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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

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410087, Oradea, Romania, Phone/fax: +40 259 408 475 e-mail: gtg.uoradea@yahoo.com

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THE EFFECT OF E-SERVICE QUALITY ON THE COMPETITIVE ADVANTAGES OF TOURISM AND HOTEL BUSINESSES IN THAILAND

Pisit POTJANAJARUWIT * 

Suan Sunandha Rajabhat University, Faculty of Management Science, Business Administration, Bangkok, Thailand, e-mail : pisit.po@ssru.ac.th

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Abstract: In recent yeats, technological advancement has become a crucial factor for businesses' survival. Traditional business models and processes have been modified and integrated with technology to enable competitive business operations. Consequently, the internet has taken on an important role in business as it allows access to a large number of users at the same time, resulting in an ability to compete without limits. This research aimed to study the effect of electronic service (e-service) quality on the competitive advantages of tourism and hotel businesses in Thailand. Data were collected from 113 marketing managers of tourism and hotel businesses in Thailand using a questionnaire as the research instrument. Statistical methods used to analyze the data were Correlation Analysis and Multiple Regression Analysis. The results showed that the reliability and efficiency of e-services correlate with and have an impact on competitive advantages – in the aspects of customer relationships, business networks, organizational learning, productivity, technology sourcing, knowledge management, and entrepreneurship orientation – at a statistically significant level of 0.05. That means business should place importance on the reliability of online service websites. This is to help service users have more confidence in the accuracy of information and security of private information. There should also be a reliable security system in place and a focus on providing support to customers through the website.

Key words: customer relationships, e-service quality, competitive advantage, tourism and hotel business, technology to improve operational efficiency

* * * * *

INTRODUCTION

In recent years, the business landscape has become a very competetive environment. There is competition from other players within the country and those from abroad, as well as the need to adapt to the rapidly changing conditions of the world. Technological advancement has also become a crucial factor for businesses' survival. Traditional business models and processes have been modified and integrated with technology to enable competitive business operations. These adaptations can be seen most among service businesses as they have started providing online services. Consequently, the internet has taken on an important role in business as it allows access to a large number of users at the same time, resulting in an ability to compete without limits (Bazazo and Alananzeh, 2022). An electronic service (e-service) is a form of online service provided via a website. It is a product of the changes caused by the Internet which has become an important factor in the service business (Alnaim et al., 2022); Using websites as a medium to connect between businesses and clients allows for a channel through which information about a product or service can be exchanged, resulting in more successful exchanges. The basis of electronic services is the core of products and services. Even though the fundamental element of e-services is having products and services at the core (Pourabedin, 2021); focusing only on the products or services alone cannot keep the business afloat. Service quality is another important factor in differentiating products and creating competitive advantages. The service should be of quality and there must be continuous improvement of the quality as it has a direct influence on the perception and attitude of the clients. Provision of quality services will create satisfaction and good impression for service users, resulting in them willingly returning to the service. More importantly, these service users can provide public relations in either a positive or negative way (VO et al., 2020). The quality of service evaluated on the side of service users may not truly reflect the efficiency of the business. However, the quality of e-services of service providers can be considered from factors such as reliability, efficiency, support, communication, security, and incentive. These 6 service quality indicators can help tourism and hotel businesses in Thailand to be appraised for the quality of their e-services.

Since the Covid-19 lockdowns, tourism and hotel businesses have become crucial factors in the Thai economy in terms of both economic expansion and stability. Tourist arrivals in Thailand continue to increase, with the estimated total tourism income in 2022 at 1.08 trillion baht, from 10 million foreign visitors and 120 million Thai tourists, accounting for 6% of Thailand's GDP. This is divided into 670 billion baht from Thai tourists and 4.3-4.4 billion baht from foreign tourists. Most recently, from 1 Jan to 17 Sep 2022, there were 5.43 million foreign tourists visiting Thailand, leading to a projection of 1.5 million foreign tourists visiting Thailand monthly in the last 3 months of this year. However, it is not necessary to measure competitiveness with only financial performance which may include some inaccurate information and may not be able to truly reflect a competitive advantage. Competitive advantages can be measured in 9 aspects, but for relevance with the

* Corresponding author

studied businesses, only 7 aspects are used here— customer relationships, business networks, organizational learning, productivity, technology sourcing, knowledge management, and entrepreneurship orientation. These elements help businesses understand their true competitive advantages and assess how each business stands out in terms of service performance over its competitors, allowing businesses to be able to compete in the market (Pongsakornrunsilp et al., 2021).

Due to the aforementioned reasons, the researcher was interested in investigating the effect of e-service quality on the competitive advantages of tourism and hotel businesses in Thailand, by testing what impacts the e-service quality would have on their competitive advantages. The data were collected from marketing managers of tourism and hotel businesses in Thailand which registered as e-commerce with the Department of Business Development. The research results can be used as a guideline for improvement of operation processes and forms of products or services to enhance the quality of e-services of tourism and hotel operators.

LITERATURE REVIEW

E-service Quality and Competitive Advantages of Businesses

In the work of (Bazazo et al., 2022) “Towards quality e-service in the public sector: The evolution of websites in the local public service sector”, it was found that transparency, efficiency, and effectiveness of the local public sector demonstrated understanding of e-service outcome, evaluating methods, and the use of electronic data to develop website content. The important factors found include the quality of the electronic table of contents, website and application technologies used to increase efficiency and effectiveness, as well as and the flexibility of organizations that adopt e-services. The e-services used in local services were ones used for education. There was also a comparison of the e-services’ quality, emphasizing the qualitative aspects, using the association between what the customer received and what was provided on the website made by each local agency. It was necessary to collect data to analyze changes, to consider of the importance of details related to the scope of e-service quality, and to establish an e-service quality control system using information as a basis for maximum benefit. This is consistent with the work of (Hu et al., 2022); “E-business development for competitive advantages: a case study” which used Intel as a case study. 8 factors were found to help contribute to the company's competitive advantages: (1) Creation and use of differentiation strategies to position themselves in the market; (2) Complete implementation of e-business, covering all competitive channels; (3) Support from high-level management; (4) Targeting quality networks; (5) Supporting new e-commerce knowledge for the networks and providing trial services to customers; (6) Efficient security of the entire network system; (7) Building and maintaining a strong e-business structure; and (8) Implementing effective e-business management strategies (Song et al., 2022); studied the relationship between competitiveness and technological innovation capability. It was found that only 16 percent of organizations operated with good new practices. Many organizations were also found with inconsistencies between their innovation capability and their competitiveness. Around 70% of the inefficient enterprises were found with decreasing returns to scale, while the other 30% were found with increasing returns to scale. For this reason, an appropriate innovation process in an organization is a very important factor for an organization's performance. This also shows that organizations must be capable of technological innovation in order to be competitive. This is in line with (Zollo et al., 2022); who studied consumer perspective of e-service quality. It was found that convenience of service, website service quality, and risk affect the satisfaction level of service users. To improve the quality of service for users, companies need to invest in the design of a website for it to provide good and measurable quality service. There should be usage risk control by combining e-services quality with technological innovations to create presentations through e-services – a result of the growth of online commerce. The focus should be placed on e-services, the relationship between various factors, and customer attitudes toward e-services. The presentations should emphasize privacy, individual differences, convenience of e-services, website service quality, risks, electronic satisfaction, and increase of interest.

Business Competitive Advantages

From the review on relevant literature, ‘competitive advantages in business’ refers to the ability of a business to compete with its competitors and maintain its market share. It is a creation of advantages in business competition including;

1. Organizational learning: (Lee et al., 2022); defined organizational learning as principles and guidelines that will help organizations, in both the public and private sectors, to be ready, capable, and able to adapt and respond to changes of the environment and organizational factors appropriately. It can create new business opportunities and help turn the obstacles into benefits for the operations, in order to steer the organization continuously towards its goals. This is consistent with (Zhang et al., 2023); who defined organizational learning as a process of management that focuses on providing organizations and personnel with quality work processes and effective performance, to be able to adapt and respond appropriately to changes in the environment and organizational factors. It can create new business opportunities and adjust obstacles to be useful for operations, leading the organization to achieve its goals.

2. Productivity refers to the use of electronic technology for improvement in terms of products and personnel. E-services are used as a tool to change or improve the quality of products (Stroumpoulis et al., 2022).

3. Customer relationship refers to continuously building relationships with customers by understanding their needs and behaviors. This can be done through the use of e-services to learn more customer information and implement those data in product and service development, as well as in tailoring marketing programs to suit each individual or each group of customers to precisely meet their needs (Mahadevan and Joshi, 2022).

4. Business networks: (Salamah et al., 2022); defined a business network as a cooperation between individuals, groups, or organizations of the same type – or a network between groups or organizations of different types – by using e-services as

a tool (Girish et al., 2022); defined business networking as creating cooperation between groups of related businesses and institutions, to carry out activities together with a reciprocal agreement to have each other’s support, to exchange ideas and information, as well as to associate and complement each other's businesses in a comprehensive way (commonality and complementarily). This is to achieve common goals and continuously create competitive advantages.

5. Technology sourcing refers to the use of e-services as a reference source of information to help manage and improve business and its capabilities, as well as the use of advanced manufacturing facilities and quality technology resources to help businesses become proficient in technology that is advantageous to future work improvement (Hung and Khoa, 2022).

6. Knowledge management refers to processes and technologies that use e-services as sources to acquire, create, manage, share, and enable the required knowledge to achieve the organization's vision. This is done through the consistent combination of human operations, work processes, and technology, leading to desired success. This is because knowledge is the origin of competitive advantages of each company which will help them gain the ability to evolve and transform the global marketplace (Ibrahim and Shaalan, 2023).

7. Entrepreneurship orientation refers to the use of e-services to assist in the design of innovative products, technical management, after-sales service systems, sales channels or brand image. It also includes being aware of internal and external organizational environments, which might be complicated for management decision-making, as well as uncertain environments. This is to help further decision-making in response to problems and obstacles that may arise in business operations and to achieve the expected results.

