. Leppa-Leppa/Leppe- Leppe* (rice and coconut milk). Rice and coconut milk that have been cooked and become one are tied in coconut leaves with tiers into 3 parts in the hope that everything can be realized abundant harvests as in the name which means loose. *d. Beppa Oto'* (rice flour and brown sugar) which means to wake up or rise up as a hope that the beginning of the rice field will taste sweet like sugar with abundant results.

4. The procedures carried out before the *Mappalili* Ceremony are: a. Prepare tools and materials such as young coconut, jackfruit, alosi, betel leaves, coconut leaves, banana leaves, candles, lalosu, bowls, bakik, plates, drums, suling, bau oil, rice mixed with turmeric, benno, majang or areca buds, and 4 bunches of rice. b. The bissu begin the Mappesabbi ritual led by the *puang matoa* using incense where one tray is filled with benno, fragrant oil, and roasted yellow rice. c. After the mappesabbi ritual is complete, puang matoa gathers the bissu then enters the *arajang* room to

carry out the *Mappangolo* ritual. d. On the same day, in the late afternoon, *mattedu arajang* begins with the bissu lifting *arajang* out of the room to the living room accompanied by the strains of drums and flutes. In the living room, *arajang* is placed on a pillow and then wrapped in palm leaves and banana leaves are released by the *bissu* and then water them using the water in the urn while waiting for holy water and creatures believed by the bissu to be the figures who guard the rice fields in the *Mallekko Bulalle* and *Mallekke Uwae* rituals. After the water is taken from the Segeri River, the *arajang* is cleaned and wrapped again. e. On the second and third days, they enter the *Maggiri ritual* where *lalosu* must be given to everyone who surrounds the *arajang* and *puang matowa* performs prayers in front of the *arajang* while using incense and a machete raised to the *arajang*. After the incense and prayers are finished, the bissu stand up and surround the *arajang* while chanting accompanied by the sound of mankok rotating with plates. f. Then on the 4th day, in the morning, the procession begins by carrying the *arajang* to the location of the burial place of a figure who is considered meaningful and every resident sprinkles water on everyone who passes by.

5. How to work at the stages of the *Mappalili* Ceremony, namely: a. *Mappesabbi* comes from the word *"sabbi"* which means witness, so *mappesabbi* can be interpreted as a form of witnessing behavior. Testifying at this stage of *Mappalili* means that those who carry out this ritual testify to carry out the mandate that has been carried out for generations, namely *Mappalili*. b. *Mappangolo* in bugis language means "facing". In *Mappalili* activities, the mappanggolo ritual aims to face and pray while asking for smooth running during *Mappalili* activities until the harvest season. *c. Te'du Arajang* waking up a sacred heirloom in the form of a rice field plow that is stored in a certain room hanging from the ceiling of the house while accompanied by traditional music. Waking up the *arajang* is carried out by the *puang matoa* as a leader equipped with heirlooms that are considered a package with the *arajang*. The implementation of *te'du arajang* is carried out to ask permission from supernatural beings who envelop the *arajang* so that it can be used in the *Mappalili* Ceremony. d. *Mappalesso Arajang Arajang* is taken down from its place and moved in an open space or in the middle room, after *Arajang* is moved then opened and laid like a corpse. *Arajang* is covered with Banana leaves then the end is given a pile of several bundles of rice that are still in the form of grains then at the top of the pile of rice is fitted with a typical *Bugis* umbrella. e. *Mallekko Bulalle Bulalle* pick-up is a belief in the name of a person with a disembodied human-like body that is located in the market right in front of the market. f. *Mallekke Uwae* is the process after the *Arajang* is moved then followed by bathing the *Arajang* with Holy water taken from the Segeri river right along with the pick-up of the grandmother. The water is placed near the head and feet of the *Arajang* then *Puang matowa* and several community leaders bathe the *Arajang*. When bathing the *Arajang*. many people are competing to take water from the former *Arajang*, they believe that the water can be a medicine for rice plants. g. *Magiri* is a dance of *Bissu* dressed up as transvestites by stabbing sharp objects in parts of their body such as the eyes, palms, neck, and stomach. *Ma'giri* dance is a unique dance by using an heirloom dagger with the intention of protecting its master to the end if it is disturbed and threatened.

6. Segeri traditional house shape or name is arajang which is taken from the name of the heirloom object.

7. Implementer: Bissu

Balla Kalompoang Labakkang

The main session of the *Mappalili* Ceremony celebrated at Balla Kalompoang is presented in Figure 7 and the process and stages of the *Mappalili* Ceremony at the Balla Kalompoang traditional house as a belief of the people of Labakkang District, Pangkep Regency before going down to the rice fields are carried out as follows.

1. Language as a means of communication used to perform the *Mappalili* Ceremony by *Karaeng Pinati* is Makassar and its meaning can be understood by the local community. While communication between fellow communities is Makassar and Bugis. But the dominant language used is Makassar.