This corresponds with (Kim et al., 2023); in the study “Customer Perceived E-service Quality in Online Shopping”. It was found that the e-service quality strategy is an important part of e-commerce websites’ success in addition to pricing strategy and website design. The five major factors found affecting the quality of e-services were; (1) website design, (2)

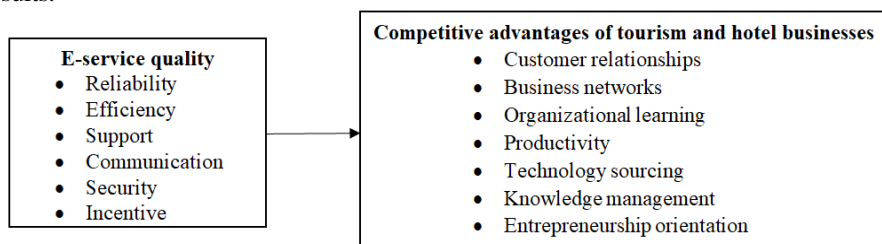


Figure 1. Conceptual framework

(3) responsiveness to needs, (4) trust, and (5) personalization. The results were used to increase understanding of how e-service quality affects customer perceptions of online purchases. As the internet and e-commerce have grown dramatically, new distribution and marketing channels have emerged. A work by (O’Connor, 2023); on the competitiveness of information technology (IT) in Thailand found that the use of IT brings in benefits from cost reduction to the speed and accuracy of the information system, leading to appropriate strategic planning and contributing to the efficiency of the organization’s operations. Use of strategies combining with technology is crucial in the era of globalization as businesses are met with competition from free trade and having to achieve a high enough potential to compete for their domestic market share. This is in line with the research of (Bazargani and Kilic, 2021); on the competitiveness of information technology (IT) in Thailand which found that the use of IT brings in benefits from cost reduction to the speed and accuracy of the information system, leading to appropriate strategic planning contributing to the efficiency of the organization’s operations. Use of strategies combining with technology is crucial in the era of globalization as businesses are met with competition from free trade and having to achieve a high enough potential to compete for their domestic market share. Clarity in service providing, building of trust, and providing assistance to service users when in doubt or faced with various problems also creates good faith for the business itself. This is consistent with the work of (Choirisa, 2022); which found that transparency, efficiency, and effectiveness of the local public sector demonstrated understanding of e-service outcome, evaluating methods, and use of electronic data to develop website content. The quality of the electronic table of contents, website, and application technologies was used to increase efficiency and effectiveness, as well as the flexibility of organizations. Details related to the scope of e-service quality were also important to establish an e-service quality control system using information as a basis for maximum benefit.

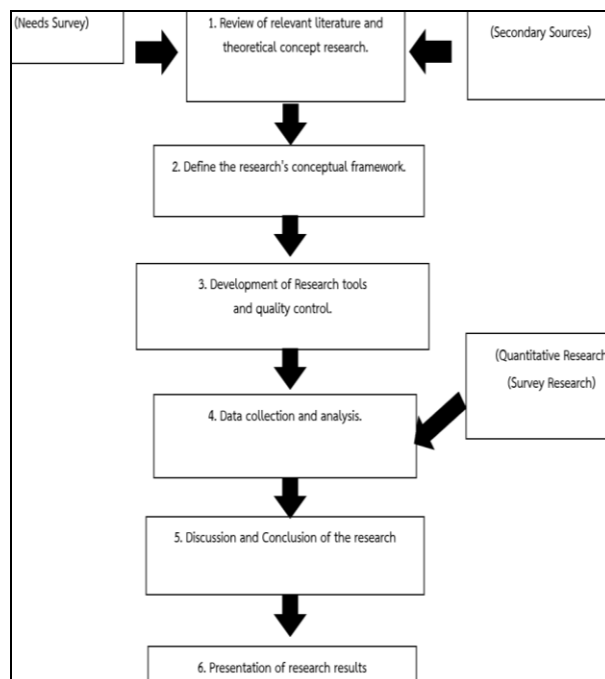


Figure 2. Flow chart of methodology steps

MATERIALS AND METHODS

Determination of population and sample

1. The population for this the research was 257 marketing managers of tourism and hotel businesses in Thailand that were registered with the Department of Business Development (Srhoj et al., 2021).

2. The samples included in the research were 160 marketing managers of tourism and hotel businesses in Thailand that were registered with the Department of Business Development. The sample size was determined by Taro Yamane's calculation formula (Yamane, 1973); using the known number of population and then the Stratified Random Sampling method to recruit participants based on business locations. The steps for sampling were as follows: (2.1) Classifying marketing managers of tourism and hotel businesses in Thailand according to their business locations; (2.2) Determining proportionate samples of marketing managers of tourism and hotel businesses in Thailand.

Research instruments

The research instrument used was a questionnaire created according to the objectives and conceptual framework established. The questionnaire was divided into 4 parts – (I) General information of marketing managers of tourism and hotel businesses in Thailand, (II) General information about tourism and hotel businesses, (III) Opinions on the quality of e-services, and (IV) Opinions on the competitive advantages of tourism and hotel businesses. The quality of the research instrument was tested as follows:

1. The questionnaire was used in a try-out with 30 marketing managers of tourism and hotel businesses in Thailand (Bazazo et al., 2022); who were not included in the sample group. The reliability was evaluated by finding the alpha coefficients according to Cronbach's alpha method. Each aspect of e-service quality was found with alpha coefficients as follows: reliability = 0.592, efficiency = 0.699, support = 0.600, communication = 0.739, security = 0.527, and incentive = 0.710. Each aspect of competitive advantages of tourism and hotels was found with alpha coefficients as follows: customer relationships = 0.463, business networks = 0.665, organization learning = 0.836, productivity = 0.714, technology sourcing = 0.651, knowledge management = 0.832, and entrepreneurship orientation = 0.674.

2. The discriminant power of the questionnaire was determined by using the item-total correlation test. Each aspect of e-service quality was found with discriminant power as follows: reliability = 0.367-0.841, efficiency = 0.499-0.813, support = 0.369-0.723, communication = 0.492-0.756, security = 0.433-0.783, and incentive = 0.549-0.783 (Table 81, Appendix C). Each aspect of competitive advantages of tourism and hotel businesses was found with discriminant power as follows: customer relationships = 0.549-0.753, business networks = 0.554-0.710, organizational learning = 0.699-0.859, productivity = 0.386-0.734, technology sourcing = 0.415-0.750, knowledge management = 0.790-0.835, and entrepreneurship orientation = 0.434-0.740.

Data Collection

Data were collected by sending the questionnaire to marketing managers of tourism and hotel businesses in Thailand, using the name and address registered with the Department of Business Development. The questionnaire was in the format of an online survey with a scheduled response time of within 30 days after receiving the questionnaire. At the end of the 30-day period, 100 sets of questionnaires were received. Phone calls were then made to the rest of the marketing managers who had not submitted the form and additional sets of the questionnaire were re-sent to these individuals with a scheduled response time of 15 days. After receiving the questionnaires, they were examined for completeness of the content. From the total of 160 sets of questionnaires sent, 145 were answered, of which 33 copies were excluded for being incomplete. As a result, 113 sets of complete questionnaires were received, representing 70.63 % of the sample group.

Data Analysis

Data from the questionnaires were input into a computer software to analyze opinion data on e-service quality and competitive advantages of tourism and hotel businesses. The analysis included processing descriptive statistics and using Correlation Analysis and Multiple Regression Analysis to test the correlation between e-service quality and competitive advantages of the tourism and hotel businesses.

RESULTS AND DISCUSSION

The analysis results of overall opinion towards e-service quality of Thailand's tourism and hotel marketing managers are as follows; From Table 1, the marketing managers of tourism and hotel businesses in Thailand were found to have overall opinion towards e-service quality at a high level ($\bar{X} = 3.58$). When considered by aspect, 5 items, ranking from highest to lowest score, were all ranked at a high level – reliability ($\bar{X} = 3.76$), incentive ($\bar{X} = 3.58$), support ($\bar{X} = 3.56$), efficiency ($\bar{X} = 3.55$), and communication ($\bar{X} = 3.53$). One aspect of e-service quality had a mean score at a moderate level – security ($\bar{X} = 3.47$). Results on Multiple Correlation Analysis and prediction equation formation.

Table 2 shows independent variables being correlated, resulting in a multicollinearity phenomenon. The researcher therefore tested this multicollinearity by using Variance Inflation Factor (VIF) values. It appeared that the VIF values of the e-service quality independent variables were less than 10, ranging only between 1.441-1.881, indicating the variables not being significantly correlated (Bazazo et al., 2022); When considering the correlation coefficients between each independent variable or each aspect of e-service quality, they were found correlated with the overall competitive advantages of tourism and hotel businesses at a statistical significance level of 0.05, with correlation coefficients between 0.330-0.563. The researcher then performed a Multiple Regression Analysis and created a prediction equation (Hu et al., 2022); for competitive advantages of tourism and hotel businesses (CRA) as follows;

$$\text{CRA} = 1.433 + 0.207 \text{ RLY} + 0.116 \text{ EFC} + 0.188 \text{ SUP} + 0.042 \text{ COM} + 0.051 \text{ SEC} + 0.083 \text{ ICT}$$

Table 1. Overall opinion towards e-service quality of Thailand's tourism and hotel marketing managers

E-Service Quality	\bar{X}	SD	Opinion level
1. Reliability	3.76	0.46	High
2. Efficiency	3.55	0.55	High
3. Support	3.56	0.55	High
4. Communications	3.53	0.52	High
5. Security	3.47	0.58	Moderate
6. Incentive	3.58	0.60	High
Overall	3.58	0.40	High

It means if tourism and hotel entrepreneur develop reliability of the website (RLY) 0.207 such transparency, clarity in service providing, building of trust, and providing assistance to service users when in doubt or faced with various problems also creates good faith for the business itself. Efficiency (EFC) 0.116 such increase speed and accuracy of the website system, support (SUP) 0.188 such demonstrated understanding of e-service outcome, evaluating methods, and use of electronic data to develop website content, Communication (COM) 0.042 such allows access to a large number of users at the same time, resulting in an ability to compete without limits, Security (SEC) 0.051 such the presentations should emphasize privacy, individual differences, risks electronic satisfaction, and increase of interest and also incentive (ICT) 0.083 such tailoring marketing programs to suit each individual or each group of customers to precisely meet their needs it will create competitive advantages of tourism and hotel businesses (CRA) for 1.433 (Alnaim et al., 2022). This equation can predict the overall competitive advantages of tourism and hotel businesses (CRA) at a statistical significance level of 0.05 ($F = 14.606$; $p < 0.000$) with 0.422 Adjusted R-Squared (AdjR2) (Table 4). When used to test correlation between independent variables or each aspect of e-service quality with overall competitive advantages of tourism and hotel businesses (CRA), (Zhang et al., 2023) the results were acquired as shown in Table 3. From Table 4 e-service quality in the aspects of reliability (RLY) and support (SUP) was found with a positive correlation and a positive impact on the overall competitive advantages of tourism and hotel businesses (CRA) at a statistical significance level of 0.05 (Salamah et al., 2022). Therefore, regarding e-service quality were accepted. Other aspects were not found correlated with the overall competitive advantages of tourism and hotel businesses (CRA). When using only these two aspects of e-service, reliability (RLY) and support (SUP), to create another prediction equation for overall competitive advantages of tourism and hotel businesses (CRA), it resulted in AdjR2 being 0.673 and the equation (Bazazo and Alananzeh, 2022); as follows:

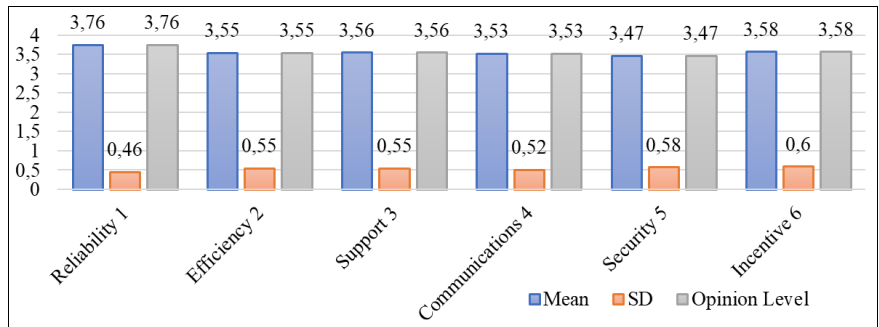


Figure 3. Overall opinion towards e-service quality of Thailand’s tourism and hotel marketing managers

Table 2. Multiple Correlation Analysis of e-service quality and overall competitive advantages of tourism and hotel businesses in Thailand*Statistically significant at 0.05 level

Variable	CRA	RLY	EFC	SUP	COM	SEC	ICT	VIF
\bar{x}	3.611	3.765	3.552	3.559	3.586	3.533	63469	
SD	0.370	0.461	0.552	0.548	0.520	0.579	0.599	
CRA		0.550*	0.517*	0.560*	0.372*	0.417*	0.397*	
RLY			0.563*	0.504*	0.462*	0.433*	0.340*	1.701
EFC				0.513*	0.504*	0.507*	0.330*	1.881
SUP					0.442*	0.402*	0.414*	1.628
COM						0.440*	0.488*	1.691
SEC							0.382*	1.521
ICT								1.441

Table 3. Data source for the competitive advantages of tourism and hotel businesses’ equation

Researchers and Academics	Correlation Coefficients of Competitive Advantages in Tourism and Hotel Businesses’ Equation						
	CRA	RLY	EFC	SUP	COM	SEC	ICT
(Bazazo et al., 2022);	√				√		
(Hu et al., 2022);		√		√			√
(Stroumpoulis et al., 2022);			√	√		√	
(Zollo et al., 2022);	√		√		√		√

Table 4. Testing the correlation of regression coefficients with the overall competitive advantages of tourism and hotel businesses in Thailand* Statistically significant at 0.05 level

E-service quality	Competitive advantages		t	p-value
	Regression Coefficient	Standard Error		
Constant (a)	1.433	0.249	5.750	0.000*
Reliability (RLY)	0.207	0.075	2.752	0.007*
Efficiency (EFC)	0.116	0.066	1.760	0.081
Support (SUP)	0.188	0.062	3.042	0.003*
Communication (COM)	-0.042	0.066	-0.629	0.531
Security (SEC)	0.051	0.057	0.902	0.369
Incentive (ICT)	0.083	0.053	1.561	0.122

$F = 14.606$ $p = 0.000$ Adj $R^2 = 0.422$

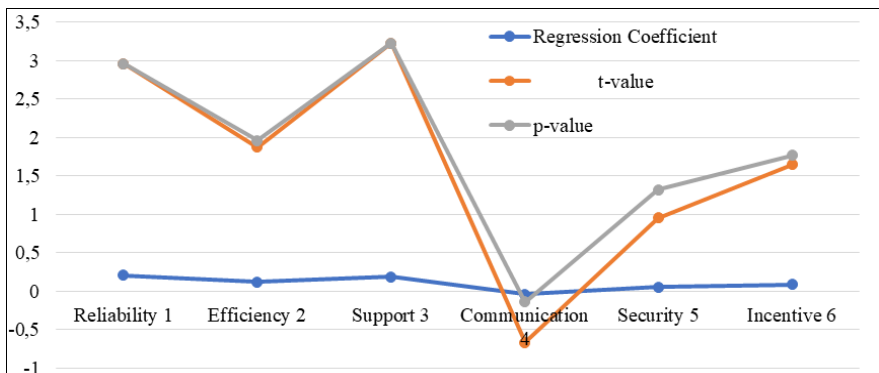


Figure 4. E-service quality and advantages in tourism and hotel businesses

CRA = 1.620 + 0.280 RLY + 0.256 SUP

It means if tourism and hotel entrepreneur want to create competitive advantages of tourism and hotel businesses (CRA) for 1.620 the business have to develop reliability of the website (RLY) 0.280 such clarity in service providing, building of trust and also support customer (SUP) for 0.256 such providing assistance to service users when in doubt or faced with various problems. It will improve competitive advantages of tourism and hotel businesses (CRA).

And also focus should be placed on e-services, the relationship between various factors, and customer attitudes toward e-services. The presentations should emphasize privacy, individual differences, convenience of e-services, website service quality, risks, electronic satisfaction, and increase of interest (Mahadevan et al., 2022).

Table 5. Data source for the competitive advantages of tourism and hotel businesses' equation

Researchers and Academics	Correlation Coefficients of Competitive Advantages in Tourism and Hotel Businesses' Equation		
	CRA	RLY	SUP
(Alnaim et al., 2022)	√		
(Zhang et al., 2023)	√	√	
(Salamah et al., 2022)	√		√
(Mahadevan et al., 2022)		√	

CONCLUSION AND DISCUSSION

The results of this study reveal that marketing managers of tourism and hotel businesses in Thailand had a high-level opinion towards the quality of e-services both in general and by each aspect. The quality of reliability includes a business's capability to properly provide e-services through the website. The business has to be able to provide fast e-services via the website and ensure that the business website is up-to-date. Businesses must be prepared to meet the needs of customers all the time, for instance, allowing customers to contact the business at all times and use more services. The businesses should also show sources of information when citing external information on their website's content. This corresponds with (Mirčetić and Mihić, 2022); in the study "Customer Perceived E-service Quality in Online Shopping". It was found that the e-service quality strategy is an important part of e-commerce websites' success in addition to pricing strategy and website design. The five major factors found affecting the quality of e-services were; (1) website design, (2) reliability, (3) responsiveness to needs, (4) trust, and (5) personalization. The results were used to increase understanding in how e-service quality affects customer perceptions of online purchases. As the internet and e-commerce have grown dramatically, new distribution and marketing channels have emerged.

Two aspects of e-service quality – reliability and support – were also found with a positive correlation and positive impact on the overall competitive advantages of tourism and hotel businesses, as well as competitive advantages such as customer relationships, business networks, organizational learning, technology sourcing, and knowledge management. This might be due to current business competitions being not limited only to the domestic market, but including competitions at regional and global levels. This can be done through building foundations such as customer relationships and useful information, as well as using it efficiently. There should also be business networking to gain both domestic and international alliances, supporting and encouraging personnel within the organization to learn more about technology and its application in operations. There could be collaborations with organizations or agencies with new technological potential to apply the existing knowledge within the organization for maximum benefit.

This is in line with the research of (Bazargani and Kilic, 2021); on the competitiveness of information technology (IT) in Thailand which found that the use of IT brings in benefits from cost reduction to the speed and accuracy of the information system, leading to appropriate strategic planning contributing to the efficiency of the organization's operations. Use of strategies combining with technology is crucial in the era of globalization as businesses are met with competition from free trade and having to achieve a high enough potential to compete for their domestic market share. Clarity in service providing, building of trust, and providing assistance to service users when in doubt or faced with various problems also creates good faith for the business itself. This is consistent with the work of (Choirisa, 2022); which found that transparency, efficiency, and effectiveness of the local public sector demonstrated understanding of e-service outcome, evaluating methods, and use of electronic data to develop website content.

The quality of the electronic table of contents, website, and application technologies was used to increase efficiency and effectiveness, as well as the flexibility of organizations. Details related to the scope of e-service quality were also important to establish an e-service quality control system using information as a basis for maximum benefit.

Suggestions

Executives and entrepreneurs of tourism and hotel businesses in Thailand should focus on the quality of e-services as they are a tool to increase the efficiency of online services. This is to increase the competitive advantages of tourism and hotel businesses both at domestic and international levels. They should also place importance on the reliability of online service websites. This is to help service users have more confidence in the accuracy of information and security of private information. There should also be a reliable security system in place and a focus on providing support to customers through the website. This could include adding frequently asked questions (FAQs) to help users make decisions and solve problems of products or services that may arise.

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PERIPHERAL TOURISM ENTREPRENEURS IN A RESOURCE-CONSTRAINED ENVIRONMENT: EVIDENCE FROM EASTERN CAPE PROVINCE, SOUTH AFRICA

Zinzi SIXABA 

School of Tourism & Hospitality, College of Business and Economics, University of Johannesburg, Bunting Road, Johannesburg, South Africa, e-mail: zinzi.sixaba@gmail.com

Christian M. ROGERSON ^{*} 

School of Tourism & Hospitality, College of Business and Economics, University of Johannesburg, Bunting Road, Johannesburg, South Africa, e-mail: chrismr@uj.ac.za

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Abstract: The tourism industry is distinguished from many other economic activities by the dominance of small-scale enterprises and micro-firms. Small tourism firms are critical change agents for destinations, local economic development and poverty reduction most especially in peripheral regions. This paper is situated within a growing international literature on tourism entrepreneurship and specifically the characteristics and motivations of small tourism entrepreneurs and their business operations. The research is conducted in Eastern Cape province of South Africa which is a resource-scarce or resource-constrained environment. Results are presented from a survey of 79 Black-owned small accommodation businesses and 19 semi-structured interviews with key stakeholders. It is shown that women own and operate the majority of these small accommodation businesses. These are mainly bed and breakfast establishments or small guest houses for which the clientele is mostly business tourists and government employees in particular. Issues under scrutiny are business motivations, start-up and operational issues. Networking emerges as an important business strategy for these peripheral entrepreneurs to address the challenges of business development. Overall, this study provides original findings and fresh insight into a segment of peripheral entrepreneurs operating in a resource-scarce context.

Key words: tourism entrepreneurs, small accommodation businesses, women entrepreneurs, resource-constrained environment, South Africa

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INTRODUCTION

Small and medium-sized enterprises have exerted a long-standing numerical dominance of the tourism industry (Shaw and Williams, 1994; Getz and Carlsen, 2005; Nordbø, 2009). Across the international experience it is evidenced that one of the essential characteristics of the tourism industry is that it is mostly made up of small-scale enterprises and micro-firms (Thomas, 2004; Işik et al., 2019; Yachin, 2019; Kc et al., 2021; Trip et al., 2021; Yachin, 2021). Among others Pham et al. (2021: 2010) assert that micro and small enterprises “comprise the majority of the tourism and hospitality businesses globally and contribute heavily to the economic livelihood of many communities”. Especially in rural areas small businesses, micro-enterprises and entrepreneurship in tourism are given high importance in policy debates in terms of their assumed contribution to economic development because they are acknowledged as a gateway to economic independence, community empowerment and capacity building (Nordbø, 2022). The promotion of small tourism businesses therefore can be a critical pathway for enhancing local economies and most especially act as a vital tool for bringing appropriate development to marginalised and peripheral areas (Yachin, 2020). Such businesses are present across both urban and rural environments and in all tourism activity sectors, including accommodation services, attractions, tour services, tourism niche markets (such as adventure tourism, heritage, and eco-tourism) and, support service sectors.

Overall, small tourism businesses in both the Global North and Global South are agents for tourism change, destination development and local economic growth (Ateljevic and Doorne, 2007; Saarinen and Rogerson, 2021). In Europe the advancement of tourism small businesses is viewed as significant for regional development and community-based tourism as small firms provide the foundations for entrepreneurship and job creation (Leitão et al., 2021). Support for small firms is prioritised by the European Union because of their contribution to regional development which include the increase in innovation, growth of ideas in relation to products, unique niches to enhance competitiveness, social and economic opportunities, and employment particularly for under-privileged social groups (Thomas and Augustyn, 2011).

In the Global South the growth of small tourism businesses is often conditioned by different factors as compared to the Global North (Gartner, 2004; Zhao, 2009). A critical point of differentiation relates to the ‘resource-scarce’ or ‘resource-constrained’ environments within which tourism entrepreneurship and small firm development in tourism occurs in the Global South (Ngoasong and Kimbu, 2019; Ribiero et al., 2021). In all poor communities, however, tourism small businesses can play important roles such as contribute to reduce poverty, foster social inclusion,

* Corresponding author

protection of the natural environment and encourage the youth to stay in the community (Rogerson, 2020; Dias, 2021). Key questions are raised regarding the significance of tourism small firms in the Global South. The critical role of small firms as a vigorous and visible element of tourism economies across the Global South is stressed in several investigations (Dahles and Bras, 1999; Dahles, 2000, 2001; Dahles and Keune, 2002; Hampton, 2003; Adams and Sandarupa, 2018; Shariff and Abidin, 2020). Over 20 years ago the pioneer work by Dahles and Keune (2002) spotlighted a growing interest in the investigation of tourism small businesses in the Global South because of tourism's potential for contributing to sustainable development. Tourism entrepreneurship is viewed now as fundamental to meeting several of the United Nations Sustainable Development Goals, including those for gender equality (SDG5), decent work and economic growth (SDG 12), and sustainable consumption and production (SDG 12). Policy development for tourism small firms therefore must be an essential component of planning in relation to the United Nations Sustainable Development Goals (Adu-Ampong and Kimbu, 2021; Mantey, 2021).

The uncertain times of the COVID-19 pandemic and its impacts prompts a re-thinking of African tourism research agendas (Rogerson and Baum, 2020; Rogerson and Rogerson, 2021). Arguably, one vital issue is the need for greater understanding of the nature, significance and challenges of tourism small firms operating in peripheral areas (Zheng, 2021). It is against this backdrop the aim in this paper is to investigate the characteristics and operations of small tourism entrepreneurs in the resource-constrained environment of the Eastern Cape, the poorest province of South Africa. Our focus is on the cohort of Black-owned small tourism firms which concentrate geographically in the territories of Transkei and Ciskei, the former Bantustans which were established under apartheid planning (Rogerson and Sixaba, 2021). Since 1994 South Africa has pursued a series of programmes targeted at 'empowering' groups and individuals who had been negatively impacted by the previous system of apartheid (Ponte et al., 2007). The need for a change in the racial balance of ownership was particularly pressing in the tourism sector which was almost exclusively White-dominated in the pre-1994 period (Rogerson and Visser, 2004). National government called for the "transformation" of the tourism sector, one element of which is supporting the growth of Black-owned tourism small firms or small, medium and micro-enterprises (SMMEs) (Rogerson, 2004; Abrahams, 2019; Giddy et al., 2020).

TOURISM SMALL FIRMS - LITERATURE CONTEXT

As a consequence of the international growth in the numbers of tourism small firms there has been an expansion of academic interest in understanding the issues and dynamics surrounding tourism small firms. Among others Dias (2021: 14) asserts that the study of small businesses "is crucial due to their share in the total numbers of tourism firms". In many countries small or medium-sized enterprises are viewed as constituting the entire stock of tourism businesses (Domi et al., 2019). Organizationally it is acknowledged that small tourism businesses are not only different from large businesses but also distinct within the broader business sector (Ateljevic and Doorne, 2007).

Hence, there is a need to recognise small tourism businesses as a separate analytical category which require scholarly attention as well as appropriate and focused policy initiatives (Thomas, 2000; Zheng, 2021). According to Morrison et al. (2010) research on small tourism businesses can be traced over a period of 35 years going back to the 1970s. The first period of academic interest in small businesses saw a flurry of activity that occurred during the early 1990s which became a steady flow of somehow fragmented output rather than the ambitious and coherent programme of research that was anticipated at the time (Thomas et al., 2011: 963). Arguably, the pace of international research on tourism small businesses developed slower than envisaged. The work by Thomas et al. (2011) situated tourism small businesses within the wider small business context and noted that a significant amount of tourism small business research is drawn from fields such as business and management, sociology, social anthropology, politics and policy studies.

The available research on tourism small businesses derived from general small business literature with limited connection to tourism and as a result tourism scholars only added empirical data to the existing general literature (Page et al., 1999). It is for this reason that Page et al. (1999) could label tourism small businesses as a research theme that was *terra incognita* and point to major gaps in both theoretical and empirical knowledge.

This argument was re-stated by Thomas et al. (2011) who expressed concern that tourism small business scholarship remained fragmented and that the "limited engagement of tourism academics in research relating to small firms is surprising" (Thomas et al., 2011: 963). These authors called for scholars to address this "shortfall" in international research which they considered had made only sporadic and uneven progress (Thomas et al., 2011: 964).

A considerable upturn has occurred in research on tourism small firms since 2000 and especially in the period 2010-2020 (see Yachin, 2019, 2020). During the decade of 2010s the growth of scholarship is reflected in a suite of writings variously about family firms, lifestyle entrepreneurs as well as tourism small firms (eg. Brouder and Eriksson, 2013; Peters and Kallmuenzer, 2018; Dias, 2021; Dias and Silva, 2021; Kc et al., 2021; Dias et al., 2022; Łobejko, 2022). In 2020, however, Alford and Jones (2020: 1) still could assert with confidence a continuing need "for more detailed studies of small tourism enterprises". Other observers contend that particularly the group of very small enterprises (employing less than five workers) and micro-entrepreneurship have remained largely invisible to scholars until recent years (Kc et al., 2021). Another shortfall of research in the international context undoubtedly surrounds an understanding of the issues relating to tourism small firms in the resource-constrained environments of the Global South. In one recent investigation Mantey (2021: vi) noted "there seems to be paucity of studies on Small and Medium Enterprises in the development of tourism in Africa".

Entrepreneurship in tourism has been a field of growing scholarly and policy interest. It is observed by Yachin (2020: 31) that entrepreneurship "is a complex and difficult-to-define concept". The complexity in definition is created by the diversity of theoretical and methodological approaches which inform perspectives on entrepreneurship (Ateljevic and

Doorne, 2004; Yachin, 2020). As pointed out by Dias (2021) research on tourism entrepreneurship has addressed a range of different issues including the organizational capabilities of small and medium-sized firms, entrepreneurial processes as well as the characteristics of the entrepreneur and the tourism enterprise. Central themes have been the entrepreneurial characteristics and the cultural context associated with tourism small businesses which are important threads in writings for over two decades (Ateljevic and Doorne, 2000; Shaw, 2004; Ateljevic and Doorne, 2007; Yachin, 2020; Dias, 2021). Additional issues of concern have included the easy of entry into business, financing of capital start-up, level of skills and the staying power or survival of small tourism businesses (Shaw, 2004; Brouder and Eriksson, 2013).

As observed both by Yachin (2020) and Dias (2021) the type of entrepreneurial motivation has been a further vital dimension of research on tourism entrepreneurship. This is explained by the fact that “since a large part of small tourism businesses are run by individuals with lifestyle objectives, such as motivation to live in a desired location, build social networks, and be part of a community, as opposed to the profit maximisation that characterizes entrepreneurship in other (non-tourism) sectors of activity” (Dias, 2021: 13). In tourism entrepreneurial scholarship distinctions are drawn between the business-oriented and lifestyle entrepreneurs particularly in the provision of accommodation services (Shaw and Williams, 2004). Lifestyle entrepreneurs who are considered to “prioritize personal or family needs, expectations, preferences and values over economic growth and profit maximisation, also are driven by environmental considerations and desire for a sense of community” (Ciasullo et al., 2019: 76). In rural destinations such lifestyle entrepreneurs are viewed as assuming a vital role in innovation and destination sustainable development (Yachin, 2019, 2020; Dias and Silva, 2021; Dias et al., 2021, 2022). As Yachin (2020: 29) asserts “lifestyle entrepreneurship does not necessarily mean unprofessional or unproductive”.

Overall, therefore, there has been the growth of a substantial scholarship around entrepreneurial cultures and the motivations for entrepreneurs to launch tourism small businesses. In rural areas of the Global North – which have been a major focus of recent scholarship on tourism small businesses - research on lifestyle entrepreneurs has been popular (Yachin, 2019). Recent research by Tomassini et al. (2021) expands previous conceptualisations of lifestyle entrepreneurs by looking at issues of identity construction in terms of their ethical commitment to global issues, social and economic inequalities. In the context of the Global North it contributes to research on small tourism businesses by broadening the simple dichotomy between commercially-oriented and lifestyle-oriented entrepreneurs and arguing that a subset of the latter are driven by a conscious set of values around ‘doing good’ for society. Ciasullo et al. (2019) add the category of what they style ‘heretical entrepreneurs’ as a subset of lifestyle entrepreneurs who function in remote destinations. It is noticeable within the literature that the notion of lifestyle entrepreneurship is primarily a phenomenon of the Global North. Skokic and Morrison (2011) argue that in developing economies of the Global South entrepreneurs rarely operate a business just to live a good life due to the economically unstable conditions and generally resource-constrained contexts. Nevertheless, the concept of lifestyle entrepreneurs cannot be ignored in the Global South. Research undertaken both in Ghana and South Africa has revealed groups of lifestyle entrepreneurs who operate tourism small businesses in several parts of these countries (Rogerson, 2008; Mensah-Ansah, 2014; Mantey, 2021).