Figure 7. The main session of *Mappalili* Ceremony in Balla Kalompoang
(Source: Research, Labakkang, 2023)

2. The people who play a role in the ceremony are *Karaeng Pinati*, traditional members of *Balla Kalompoang* with each inherited pataka, the local government partially financially supports and provides space and place for the ceremony.

3. Food and habits that must be present are: a. *Lapis Cake* is a cake that has different levels of layers which means sustenance that is piled up and abundant, b. *Barongko* is a cake made of bananas and wrapped in bananas with the intention that what is seen on the outside should be the same as what is seen on the inside, c. *Cucuru Bajao* is a cake made from eggs and rice flour and sugar with the hope that everything that is carried out will get a sweet taste with the harvest is abundant, d. *Roko-Roko Cangkuni, Putu, Jalangkote, Bolu, Shrimp, Crab, Fish, and Konro* is a food and cake dish that complements and comes from donations from the community who owns the business with the hope that it can bring blessings and abundance to all the result done.

4. Procedures that are done are: a. Everyone who wants to enter the *Balla Kalompoang* must wear traditional clothing in the form of a cap and songkok racca for men and bodo clothes for women. b. Prepare tools and materials such as: Drum, chicken, buffalo, rice field plow, shield, dupa, rice 4 bunches, spear, and heirlooms. c. The summoning of each descendant who owns the pataka is *Karaeng Sialloa*, Carrier *Lengu*, *Karaeng Labakkang*, and *Pinati*. d. After all have been in the room, all heirlooms are removed and then cleaned by smoking each end of the sharp weapon from top to bottom which can be witnessed by a group of people. e. After that, on the same day, *Karaeng Sialloa* was picked up, accompanied by drum and gong. All the bodyguards of each *pataka* moved towards *Karaeng Sialloa* house and brought him to the *Balla Kalompoang*. f. By magribh, the whole ceremony is over and all the guests and the community have dinner while preparing for the *tudang sipulung* event. g. After isya, invited guests and the community filled the *Balla Kalompoang* to discuss all agricultural issues so that the harvest obtained can be abundant. h. On the second day, precisely at dawn, everyone gathered in front of *Balla Kalompoang* to bring plows, buffalo, chicken, four bunches of rice to the ulayak land/customs guided directly by Pinati and his entourage. i. After arriving, *Pinati* lowered the rice field plow to the ground and the buffalo carried the plow with that as a sign that the beginning of the rice field began while throwing peo/rice field soil. j. Rice 4 bunches of rice are contested 2 bundles at the ulayak land and 2 were brought to the *Balla Kalompoang*. Return of heirlooms and *Karaeng Siallo*.

5. How to work at the stages of the *Mappalili* Ceremony, namely: *a. Mattompang* (heritage cleaning) heirlooms that existed in ancient times that were part of the greatness of the Labakkang and *Balla Kalompoang* communities were removed from the chest by *Karaeng Pinati* in the form of Simambung or Bima machete as many as 2 pieces, Kris, Badik, and 2 twin swords. The heirlooms are cleaned, stored, and displayed to the guests. *b. King's Pickup for a Day*, the king or *Karaeng* who existed before the handover to *Karaeng Sialloa* was the Labakkang sub-district head. King of the Day is a symbol of one of the preservation of the royal system that is no longer used in Pangkep Regency. The coronation and arrival of the king for Day is part of the introduction of the descendants of thekings of old, so the event is called the king of the day in other words *Karaeng Sialloa*. Just like the king in general, everything that is requested or desired, the community and Pinati andtheir staff must follow and carry out all the words issued since their appointment. Another duty of *Karaeng Sialloa* is to witness the heirlooms stored in *Balla Kalompoang*. *c. Tudang Sipulung* is the most important part of the *Mappalili* Ceremony with the sound of drums indicating that soon the start of rice fields in Labakkang District will begin and bring crops to the *Balla Kalompoang*. In this section the community gathers as well as local government officials and guests from other royal houses in South Sulawesi Province. *TudangSipulung* talks about the sustainability of the rice crop that will be cultivated, such as the determination of seeds to be planted, water needs in rice fields, and submission of community problems around agriculture to the local government. *d. Arak-Arak* is the initial process of *Mappalili* starting at dawn by bringing a rice field plow, 4 bunches of rice seeds, chicken, buffalo, and heirlooms to the land of ulayak/customs accompanied by entourages ranging from *Karaeng Sialloa*, *Pinati*, *Karaeng Labakkang*, the king's bodyguard, and according to their respective *Pataka*. *e. Return of Heritage Objects*, the heirlooms that were removed from the chest were then brought to the land of ulayak/the customary land was returned to its original place in *Balla Kalompoang*, and with the return of the heirlooms, the *Karaeng* Sialloa was returned to *Karaeng Labakkang* or the Labakkang Sub-district Head in office.

6. Labbakkang traditional house shape or name is *Balla Kalompoang* which means the house of greatness.

7. Implementer: *Karaeng Pinati*

The difference in the *Mappalili* Ceremony between *Arajang* Segeri and *Balla Kalompoang* is clearly visible based on the indicators in the procession above. Each process has different meanings and significance but with one goal for the success of rice farming in Pangkep District. All the differences that occur are inseparable from the history of the past soit makes Pangkep Regency has its own uniqueness and becomes one of the destinations for tourist trips.

Sustainability of *Mappalili* Ceremony in Supporting Cultural Tourism in Maros- Pangkep Geopark

Segeri Sub-district and Labbakang Sub-district are two sub-districts that held the *Mappalili* Ceremony from the past until now. Held since the time of the royal era, especially for agriculture at the time there were frequent crop failures. Segeri Sub-district area and Labakkang Sub-district is part of the Pangkep Regency which is located astronomically 4°40' LS - 8°00' LS and 110° BT - 119°48'67" BT with Geography having boundaries: North – Barru Regency; South – Maros Regency; East – Maros Regency and Bone Regency; West – Makassar Strait. Has an area of 1.112,29 km^2, 115 islands, 13 sub-districts which are divided into 9 mainland areas 9, islands as many as 4, and 103 Village/ Ward (BPS, 2021). So the many and vast areas of Pangkep Regency and diverse historical stories provide positive benefits related to the survival of its people.

Various efforts have been made by the Pangkep Regency government and the Maros- Pangkep Geopark manager so that the *Mappalili* Ceremony can become part of the Geopark. The struggle to date has recorded that the *Mappalili* Ceremony in the Segeri area has been included in intangible cultural heritage and Bissu traditional actors are part of the Maros- Pangkep Geopark indicators in May 2023. In the future, the *Mappalili* Ceremony in Labakkang is a priority so that it becomes part of the Maros-Pangkep Geopark. In fact, the Minister of Tourism and Creative Economy has reviewed all aspects of the *Mappalili* Ceremony at *Balla Kalompoang* to be given special attention. The *Mappalili* Ceremony has a very sacred meaning and value for the people of Pangkep Regency, especially Labakkang District and Segeri District. *Mappalili* or *Appalili* comes from the word *palili* meaning "circumference" (Pemkab, 2023) which is a form of beginning to go down the rice fields simultaneously with the intention and purpose of protecting rice plants from something that will disturb or destroy starting from pests, diseases that damage rice plants, lack of water or excess water during the rice planting process.

This event is routinely held in November, which according to local beliefs and the Book of *La Galigo* is the beginning of the rainy season. More (BMKG, 2023) revealed that the Indonesian Province which includes South Sumatera, Lampung, most of Banten, Jakarta, West Java, most of Central Java, some of East Java, Bali, a small part of West Nusa Tenggara, a small part of East Nusa Tenggara, North Sulawesi, Gorontalo, some of Central Sulawesi, most

of South Sulawesi, Northern North Maluku, and southern South Papua entered the rainy season in November with a value of 255 ZOM (36,5 %). The implementation of the *Mappalili* Ceremony is visited by many people both from within the country and abroad, which has increased every year. *Mappalili* as a cultural tourism destination for everyone who witnesses it provides an unforgettable experience to be missed when visiting South Sulawesi Province. The unique procession that is shown and enjoyed by tourists and the community throughout the *Mappalili Ceremony* is shown in Tabel 6 and an overview of the uniqueness of the *Mappalili Ceremony* can be revealed in Figure 8.

Table 6. Uniqueness of the *Mappalili* Ceremony

Number	Uniqueness
1	*Karaeng Sialloa*/ King of the day system
2	Heirlooms and *Mappalili* tools as royal relics full of history
3	Problem solving/a typical *Bugis Makassar* problem or *Tudang Sipulung*
4	*Bugis Makassar* specialty food
5	Different traditional figures and procesions
6	Attractions of *Bissu*
7	Seeing the Kings of the Archipelago in South Sulawesi Province
8	Tips and triks for agricultural success in Pangkep Regency
9	Land Wars and Water Wars

(a) Watering Each Other

(b) Balla Kalompoang Guards

(c) Throwing Peo/ Clay

Figure 8. Some Attractions of the *Mappalili* Ceremony (Source of Research, Pangkep November 19-27, 2023)

The existence of the *Mappalili* Ceremony in Geoparks and Geotourism influences people's perceptions, providing selling power (Kumar et al., 2023), and is an opportunity for the continued development of the *Mappalili* Ceremony in the future (Jia et al., 2023). Positive measures such as reduced unemployment and immigration rates (Farsani et al., 2012). The number of tourism visits in Pangkep Regency when the *Mappalili* Ceremony is held has an impact on the economy of the local community in the *Mappalili* Ceremony. As in Labakkag Sub-District and Segeri Sub-District, the series of *Mappalili* Ceremony this year are right on the big market day and the beginning of the descent of rice on ulayak/customary land close to the big market. The average income from selling in large markets is about 2 times the previous sales of Rp300.000. Songko Racca and Lipa Sabbe are rental for visitors who want to see the *Mappalili* Ceremony but the clothes used are not according to the rules. The perceived benefits can be well realized if all aspects and indicators contained in UNESCO's vision and mission are carried out as well as possible.