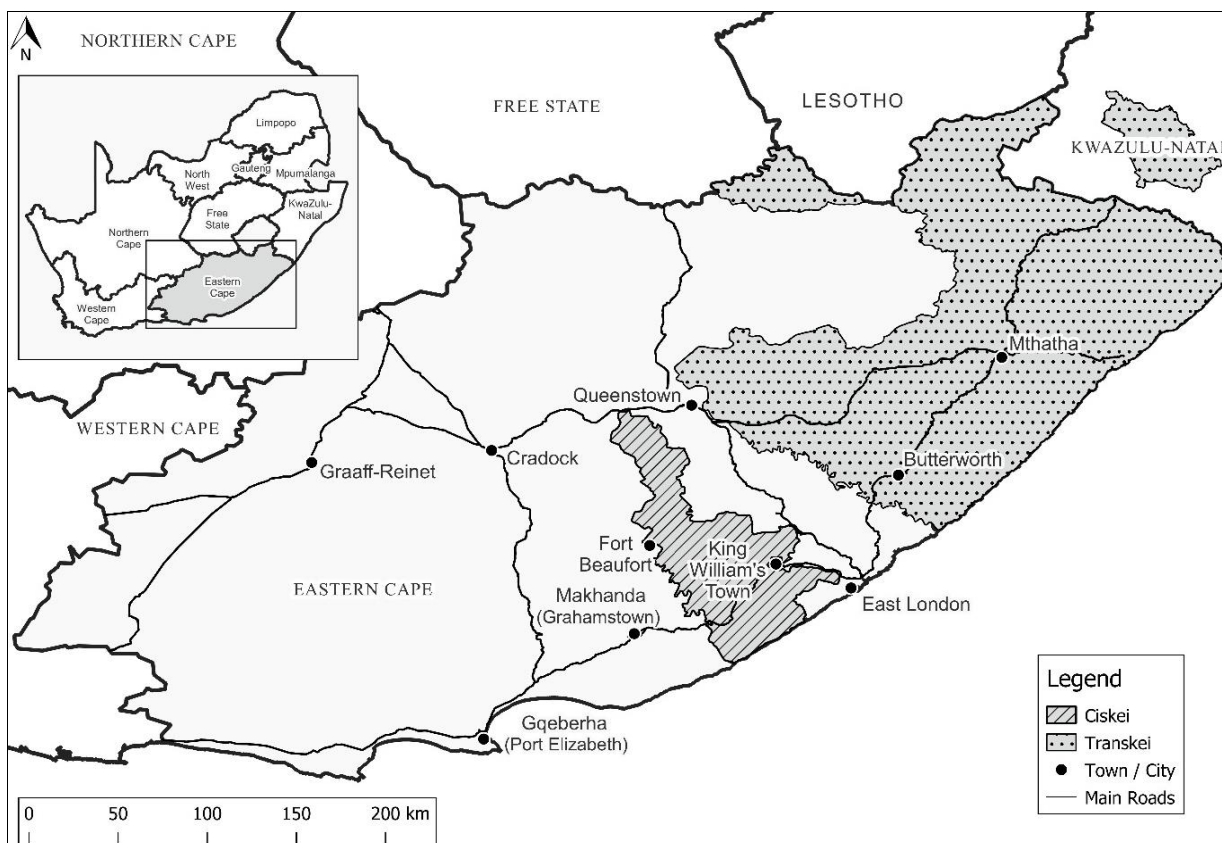


Figure 1. South Africa's Eastern Cape Province (Source: Authors)

RESEARCH CASE STUDY AREA AND METHODS

The setting for this research is South Africa's Eastern Cape province which was constituted only in 1994 after democratic transition. The Eastern Cape is the second largest province of South Africa's nine provinces. The major urban centres of the Eastern Cape are the coastal settlements of Gqeberha (formerly Port Elizabeth) and East London and the inland location of Mthatha, the 'capital' of the former Transkei. Other notable urban centres are the smaller towns of Makhanda (former Grahamstown), King William's Town, Bisho (former capital of Ciskei) and Graaff Reinet.

It is shown on Figure 1 that a major part of the territory of this province is constituted by rural areas that previously were part of the Transkei and Ciskei. In terms of economic and social development the province is underdeveloped and marked by geographical inequality between the urban-industrial centres and underdeveloped rural hinterlands, mainly the former homeland areas of the Transkei and the Ciskei. The Eastern Cape endures some of the highest rates of poverty and unemployment rates in South Africa with estimates that 72 % of the people in the Eastern Cape are living below the poverty line. In terms of South Africa's space economy the major part of the Eastern Cape would be classified as a peripheral region (Rogerson, 2019; Dlomo and Rogerson, 2020). The research was anchored on a structured survey that was conducted in 2018-2019 with 79 interviews conducted with Black-owned tourism accommodation establishments across the Eastern Cape. Themes of concern in the survey included the nature of tourism entrepreneurs and their businesses, entrepreneurship motivations, start-up issues and operational issues for businesses. The survey findings are supported and supplemented by the responses from the 19 semi-structured interviews which were undertaken with government stakeholders, local experts as well as a selection of accommodation service providers. The list and coding of these semi-structured interviews is given in Table 1 which shows the 19 respondents and their coding.

Table 1. Details of the 19 respondents (Source: Authors)

Code	Location	Type of Establishment	Role
GOV1	King Williams Town	Eastern Cape Economic Development, Environmental Affairs and Tourism (DEDEA)	Manager: Tourism
GOV2	East London	Buffalo City Metropolitan Municipality - Tourism	Marketing and Promoting Officer
GOV3	East London	Eastern Cape Parks and Tourism Agency (ECPTA)	Chief Marketing Officer
GOV4	East London	Commission on Restitution of Land Rights	Consulting Officer
GOV5	East London	Eastern Cape Parks and Tourism Agency (ECPTA)	Senior Manager: Tourism Development
GOV6	East London	Eastern Cape Parks and Tourism Agency (ECPTA)	Commercialisation Manager
GOV7	East London	Eastern Cape Parks and Tourism Agency (ECPTA)	Manager: Tourism Enterprise
GOV8	Gqeberha	Nelson Mandela Bay Metropolitan Municipality	Director: Tourism Development
GOV9	Mthatha	Eastern Cape Parks and Tourism Agency (ECPTA)	Regional Manager: Tourism
AC1	Bisho	Guest House	Owner
AC2	King Williams Town	Bed & Breakfast	Owner
AC3	East London	Bed & Breakfast	Owner
AC4	East London	Guest House	Owner
AC5	Gqeberha	Bed & Breakfast	Owner
AC6	Lusikisiki	Guest House	Owner
NGO1	Bulungula	Backpacker Lodge	Manager
NGO2	Mbizana	Wild Coast Sun Mbizana Development Trust	Committee member
KI1	Gqeberha	International Tourism Consultant	Consultant
KI2	Gqeberha	Nelson Mandela University	Lecturer: Tourism Department

RESEARCH FINDINGS

Taken together the 98 interviews provide the basis for our analysis of the two major themes which are investigated in this paper namely: (1) the characteristics of Black entrepreneurs operating small tourism businesses SMMEs and a profile of their businesses; and (2) the motivations, start-up challenges and organization of these accommodation businesses. These are presented in the following two sub-sections of material and discussion.

The Characteristics of Entrepreneurs and Businesses

The central findings concerning the characteristics of Black entrepreneurs and their businesses confirm those of other recent investigations that tourism small firms in South Africa are not a homogeneous category of enterprises (Rogerson, 2005, 2008; Hlanyane and Acheampong, 2017; Hofäcker and Gebauer, 2021; Booyens et al., 2022; Greene, 2022). Table 2 provides a profile of these entrepreneurs in the Eastern Cape. As is evidenced from Table 2 gender is a defining characteristic of Black-owned SMMEs in the accommodation sector of Eastern Cape with women being the largest group of entrepreneurs for accommodation services. This finding about the dominance of women in accommodation services confirms the results of several other investigations which have explored aspects of the ownership of small accommodation establishments in parts of the Eastern Cape (Hlanyane and Acheampong, 2017; Mdluli, 2020). In terms of age of entrepreneur 85% were over the age of 40 years and nearly one-third were aged more than 60 years.

The results reveal that the cohort of Black entrepreneurs is relatively well-educated with 23% in possession of University postgraduate qualifications and only 5% of the entrepreneurs having no formal education. A significant share of the group of interviewees had obtained diploma qualifications and commented on their usefulness in operating their business: *I would say my degree helped me quite a lot...it helped me because my other major was management, so my degree was economics and management, I would say that management helped the most, in a sense that when you have a*

business you have to market the business, and as part of management they teach about marketing the business' – AC1. Entrepreneurs had various career paths before owning a tourism business. The most common previous occupation linked to education; nearly one-third of the Black-owned tourism businesses were operated by former teachers. Other previous occupations of entrepreneurs were varied and included administration, nursing, government and banking. The cohort of owners also included a former medical doctor, information technology worker, miner, graphic designer, business consultant, and domestic servant. It is observed that only two of the 79 Black entrepreneurs had any prior work experience in the tourism and hospitality sector, one as a travel consultant and the other as a waiter.

For at least one bed and breakfast entrepreneur the experience of previous work in tourism was seen as valuable: 'I had worked at various companies, I worked at Avis, Short Travel, Connects Travel, American Express Travel...and at some point, I got exposure... for instance at Short Travel I was dealing mainly with leisure travellers, then at American Express, I was getting corporate travellers. So I got the exposure of both markets and their behaviours and trends' - AC2. Skills obtained in business work outside tourism (particularly in management) were also highlighted as useful: 'I think the skills I have acquired have assisted me with this business...managing people, working with customers and also control of the business, because it is very important to know what is where' – AC4. From the foregoing it is apparent that skills obtained during previous work experience are valued in running a tourism business. Of particular note by entrepreneurs are skills for managing the business, marketing of the product, confronting complex decisions, and human resource management.

Table 2. Profile of Business Owners (Source: Author Survey)

		Number	Percent
Gender (N=79)	Female	64	81
	Male	15	19
Age (N=78)	< 21 years	0	0
	21 - 30 years	3	4
	31 - 40 years	9	11
	41 - 50 years	25	32
	51 - 60 years	17	22
	Above 60 years	24	31
Education (N=75)	No formal education	4	5
	Not completed University	5	7
	High School	8	11
	Diploma/Degree	40	53
	Postgraduate	17	23
	Others	1	1
Previous Occupation (N=71)	Education	22	31
	Administrator	7	10
	Entrepreneur	7	10
	Nurse	5	7
	Manager	5	7
	Government employees	4	6
	Banking	4	6
	Student	3	4
	Other	14	18

Table 4. Period of Operation (Source: Author Survey)

	Number	Percentage
Years (N=79)	Less than 3 years	8
	4 - 6 years	10
	7 - 9 years	19
	More than 10 years	42

Table 5. Business Motivation (Note: Likert Scale in Degree of Importance 1-5 with 5 Very Important; N=number of responses)

Motivation	1	2	3	4	5	Mean
Economic Freedom (N=78)	1	1	7	14	55	4.55
Opportunity (N=76)	1	3	6	22	44	4.38
Tourism business (N=77)	2	3	11	24	37	4.18
Own boss (N=78)	2	1	11	13	51	4.41
Self-worth (N=78)	5	2	7	18	46	4.26
Lifestyle (N=77)	13	6	11	26	21	3.47
Provide jobs (N=77)	11	8	13	18	27	3.55
Living standards (N=77)	2	4	3	20	48	4.40
Increase income (N=77)	1	1	4	20	51	4.55
Self-employed (N=76)	1	1	4	18	52	4.57
Market demand (N=77)	2	6	13	18	38	4.09

For the majority of respondents (75%) it was revealed that the tourism business is their main source of household income. This said, the majority of entrepreneurs have multiple income streams with supplementary sources of income that include most importantly other businesses and pensions. For the group of entrepreneurs with the accommodation business

Table 3. Characteristics of Enterprises

Characteristic	Number	Percent	
Accommodation Type (N=82)	Bed & Breakfast	36	44
	Guest House	26	32
	Homestay	8	10
	Lodge	4	5
	Hotel	3	4
	Self-catering	2	2
	Backpacker Hostel	2	2
	Camping	1	1
Rooms (N=78)	1 - 5	15	19
	6 - 10	40	51
	11 - 20	15	19
	21 - 30	3	4
	31 - 40	2	2
	41 - 50	3	4
	50+	1	1
Grading (N=79)	1 Star	1	1
	2 Star	3	4
	3 Star	36	46
	4 Star	14	18
	5 Star	0	0
	Not Graded	25	32
Additional Purposes (N=123)	Conference venue	31	25
	Functions/Events	24	19
	Catering	57	46
	None	10	8
	Other	1	1
Employees (N=79)	1 - 5	57	72
	6 - 10	15	19
	11 - 20	3	4
	21 - 30	1	1
	None	3	4

Source: Author Survey Note: No responses for certain categories and multiple responses on additional purposes

Table 6. Source of Start-Up Capital (N=79) (Source: Authors)

	Frequency	Percentage
Own Savings	56	71
Bank Loan	12	15
Friends & Family	8	10
Pension fund	2	2
Government Grant	1	1

as a secondary rather than primary source of household income a similar picture emerges of alternative income sources through the operation of other businesses as well as pensions for the segment of retired entrepreneurs. Stitching together a living from different income sources is therefore a characteristic of these tourism entrepreneurs.

Table 3 provides a profile of the accommodation enterprises operated by Black entrepreneurs in the Eastern Cape. The overwhelming majority (91%) of these accommodation service establishments would be classed as micro-enterprises which in terms of South African official categorizations represent establishments with less than 10 employees (Booyens et al., 2022). These are typically owner-managed bed and breakfast, small guest houses or homestay establishments; 70% of the establishments had less than 10 rooms. In terms of ownership structure the study found that 85 percent were either closed corporations, family-owned or in sole proprietorship.

The group of bed and breakfast enterprises and guest houses are geographically spread throughout the urban centres of Eastern Cape Province. By contrast, the group of homestays are concentrated in Coffee Bay, Port St Johns and Makhanda/Grahamstown. The coastal homestays situated in Coffee Bay and Port St Johns mainly target the market of international backpackers or budget travellers. However, at Makhanda (Grahamstown) the homestays are a provincial government tourism initiative known as Kwam-eMakana which aims to boost the local economy and involve specifically local women entrepreneurs. This initiative allows local women to convert their homes into accommodation establishments and cater for guests, particularly during the National Arts Festival – one of South Africa's largest and most-established cultural festival - held annually in Makhanda (Grahamstown). Other smaller local festivals in the Eastern Cape also have been a stimulus for homestays operated by Black women entrepreneurs. One government official highlighted that at the coastal location of Port St Johns *'There is a festival we do there, Isingqi Sethu. The homestays benefit during that time. So, homestays are also an opportunity in the absence of formal accommodation, you understand'* – GOV1.

In terms of the source market for these Black-owned accommodation enterprises, given that Eastern Cape is the least visited South African province for international tourists, it is not surprising that it is the domestic tourism market that is overwhelmingly dominant. Only one enterprise indicated that international tourists were the mainstay, all others (78 of 79) were reliant on the domestic market, a finding which confirms that of other investigations (Booyens et al., 2022). Of particular note is that a large number of accommodation owners have as their target market the professional or business traveller, many of them government officials. Some respondents explicitly highlighted that they prefer corporate travel rather than government clients because of delayed payment issues with the government. Several businesses host guests who come for government-related work to attend workshops or meetings. Enterprises situated in close proximity of urban centres such as East London or King Williams Town/Bisho (where the Eastern Cape provincial administrative head offices are located) enjoy the greatest opportunities for business tourists. In terms of leisure travel the owners acknowledged there are only limited flows. It was disclosed that many leisure visitors travel during weekends and often for events such as weddings, funerals, traditional ceremonies as well as to visit friends and family. Table 3 shows most of these small accommodation businesses seek to generate additional income beyond accommodation services through sources such as hosting conferences/meetings and in particular by undertaking catering; 79% of the enterprises undertook catering and 39% provided a conference/meetings venue.

The grading of establishments was highlighted by several respondents as a significant business development issue. Two-thirds of the establishments were graded - mostly a 3-star rating - with the ungraded establishments mainly the homestays and establishments located in rural or township areas. Asked to reflect on the grading process a small town guest house owner stated as follows: *'The establishments has to be graded, even if it is a 1 star, it has to be graded, there is a grading facilitator that normally comes once a year, usually around September, she comes and grades us...but there is a fee that you pay it is an amount of R 3 600 that you pay to the grading council, you pay and they come and grade you'*. – AC6. As part of the government's development initiative, the owners are encouraged to contact government offices for advice prior to opening an accommodation business. As remarked by one of the officials, *'We would say if you have an intention to open a tourism business come to us first during the conceptualisation stage so that we are able to take you through the criteria and the requirements'*. – GOV5. The importance of grading is that it offers an opportunity for the establishment to be included within the government's procurement database for market access. This was confirmed in an interview conducted with one of the government officials *'...more than anything, it is how they continue to gain access to tourism development support and access to market opportunities...all the graded establishments, some of the standards they meet, we try to make sure they do not lose those standards and then we give them direct access to the market'* – GOV3. Another government official clarified that *'They must be graded...they won't get support from the government if they are not graded'* – GOV7.

Table 4 shows that the largest share of businesses have been long-established: 53 % of entrepreneurs have owned their business for more than 10 years and three-quarters for more than 7 years. Beyond a response to transformation initiatives and opportunities there is an additional aspect to establishing these businesses corresponding to the 2010 FIFA World Cup time frame when many Black entrepreneurs in the Eastern Cape, as in other areas of South Africa, opened up accommodation businesses in the expectation of hosting guests and to generate income in relation to that mega-event. Further details about business start-up are the focus of attention in the following sub-section of discussion and analysis.

The Establishment and Organization of Businesses

The findings concerning the motivation for entrepreneurs to start up a tourism accommodation business and the issues around business start-up provide parallels with findings reported in the Global North. The reasons for the establishment of small firms and entrepreneurship in tourism have been reviewed in a variety of contexts (Page et al.,

1999; Thomas, 2004; Ateljevic and Doorne, 2007; Thomas et al., 2011; Yachin, 2020). Building upon this international literature the motivations for the start-up of an accommodation business by Black entrepreneurs in the Eastern Cape were examined for 11 factors using a Likert scale. The results are captured in Table 5.

The findings on Table 5 indicate several reasons for tourism entrepreneurship in the context of the Eastern Cape. The leading factors related to a desire for self-employment (score 4.57), economic freedom (4.55), to increase income/living standards and to be one's own boss. Of note also is that entrepreneurs were motivated by opportunistic reasons (score 4.38) in terms of identifying a business opportunity in the accommodation services sector. By contrast the factors which score the lowest ratings significantly relate to the provision of jobs (3.55) and lifestyle considerations (3.47). Arguably, in the resource-scarce context of the Eastern Cape economic and financial considerations were paramount for the launch of tourism businesses and often with the desire to create revenue and attain financial security to support families. In relation to such considerations the qualitative interviews provided further insight. In one of the semi-structured interviews it was indicated *'I opened the business to help the family, the kids of my brother. It took them to school, they graduated and now they are working'* – AC6. The issue of financial security was also a motivating factor among the respondents: *'I asked myself what I am going to do when I retire. I have to find something to feed myself and my children, build my own legacy not to depend on anything but yourself, like be an independent woman'* – AC6. The idea of building a legacy was a motivating factor amongst several entrepreneurs. A Bisho guest house owner asserted: *'I want to leave a legacy for my kids and I think when my kids grow up, I want them to be involved in the business as well'* – AC1.

The research discloses that 'self-development' and 'independence' were also prominent motivations and the idea of being one's 'own boss' suggests that entrepreneurs seek a sense of independence and self-reliance. The notion of wanting to recognise 'self-worth' suggests that business owners are influenced by commercial reasons as well as to fulfil personal desires and goals. One bed and breakfast entrepreneur affirmed as follows: *'I am at developing stage and when the business is ready, everything running smoothly with or without me and then I can also have time for myself to pursue other developments that I want'* – AC2. The respondent's sense of freedom and the notion of being able to make their own decisions was of high relevance as well as the freedom created an opportunity for the entrepreneurs to be able to attend to their personal family matters. A guest house operator expressed that *'I wanted to be around my dad because my dad is not well, so that was another motivating factor for me'* – AC1. Likewise an East London-based owner mentioned *'I felt that if I could do something where I am my own boss and I could succeed'* – AC4.