Products made and processed by UMKM accessories are given space or a place to sell around *Balla Kalompoang* dan *Arajang*. However, the community does not take advantage of these activities, as only local snacks and drinks are widely available. Physical products or in the form of goods available are only badik typical weapons of South Sulawesi and its existence was initiated by a local organization. Entrepreneurship education for the community as one of the steps to be taken aims to design entrepreneurship training programs for the community in order to create new businesses in the local area and to provide services to tourists (Paakkanen and Suonpää, 2023).

Separate ethics and rules in the *Mappalili* Ceremony in maintaining and utilizing environmental sustainability (Herawati, 2004) prioritize the success of surrounding agriculture, which has increased every year (Marfai, 2012). The list of interview results on informants regarding the environment is shown in Table 7 and the documentation results regarding the natural tools and materials used in the Mappalili Ceremony process are illustrated in Figure 9.

Table 7. Interview Results with Informants about the Environment

Initials	Position	Question	Meaning
MZ	Karaeng Pinati/ Traditional Learders	Riolo anne mae punna aggalungi tawwa tena wassele nagappa nasabaiamintu nagappapi Mappalilika nampa bajibatena angassi.	In the past, when the community went down the rice fields to harvest, only a small amount of results were obtained and even none. So that in the past the king looked for causes and solutions so that the community could get abundant results with the Mappalili Ceremony.
MA	Karaeng Sialloa/ King of the Day	Ri lalang Mappalili eroknaappakarammula appajeko ammake sapi areka kerbau.	In Mappalili, in particular, fertilizing paddy fields using cow or buffalo.
AR	Labbakang Sub-District Secretary	In this Mappalili as much as possible avoid factors that threaten its sustainability, especially the values of using in working on rice fields still using traditional tools and materials as in the past.	In Mappalili all the tools and materials used are still using environmentally friendly tools and materials such as buffalo and cow in working on rice fields.
EK	Bissu Helpers	Mappalili Segeri maddakala sapi sibawa tedong	Mappalili Segeri uses cow and buffalo in plowing.

(a) Arajang Segeri   (b) Betel Leaf
Figure 9. Tools and Materials for Mappalili Ceremony (Source of Research, Segeri, 2023)

Karaeng Pinati as a customary leader realizes that agricultural prosperity must be supported by fertile soil, sufficient water, good seeds, and controlled pests. *Mappalili* from the past until now in its implementation has contributed and set an example in increasing rice productivity. The tools and materials used in managing rice fields during *Mappalili* still maintain their local wisdom. For example, cattle are used in loosening the soil, lemongrass leavers are used as a form of pest control for snails. More (Wowor et al., 2022; Kusumaningtyas et al., 2022) that lemongrass leaves can control grasshopper and snail pests in rice fields. However, it cannot be denied that the changing times are still carried out by the community, it seems that the practice of protecting the environment has its own thoughts to deal with pest control instantly without thinking about the impact caused considering the many pesticide products of various kinds.

The cultural substainability of the *Mappalili* Ceremony is very important, compared to economic, environmental, and social aspects (Habib et al., 2023). According to one Anthropology expert, the government's efforts in preserving the *Mappalili* Ceremony are like two different sides of a knife, one call for the implementation of *Mappalili*, the second implementation continues but the practice of condification against them is still carried out. Therefore, the *Mappalili* Ceremony as part of Cultural Tourism in supporting the Maros-Pangkep Geopark needs special attention from the government in decision making and future planning (Sumarmi et al., 2024). The expected development does not only focus on tourism but pays attention to all aspects of the environment and local stakeholders according to the sustainability mission set by UNESCO (Jiang et al., 2023).

The sustainability of the *Mappalili* Ceremony in the future in maintaining local wisdom knowledge so that it is not eroded by modern technology (Admojo et al., 2018) and balance and manage natural resources and the environment (Weningtyas and Widuri, 2022) by paying attention to actors or customary actors. The list of interview results on informants regarding the preservation of the *Mappalili Ceremony* is shown in Table 8.

Table 8. Results of Interviews with Informants about the Preservation of the Mappalili Ceremony

Initials	Position	Question	Meaning
MYL	Regent of Pangkep	The Pangkep District Government strongly supports the preservation of Mappalili and has even budgeted annually to carry out Mappalili through the Education and Culture Office.	The Pangkep District Government strongly supports the preservation of Mappalili and has even budgeted annually to carry out Mappalili through the Education and Culture Office.
IK	Staff of the Ministry of Education and Culture	Each Sub-district that carries out the Mappalili Ceremony is given a budget of Rp10.000.000 Only, for indigenous actors there is actually a desire but there is no budget, every year we also always fight for the DPR but it has not beenapproved.	Each Sub-district that conduct the Mappalili Ceremony is given a budget Rp10.000.000 Customary actors in Pangkep Regency on behalf of the government have not preserved due to the absence and unapparoved budget by the DPR.