The availability of certain resources was a motivating factor for certain respondents, particularly the availability of a property. Many accommodation providers converted already existing homes into accommodation establishments. In addition, some entrepreneurs were motivated by identifying a lack of accommodation facilities in their area and responded to market demand. It was commented *'My mom had started this B&B and it was very informal because she used to get clients from that lady that runs a B&B in King Williams Town, so whenever that lady got an overflow then people would come here and sleep here...I looked at this and said to myself instead of going to Johannesburg and looking for a job maybe I could take over this business. I looked at the figures and the figures even motivated me more'* – AC1. In addition a bed and breakfast owner in East London asserted *'When we bought this house, we realised that it has a lot of potential for development because there was already an existing building that is here...the idea came that let us make a B&B because there are these rooms here that we have made and we do not know how to utilise them'* – AC3. Overall, the above findings from a 'resource-scarce' environment in the Global South offer a contrast to works in the Global North which stress the weight of lifestyle considerations in tourism entrepreneurship and especially in rural and marginal areas (see Yachin, 2019, 2020).

The sources utilised for the start-up of a tourism business in the Eastern Cape exhibit certain parallels to findings in the international mainstream writings on small firms in tourism (Thomas, 2004; Yachin, 2019) as well those in the resource-constrained environments of sub-Saharan Africa (Mensah-Ansah, 2014; Ngoasong and Kimbu, 2019; Mantey, 2021). Table 6 captures the findings from the Eastern Cape.

In terms of acquiring capital for business start-up 71% of the entrepreneurs used their personal savings to fund the business. Other notable sources were assistance from friends and family: *'The capital I received from mom and dad'* – AC1. This was also flagged in another interview where the owner was asked about start-up financing: *'I had to ask some family members to help me, so I would ask some of them to invest in me...and so my mom played a big role, because she took all the investments and assisted me to do the business. It was mainly from family members and also some of the money I had saved'* – AC2. Formal financing sources such as bank loans were a factor for only 15% of the surveyed entrepreneurs. As a whole, these results concerning source of start-up capital and most especially a heavy reliance on own savings exhibit commonalities with those recorded in both the contexts of Global North and Global South.

In terms of how to start a sustainable small tourism business, information access is of concern among entrepreneurs. The majority of respondents (87%) indicated that as part of their business development they search for information (Table 5.7). The leading sources for information were local networks such as friends, family and other business owners; the internet and government were secondary sources. One East London respondent indicated as follows: *'I do my own research online and also with other people that own guesthouses. I also think people try to give you advice for instance the mistakes they made when they started out and those kind of things...I felt that it is important to consult with whoever I know to get whatever hints that can help me along the road'* – AC4. In many contexts it is stated that accommodation enterprises have 'low barriers to entry' and that it is therefore relatively easy to enter into a tourism accommodation business. When questioned about ease of entry two-thirds of Black tourism SMME entrepreneurs in the Eastern Cape, however, indicated it was not easy to enter into the business. Among the major barriers to entry was funding or capital to start the business (62% of the respondents); other challenges related to bureaucracy and municipal laws, existing

competition, a lack of business knowledge and the registration process of an enterprise. Regarding ease of entry the view was expressed that *'It was not easy to start this business, specifically because of the financial part and secondly the inadequacies of the municipality...We had problems with health department and problems with fire extinguishers...There were inspectors, when you start a business they come and inspect...you have to have a health certificate, something from health that says that your facility is fine. You have to have someone from the fire department that says your place is also fine'* – AC3. The difficulties for entry were particularly acute facing women entrepreneurs who indicated that they were alone when they entered the business and had multiple roles to play. Another typical response confirmed the difficulties of Black entrepreneurs entering the local tourism accommodation sector: *'No it is not easy because you have to be the owner, the marketer, I have to help cleaning and do everything alone'* – AC5.

A critical aspect for tourism business development is marketing. The survey probed how respondents marketed their establishment. Table 8 summarises the results.

Table 7. Information Access (Source: Authors)

		Number	Percentage
Seeking information (N=79)	Yes	69	87
	No	10	13
Source (N=76)	Friends & Family	24	31
	Other business owners	18	24
	Internet	7	9
	Government Agent	6	8
	Customers	2	3
	Others	19	25

Table 9. Use of Information Technology (Source: Author Survey) Note: Respondents give more than one method

Application	Number	Percentage
Bookings	54	68
Marketing	38	48
Feedback	29	37
Storage	26	33
Correspondence	26	33
Ordering	15	19
Other	1	1

their effort to drive word of mouth for promoting the business: *'You know what is helping a lot in marketing is that you start by having that first group that is coming to your business and you make sure that those people are satisfied and are served well. Those people, they go out and tell others about your establishment'* – AC6.

One method of marketing was door-to-door campaigns which involved the owners of the establishments visiting various government departments in order to introduce their accommodation establishments. Several owners mentioned that they made use of this method: *'I use different strategies for promotion. I mean I go to government departments and issue brochures and my business card. I will go to the Department of Transport and introduce myself and my Bed and Breakfast, and I say please if you have people send us some guests, and I enquire who they are using and why they are using that person, did they use us before, and did they encounter any problems...I enjoy the personal selling because people want to ask questions and then I answer them. They will ask the type of meals I offer, about the rooms I have and stuff like that'* – AC1.

Other marketing strategies involve attendance at exhibitions, particularly the Tourism Indaba in Durban: *'The government pays for everything such as accommodation, meals, and transport to go there and you just go with your product and show people...You tell people about your accommodation establishment, tell them where it is situated, about the safety and security, you mention all the facilities you have in your business...it helps a lot the Tourism Indaba'* – AC6. Beyond the mainstay of the domestic market some entrepreneurs sought to reach out to international tourists: *'I mean you go to presentations at embassies. I remember going to this one presentation at the German embassy'* – AC1.

The use of information technologies is critical for entrepreneurs operating accommodation businesses. Table 9 evidences that the most common use of such technologies is for bookings, marketing and receiving feedback from customers. Several entrepreneurs highlighted their use of social media platforms as digital marketing tools; usually this involved using Facebook and Twitter to showcase and advertise the business. One of the owners gave an example of how the use of social media has been effective for their business *'I opened a Twitter account and there was the Iron Man event that January. I covered Iron Man live and I got a lot of international people'* – AC3.

With respect to customer feedback for improving the service aspects of the business it was stressed as follows: *'Communicating with guests and getting feedback is important, like we have got TripAdvisor, for feedback and we always ask guests Did you sleep well? How was your stay? Did enjoy your stay? That kind of thing'* – AC4.

Business networks and networking are key elements in the operations of small businesses and viewed as critical for product development. In tourism literature, networks are seen as useful for tourism small firms and can contribute to survival and competitiveness (Yachin, 2019, 2020). The Eastern Cape survey revealed that the strongest collaborations were formed with other accommodation businesses (77%) and travel agencies and tour operators (71%). The benefits of

Table 8. Marketing of Accommodation Businesses (Source: Authors; Note: Respondents give more than one method)

Method	Number	Percentage
Word of mouth	70	89
Travel agency	54	68
Brochure	39	49
Own website	36	46
Social media	35	44
Guide books	24	30
Government website	8	10
Newspaper	4	1
Other	10	13

It is evident that the most common channels for marketing are through word-of-mouth, use of travel agencies, brochures, social media and website. The findings signal that most marketing is based on low cost techniques such as word of mouth. The accommodation owners maintained their word-of-mouth strategy by providing quality service and attending to customers' needs. The Lusikisiki guest house respondent stressed

collaboration relate to sharing of guests and information. The benefits of participating of networking and collaboration were evidenced in the qualitative interviews: “*Networking, as much as your product might be good you need to have people that you work with. You have to build relationships with them, so my manager does a very good job of that so the consultants know us and think of us when something comes up*” – AC4. Being part of a network or association was also viewed as important in presenting ‘one voice’ particularly when businesses want to engage with government. The government officials further stressed the importance of small entrepreneurs organising in a collective forum: “*The purpose of the forum was to bring the businesses together, so that whenever they speak, they speak in one language. You know the way the government works...it is difficult for the government to support one person. So, it is better when they come as a collective under an umbrella like a forum. So, what we suggest to them, form this forum, so whatever challenges you may have in terms of your businesses*” – GOV2. The interviews revealed that government officials encourage a culture of networking: “*We have got a tourism forum where we invite tourism associations, tourism businesses and the municipality. We share general information about tourism and we get to understand what their issues are.*” – GOV5.

Yachin (2021: 319) argues that for tourism small firms in rural areas “networks constitute a potential to pursue opportunities and compensate for lack of resources, missing skills and relevant education”. This said, it is known that networks are complex structures and can be influenced by many factors, such as trust, that determine their survival over time (Chell and Baines, 2010). Some government officials recognise the dynamics that take place within the structures and entail issues such as misunderstandings and disagreements amongst members. For example, one respondent stated “*There are associations even in Mthatha, there is one in Port Elizabeth, they do form, others clash, it is that competition I was telling you about, some get more business than others*” – GOV7. Also, from a local municipality point of view it was acknowledged by another official that “*To build relationships there is always a challenge, but we try to facilitate programmes to get them united and encourage unity*” – GOV8. Overall, the evidence from the Eastern Cape points to the finding that historically disadvantaged groups, such as these emerging black entrepreneurs, are compelled by their circumstances and common challenges in resource-scarce contexts to group themselves together. Collaborations are formed based on challenges that these peripheral entrepreneurs face in part as a consequence of a historical legacy of exclusion.

CONCLUSION

Small tourism firms are critical change agents for destinations, local economic development and poverty reduction in peripheral regions. The South African case study reveals that in Eastern Cape province women own the majority of Black small accommodation businesses which are a focus for national government initiatives for transformation. Most of these owner-managed businesses are bed and breakfasts or small guest houses for which the major clientele is business tourists as a whole and government employees in particular.

The majority of businesses are well-established, operating for more than a decade with many having their origins in the expectations raised for tourism entrepreneurs by South Africa’s hosting in 2010 of the FIFA Soccer World Cup. An important finding is that motivations for entrepreneurial start-up are driven not by lifestyle considerations but primarily for business-related and market opportunity reasons.

Start-up challenges of these enterprises in relation to finance, information access and marketing show parallels to tourism small business entrepreneurs in the Global North. Networking emerges as an important business strategy for these peripheral entrepreneurs to address the local challenges of business development. Overall, this study provides original findings and fresh insight into a segment of peripheral entrepreneurs operating in a resource-scarce context.