The ability of traditional actors in this case *Karaeng Pinati* and *Bissu* is the foundation that is considered the most knowledgeable, and sacred in maintaining and ensuring the sustainability of the *Mappalili* Ceremony (González et al., 2021). So by guaranteeing the lives of cultural actors, the government has taken one of the steps to preserve *Mappalili* (Evans et al., 2006). Attention and treatment of each customary actor must be considered in the sustainability of the *Mappalili* Ceremony where all forms of cultural parts must be guaranteed in the future based on the vision and mission of UNESCO that has been established. Considering that the Maros-Pangkep Geopark is only 7 months old since it was established in May 2023. The characteristics of *Karaeng Pinati* in fulfilling their daily lives can work like humans in general and are not bound by customary rules that require someone to work on one thing. In contrast to *Bissu* who have rules bound in life and look for future generations. According to (Untara and Rahayu, 2020) Bissu has a special nature that is not begotten and not begotten in other words *Bissu* is a man but looks like a woman, or in the *Bugis* language it called is *Calabai/Calalai*. For the people of Segeri Sub-district, *Bissu* is considered sacred and even the *Mappalili* Ceremony is said to be unsuccessful without the presence of a Bissu (Surpi, 2016:47).

CONCLUSION

The values contained in the *Mappalili* Ceremony are a value of local wisdom knowledge in agricultural management. *Mappalili* is a belief held by the people of Labakkang and Segeri Sub-districts that is considered sacred. This trust benefits agricultural yields and rice productivity, which increases every year. The various differences in the processes contained in the *Mappalili* Ceremony make it visited by the general public from both local and foreign communities.

The success and implementation of the *Mappalili* Ceremony lies in the traditional actors who play a role, so the importance of preserving the young generation. This is also in accordance with UNESCO's vision and mission in establishing Geoparks. The *Mappalili* Ceremony is cultural tourism that can support the Maros-Pangkep Geopark. Therefore, efforts to preserve cultural sustainability in the future need to be considered properly to support the development of cultural tourism in South Sulawesi.

REFERENCES

Abdullah, H. (1985). *Manusia Bugis Makassar: Suatu Tinjauan Historis terhadap Pola Tingkah Laku dan Pandangan Hidup Manusia Bugis Makassar*. Jakarta: Inti Idayu Press.

Adhani, A.F. (2020). *Makna Pesan Simbolik Tradisi Mappalili di Kecamatan Labakkang Kabupaten Pangkep* [Other, Universitas Hasanuddin]. http://repository.unhas.ac.id/id/eprint/274/

Atmadja (2020). *Melalui Catur Brata Penyepian Kita Tingkatkan Satyagraha Untuk Mewujudkan Satyam, Siwam dan Sundaram [Through Catur Brata Penyepian We Improve Satyagraha To Realize Satyam, Siwam and Sundaram]* . Nyepi celebration seminar paper 2020. LP3 UM, Unpublished.

Astina, I.K., Sumarmi, Felicia, M.Y., & Kurniawati, E. (2021). The traditional ceremonies of tengger tribe as a sustainable tourism object in Indonesia. *GeoJournal of Tourism and Geosites*, 39(4), 1371–1378. https://doi.org/10.30892/gtg.394spl07-780

Admojo, G.D., Kartini, & Jati, D.R. (2018). "*Analisis Kearifan Lokal Masyarakat Dalam Menjaga Sumber Daya Air (Study Kasus Desa Pisak Kecamatan 17 Kabupaten Bengkayang),.*" *Jurnal Teknologi Lingkungan Lahan Basah*.

Bappenas. (2023). *Bappenas Elaborasi Peran Geopark Sebagai Pemicu Pemulihan Ekonomi untuk Menyerap TenagaKerja | Kementerian PPN /Bappenas*. https://bappenas.go.id/id/berita/bappenas-elaborasi-peran-geopark-sebagai-pemicu-pemulihan-ekonomi-untuk-menyerap-tenaga-kerja

BMKG. (2023). *Kapan Musim Hujan Tiba? Ini Prediksi Lengkap BMKG | BMKG*. BMKG| Badan Meteorologi, Klimatologi, dan Geofisika. https://www.bmkg.go.id/press-release/?p=kapan-musim-hujan-tiba-ini-prediksi- lengkap-bmkg&tag=press-release&lang=ID

BPS (2021). *Kabupaten Pangkajene dan Kepulauan dalam angka*. Badan Pusat Statistik Kabupaten Pangkep. https://pangkepkab. bps.go.id /indicator/156/52/1/luas-daerah-dan- jumlah-pulau-menurut-kecamatan-di-kabupaten-pangkajene-dan-kepulauan.html

BPS (2023). *PDRB Kabupaten/Kota Atas Dasar Harga Berlaku Menurut Lapangan Usaha (Milyar Rupiah), 2021-2023*. Badan Pusat Statistik Provinsi Sulawesi Selatan. https://sulsel.bps.go.id/indicator/52/1659/1/-seri-2010-pdrb-kabupaten-kota-atas-dasar-harga-berlaku-menurut-lapangan-usaha.html

Bakry, U.S. (2017). Pemanfaatan Metode Etnografi dan Netnografi Dalam Penelitian Hubungan Internasional. *Global Strategis*, *11*(1), Article 1. https://doi.org/10.20473/jgs.11.1.2017.15-26

Bandung, A.B.T. (2020). *Budaya Bugis Dan Persebarannya Dalam Perspektif Antropologi Budaya. Lensa Budaya: Jurnal Ilmiah Ilmu-Ilmu Budaya*, *15*(1), Article 1. https://doi.org/10.34050/jlb.v15i1.11081

Cathrin, S. (2017). *Tinjauan Filsafat Kebudayaan Terhadap Upacara Bersih Desa di Desa Tawon Kecamatan Pasreman, Ngawi Jawa Timur* [Cultural Philosophy Overview of the Village Clean Ceremony in Tawun Village, Pasreman District, Ngawi, East Java]. *Jurnal Filsafat*, *27*(1). https://doi.org/10.22146/jf.22841

Cottrell, S.P., Vaske, J.J., Shen, F., & Ritter, P. (2007). *Resident perceptions of sustainable tourism in Chongdugou, China*. Society & Natural Resources, 20(6), 512–513.

Evans, B., Joas, M., Sundback, S., & Theobald, K. (2006). Governing local sustainability. *Journal of Environmental Planning and Management*, *49*(6), 849–867. https://doi.org/10.1080/09640560600946875

Fajriany, N.I. (2017). *Analisis Faktor-Faktor Yang Memengaruhi Alih Fungsi Lahan Pertanian Di Kabupaten Pangkep*. http://repositori. uin-alauddin.ac.id/7635/1/NUR%20ISRA%20FAJRIANY.pdf

Farsani, N.T., Coelho, C., & Costa, C. (2012). *Geotourism and Geoparks as Gateways to Socio-cultural Sustainability in Qeshm Rural Areas, Iran*. https://www.tandfonline.com/doi/full/10.1080/10941665.2011.610145

Fuad, M., Efendi, A., & Muhammad, U.A. (2020). Pemanfaatan Kearifan Lokal Pepaccur sebagai Bahan Ajar Sastra Indonesia. JPI (Jurnal Pendidikan Indonesia), 9(2), 213 -.223. https://doi.org/10.23887/JPI-UNDIKSHA.V9I2.22779

Gazali, G., & Widodo, F. E. (2023). *Mengungkap Bentuk, Makna, dan Fungsi Ritual Vunja: Upaya Pemertahanan Kearifan Lokal Masyarakat Pantolobe. JENTERA: Jurnal Kajian Sastra*, *12*(1), Article 1. https://doi.org/10.26499/jentera.v12i1.6071

González, A.L., Martín, J.Á.C., Tapia, A.C.V., & Rivas, F. (2021, June 7). *How Sustainability Is Defined: An Analysis of 100 Theoretical Approximations*. https://www.mdpi.com/2227-7390/9/11/1308

Habib, M.H., Hasibuan, H.S., & Kurniawan, K.R. (2023, August 31). *Cultural Space as Sustainability Indicator for Development Planning (Case Study in Jakarta Coastal Area)*. https://www.mdpi.com/2071-1050/15/17/13125

Hazar, B.A. (2023). <p>Pengembangan buku suplemen materi keragaman budaya Suku Kajang dengan pola ensiklopedia / Badrizal Al Hazar</p>. *SKRIPSI Mahasiswa UM*, *0*(0), Article 0. http://mulok.library.um.ac.id/index3.php/114283.html

Herawati, I, 2004. *Kearifan Lokal diLingkungan Masyarakat Using Kabupaten Banyuwangi Propinsi Jawa Timur*. Yogyakarta, Balai Kajian Sejarah dan Nilai Tradisional Yogyakarta.

Hironimus, Y.S., Rijanta, R., & Iskandar, D.A. (2019). *Faktor-faktor yang Mempengaruhi Peran Aktivitas Pariwisata di Taman Nasional Komodo terhadap Pertumbuhan Ekonomi Wilayah Kabupaten Manggarai Barat. 14*.

Invanni, I., & Zhiddiq, S. (2023). *Kesiapan Geopark Nasional Maros Pangkep Menuju Unesco Global Geopark (Studi Pembanding Unseco Global Geopark Gunung Sewu). Jurnal Environmental Science*, *4*(2), Article 2. https://doi.org/10.35580/jes.v4i2.32478

Jia, Z., Wu, F., & Hou, D. (2023). Geodiversity, Geotourism, Geoconservation, and Sustainable Development in Longyan Aspiring Geopark (China). *Geoheritage*, *15*(1). Scopus. https://doi.org/10.1007/s12371-022-00784-8

Jiang, W., Wang, C., Liu, N., He, X., Ye, Q., Deng, Y., & Zou, J. (2023). Ecological quality of a global geopark at different stages of its development: Evidence from Xiangxi UNESCO Global Geopark, China. *Global Ecology and Conservation*, *46*, e02617. https://doi.org/10.1016/j.gecco.2023.e02617

Junaidin, Utaya, S., Astina, I.K., & Susilo, S. (2019). Land resource management of Sambori indigenous community area viewed from Ethnoecological aspects. *Eco. Env. & Cons.* 25 (4), 131-138, EM International ISSN 0971–765X

Kodir, A., Tanjung, A., Astina, I.K., Nurwan, M.A., Nusantara, A.G., & Ahmad, R. (2020). The Dinamics Of Access On Tourism Development In Labuan Bajo, Indonesia. *GeoJournal Of Tourism And Geosites*, *29*(2), 662–671. https://doi.org/10.30892/Gtg.29222-497

Kumar, S., Kumar, D., & Luis Nicolau, J. (2023). How does culture influence a Country's travel and tourism competitiveness? A longitudinal frontier study on 39 countries. *Tourism Management*, *100*, 104822. https://doi.org/10.1016/j.tourman.2023.104822

Kurniawan, M., Faisal, E.E., & Kurnisar (2019). *Faktor Faktor yang Menyebabkan Perubahan Adat Istiadat Ngocek Bawang di Kelurahan Indralaya Mulya, Ogan Ilir [Factors Causing Changes in the Customs of Ngocek Bawang in Indralaya Mulya Village, Ogan Ilir]. Jurnal Bhineka Tunggal Ika*, *6*(1).https://doi.org/10.36706/jbti.v6i1.7928

Kusumaningtyas, V.A., Amisa, D., Sujono, H., Budiman, S., Melina, Syah, Y.M., Setiawati, T., & Rosdiana, E. (2022). Moluskisida Kombinasi Mikroenkapsulasi Daun Kacang Babi, Daun Serai Wangi, dan Kitosan sebagai Pembasmi Keong Mas pada Tanaman Padi. *Jurnal Sains Dan Kesehatan*, *2*. https://doi.org/10.25026/jsk.v2i4.146

Liswati, (2016). *Ritual Adat Mappalili di Segeri Kabupaten Pangkep*. Skripsi: Makassar, Fakultas Adab dan Humaniora, 1-5.

Marfai, M.A. (2012). *Pengantar Etika Lingkungan dan Kerifan Lokal*. Yogyakarta, Gadjah Mada University Press.

Mayasari, T. (2021). *Dinamika Peralihan Hak Milik Atas Tanah Melalui Jual Beli (Studi Kasus Di Kecamatan Jekan Raya, Kota Palangka Raya)* (Doctoral dissertation, Sekolah Tinggi Pertanahan Nasional).

Mena, E.N., Budijanto, Astina, I.K., & Susilo, S. (2020). Pelestarian Lingkungan, Dalam Adat Penti Masyarakat Manggarai [Environmental Preservation, In the Penti Custom of the Manggarai Community]. Malang: Ediide Infografika.

Nugraha, A., Firman, A., & Asri, A. (2020). *Pengaruh Pendidikan Dan Pelatihan Terhadap Kinerja Melalui Kompetensi Pegawai Pada Dinas Pariwisata Dan Kebudayaan Kabupaten Pangkep. Jurnal Aplikasi Manajemen & Kewirausahaan MASSARO*, *2*(1), Article 1. https://doi.org/10.37476/massaro.v2i1.916

Nuhung, S. (2016). Karst Maros Pangkep Menuju Geopark Dunia (Tinjauan dari Aspek Geologi Lingkungan). *Plano Madani : Jurnal Perencanaan Wilayah dan Kota*, *5*(1), Article 1.

Paakkanen, R.T., & Suonpää, M. (2023). *Entrepreneurship Education with Purpose: Active Ageing for 50+ Entrepreneurs and Sustainable Development for Rural Areas. Education Sciences*, *13*(6). Scopus. https://doi.org/10.3390/educsci13060572

Papadopoulou, E.E., Papakonstantinou, A., Vasilakos, C., Zouros, N., Tataris, G., Proestakis, S., & Soulakellis, N. (2022). Scale issues for geoheritage 3D mapping: The case of Lesvos Geopark, Greece. *International Journal of Geoheritage and Parks*, *10*(3), 435–446. https://doi.org/10.1016/j.ijgeop.2022.08.006

Pemkab. (2023). *Seni Dan Budaya.* Pemerintah Kabupaten Pangkep. https://pangkepkab.go.id/seni- dan-budaya

Putri, M.E. (2020). Peran Sektor Pariwisata Terhadap Pendapatan Asli Daerah (Studi Kasus Kabupaten/Kota Provinsi Sulawesi Selatan)Tahun 2014-2018. *Jurnal Ilmiah Mahasiswa FEB*, *8*(2). https://jimfeb.ub.ac.id/index.php/jimfeb/article/view/6509

Spradley, J.P. (2007). *Metode Etnografi*. Yogyakarta: Tiara Wacana, Edisi II.

Sufia, R., Sumarmi, S., & Amirudin, A. (2016). *Kearifan Lokal Dalam Melestarikan Lingkungan Hidup (Studi Kasus Masyarakat Adat Desa Kemiren Kecamatan Glagah Kabupaten Banyuwangi). Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, *1*(4), Article 4. https://doi.org/10.17977/jp.v1i4.6234

Sumarmi dan Amirudin. 2014. *Pengelolaan Lingkungan Berbasis Kearifan Lokal*. Malang: Aditya Median Publishing.

Sumarmi, S. (2016). *A Study of Local Wisdom of Balinese Aga and Samin People to Develop Environmental Awareness Characteristics*. 201–205. https://doi.org/10.2991/icge- 16.2017.41

Sumarmi, Bachri, S., Tanjung, A., & Mutia, T. (2019). A Study on the Local Wisdom of the Bali Aga Community Metruna Nyoman in The Indigenous Forest as an Effort to Build Character of Caring for the Environment. *Ecology, Environment, & Conservation*. 25 (4), 1638-1643, EM International ISSN 0971–765X

Sumarmi, S., Bachri, S., Purwanto, P., Mutia, T., Sholeha, A.W., Rahmasyah, P.I., & Shrestha, R.P. (2024). Mangrove Forest Management Strategy In Bedul, Banyuwangi: Collaboration Between Community And Alas Purwo National Park For Sustainable Ecotourism Development. *GeoJournal of Tourism and Geosites*, *52*(1), 85–97. https://doi.org/10.30892/gtg.52108-1185

Surpi, Ni Kadek. (2016). Hindu di Tanah Bugis: Sejarah, Gempuran Penghancuran, Kebertahanan dan Ritual Hindu Kuno di Tanah Bugis.Surabaya: Paramita.

Syarif , E., Fatchan, A., Sumarmi & Astina, I.K. (2016a). *Hutan dan Masyarakat Adat Ammatoa, Tinjauan Dalam Perspektif Pasang ri Kajang [The Ammatoa Forest and Indigenous Peoples, An Overview in the Perspective of Kajang Pasang]*. Malang: Aditya Media Malang.

Syarif, E., Sumarmi, S., Fatchan, A., & Astina, I.K. (2016b). Integrasi nilai budaya etnis Bugis Makassar dalam proses pembelajaran sebagai salah satu strategi menghadapi era masyarakat ekonomi ASEAN (MEA). *Jurnal Teori Dan Praksis Pembelajaran IPS*, *1*(1), Article 1.

Syaidah, U. (2022) *Akulturasi Budaya Mappalili dengan Nilai-nilai Pendidikan Islam di Desa Kaliang Kec. Duampanua Kab. Pinrang* [Masters, IAIN Parepare]. http://repository.iainpare.ac.id/3679/

Syamsuddin, S., & Purnama, R. (2021). Kearifan Lokal Dalam Novel Sang Pencerah Karya Buya Hamka. Prosiding Seminar Nasional Dan Internasional HISKI, 0(0), 276-288. https://prosiding.hiski.or.id/ojs/index.php/prosiding/article/view/31

Syarifuddin, S., Hasyim, I., & Firmansyah, F. (2022). Local Wisdom In South Sulawesi's Folklores. *ELite Journal : International Journal of Education, Language, and Literature*, *2*(4), Article 4.

UNESCO. (2023). *UNESCO Global Geoparks | UNESCO*. https://www.unesco.org/en/iggp/geoparks/about

Untara, I.M.G.S., & Rahayu, N.W.S. (2020). Bissu: Ancient Bugis Priest (Perspective On The Influence Of Hindu Civilization In Bugis Land). *Vidyottama Sanatana: International Journal of Hindu Science and Religious Studies*, *4*(2), 2. https://doi.org/10.25078/ijhsrs.v4i2.1837

Weningtyas, A., & Widuri, E. (2022). Pengelolaan Sumber Daya Air Berbasis Kearifan Lokal Sebagai Modal Untuk Pembangunan Berkelanjutan. *Volksgeist: Jurnal Ilmu Hukum dan Konstitusi*, *5*(1), 129–144. Scopus. https://doi.org/10.24090/volksgeist.v5i1.6074

Wowor, I., Salaki, C.L., & Rimbing, J. (2022). Use Of Plant-Based Pesticides Cymbopogon Nardus And Mimosa Pudica To Control Rice Pests. *Jurnal Agroekoteknologi Terapan*, *3*(1), Article 1. https://doi.org/10.35791/jat.v3i1.38816

GeoJournal of
Tourism and Geosites

Year XVII, no. 1, vol. 52, 2024