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SPATIAL CHARACTERISTICS OF EU-FUNDED TOURISM INVESTMENTS IN THE NORTHERN GREAT PLAIN REGION (HUNGARY) IN THE 2014-2020 BUDGET PERIOD

Zoltán BADAR 

University of Debrecen, Faculty Department of Social Geography and Regional Development Planning, Debrecen, Hungary, e-mail: badzol1990@gmail.com

Gábor KOZMA * 

University of Debrecen, Faculty Department of Social Geography and Regional Development Planning, Debrecen, Hungary, e-mail: kozma.gabor@science.unideb.hu

Bence MONYÓK 

University of Debrecen, Faculty Department of Social Geography and Regional Development Planning, Debrecen, Hungary, e-mail: bence.monyok@gmail.com

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Abstract: The aim of this paper is to present the territorial characteristics of explanation of European Union funding for tourism-related developments in the Northern Great Plain region (Hungary) in the 2014-2020 programming period of the European Union. We relied fundamentally on the website “palyazat.gov.hu” as our source, which provides information on the number of grant applications submitted and those that were successful. There are very significant differences between counties and settlements in terms of the application activity and the focus of the applications. Firstly, the specificities of the counties that make up the Northern Great Plain region had a significant impact on the region’s performance in case of national-level projects. Secondly, hand the influencing factors include the commitment of the leaders of the individual counties and settlements to tourism, the impact of the conditions set out in the calls for applications, as well as the role of political lobbying.

Key words: European Union, Northern Great Plain region, tourism, investments, settlements

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INTRODUCTION

Today, tourism is one of the fastest growing and highly diversified sectors of the economy (Drotár and Kozma, 2021a; Drotár and Kozma, 2021b; Klamár and Kozon, 2022; Mátyás et al., 2022; Tóth et al., 2022), despite the downturn caused by the Covid-19 pandemic (Škare et al., 2021; Pramana et al., 2022; Roman et al., 2022). However, achieving a competitive edge in the international arena requires constant innovation on the part of all players. To this end, priority investments (so-called flagship developments – see Kozma, 1995; Kozma, 2010; Kozma et al., 2014; De Frantz, 2018; Sochacka and Rzeszotarska-Pałka, 2021; Nod and Aubert, 2022) increase the attention of the wider public toward a given region/settlement, and tourism-related developments in rural areas play an important role in the economic diversification of the areas concerned (Rytkönen and Tunón, 2020; Tătar et al., 2020; Terzi et al., 2020; Nooripoor et al., 2021; Gorjanc et al., 2022; Ospanova et al., 2022; Plokhikh, 2022). At the same time, tourism can also be regarded as a high-risk economic sector: natural (e.g. volcanic eruptions – Medeiros et al., 2021; earthquake – Huang and Min, 2002; the rise in temperature caused by global warming – Carrillo et al., 2022) and socio-political (e.g. epidemics – Ambaw et al., 2022; Choe et al., 2021; Fekete-Fábián and Jánosi, 2022; Imeri and Gil-Alana, 2022; Ozbay et al., 2022; political instability – Omer and Yeşiltaş, 2020; Sass, 2020; Shaari et al., 2022) events have a major impact on the situation of tourism operators and thus on the regions that rely on the sector. As a result, the various players (businesses, local authorities), in order to reduce the risk of the investments made, are seeking to use, in addition to their own financial resources, also public funding (Ballesteros and Hernández, 2019; Jarábková, 2016; Kumar, 2020), which may come from the central budget of the given country or also from outside the country (e.g. from the European Union). Researches analysing the use of EU funds can basically be divided into two major groups: on the one hand, it has sought to identify the impact of the financial supports and, on the other, it has examined their territorial characteristics.

The studies in the first group showed, among other things, that for Objective 1 regions, funds mainly contributed to employment growth and less to income growth. A further problem was that the positive effects of cohesion funds were short-lived, and their impact diminished considerably during the crisis in the second half of the 2000s (Becker et al., 2018).

Secondly, it has been found that there is no clear link between the effectiveness of regional policy and the amount of funds received (Di Caro and Fratesi, 2022): in the Mediterranean (e.g. Spain, Italy, Greece) and in several regions of several Central European countries (e.g. Hungary, Romania, part of Poland), it has been shown that a significant amount of

* Corresponding author

financial supports was not associated with a positive growth effect. In contrast, regions in Germany and France that received little funds were able to show significant growth. An important conclusion of the analyses was the distinction between old and new Member States (Vedrine and Le Gallo, 2021), which showed that in the latter region, while Structural Funds had a positive impact on economic growth, it contributed to widening regional disparities (Medve-Bálint et al., 2022).

Among the results of the research on the regional characteristics of European Union subsidies in Hungary, the following can be highlighted. On the one hand, natural conditions were an important determinant for renewable energy sources (Badar and Kozma, 2021), and there were significant differences between the different Operational Programmes (Territorial and Settlement Development Operational - regional decentralization, Environment and Energy Efficiency Operational Programme - regional concentration). In the case of subsidies for economic development (Badar and Kozma, 2020), the impact of the size of settlements (smallest settlements were in an unfavourable position), the favourable position of district seats and the role of the socio-economic situation of settlements (more unfavourable position of less developed settlements - lower success rate of subsidy applications) were identified. The very significant role of tourism potential and the moderate role of the socio-economic situation (degree of underdevelopment) were important research findings in the case of tourism subsidies (Gyurkó, 2000). The study focusing on the Lake Balaton region (Horváth and Alpek, 2020) also revealed significant spatial differences, which were due to natural reasons: settlements closer to the lake were able to obtain much higher subsidies than the so-called background settlements, with the exception of Zala County with its significant health tourism centres (e.g. Hévíz, Kehidakustány and Zalakaros). The conditions for the use of European Union development funds available for tourism development in Hungary in the period 2014-2020 are regulated by three operational programmes: GINOP (Economic Development and Innovation Operational Programme), Rural Development Programme (VP) and Territorial and Settlement Development Operational Programme (TOP).

Priority axis 7 of GINOP (Economic Development and Innovation Operational Programme) included ideas for the development of tourism, with the following four priority areas:

- Network-based thematic development of natural and cultural heritage sites of national and international importance
- The development of attractions of international importance ("magnets"), which attract new target groups and reduce the territorial concentration of tourism.
- Experience-centred presentation of natural values as tourist attractions.
- The creation of an internationally competitive environment and offering for spas.

Sub-measure 4 (Support for investment in the creation and development of non-agricultural activities) of measure 6 (Development of agricultural holdings and enterprises) of the Rural Development Programme (VP) aims to develop tourism. This sub-measure considered tourism as a means of diversifying economic activity in rural areas and, in this respect, gave priority to the development of new places of accommodation and the expansion of existing capacities in the countryside.

Measure 2 (Socially and environmentally sustainable tourism development) of Priority axis 1 (Development of the regional economic environment to promote employment) of the Territorial and Settlement Development Operational Programme (TOP) also dealt with tourism and focused on the development of tourist attractions of regional importance, which are mainly owned by settlements.

Of the three operational programmes, the calls for applications launched by GINOP and VP were open to applications from all over the country, and so applicants in the region faced a strong competition. By contrast, in the case of TOP, the amounts available for tourism development were determined at county level (these were contained in the County Integrated Programmes adopted by the County Assembly) and, as a result, only operators from the settlements of the county concerned were allowed to submit applications. Within TOP, there was a separate category for the county seats, which received separate development funds under priority axis 6 of the operational programme, and so in their case there was no competition.

In this context, the aim of this paper is to present the territorial characteristics of European Union funding for tourism-related developments in the Northern Great Plain region (Figure 1) one of the least developed regions of Hungary, in the 2014-2020 programming period of the European Union. In the framework of the above, we will highlight the situation of the region and the counties that it includes, and the differences between the individual settlements. We want to answer, among others, the following questions:

- what differences exist at regional and county level in terms of application activity for each operational programme?
- what differences can be observed between municipalities in terms of application activity and winning rates?
- what factors are responsible for the differences and which characteristics of the counties influence them?

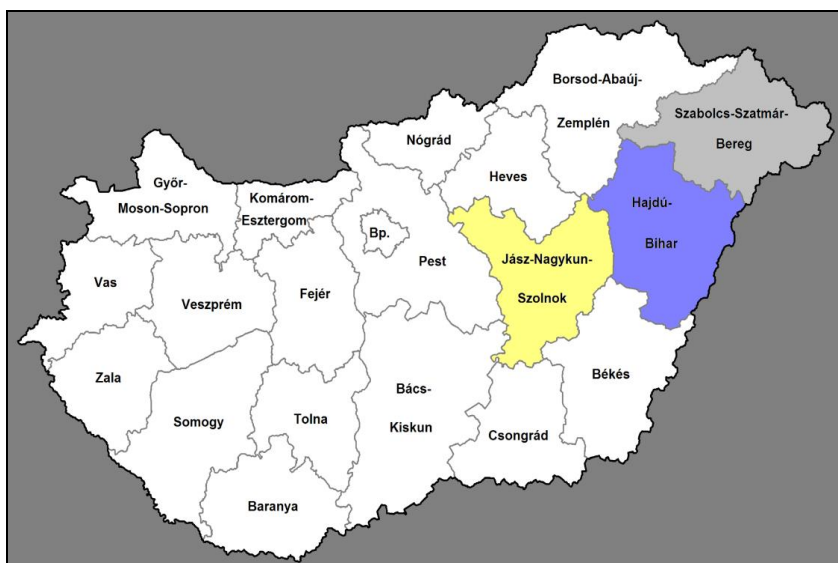


Figure 1. Location of the Northern Great Plain region in Hungary and the counties that make up the region (Source: own work)

MATERIALS AND METHODS

In the course of writing this paper, we relied fundamentally on the website “palyazat.gov.hu” as our source, which provides information on the number of grant applications submitted and those that were successful, as well as the amounts of aid applied for and granted, in a breakdown according to county. On the other hand, it also provides information on which the settlements with winning applications were, what the total amount of the awarded grants and projects was, as well as on the implementation process. In addition to the above, we also used information from the website of the Central Statistical Office of Hungary (KSH), which provided data on the population of each settlement. On the other hand, it also provides information on which the settlements with winning applications were, what the total amount of the awarded grants and projects was, as well as on the implementation process. In addition to the above, we also used information from the website of the Central Statistical Office of Hungary (KSH), which provided data on the population of each settlement.

Two things can be mentioned as shortcomings of the databases. On the one hand, only county-level data were available for the applications submitted, so we were not able to carry out analyses at the level of municipalities. On the other hand, the expenditure for the budget period in question was not yet fully recorded in the information system and therefore not enough information was available on which funded projects had been implemented and how much was actually spent.

In the course of the processing of the data, we relied on the possibilities offered by Excel and various statistical programs (e.g. SPSS). In this way we compared the data of the three counties to the national values, and with the use of various statistical indicators (ratios, relative values) to identify differences within the counties (Figure 2).

RESULTS AND DISCUSSION

When analysing the grants announced for the whole country, the picture is mixed for the Northern Great Plain region. In the case of GINOP (Table 1), which mainly supports the development of tourist attractions of national importance, the region’s application activity was slightly lower than the national average, and this was also observed for the individual counties. The reason for this, in our opinion, is that the region has only limited attractions that would appeal to more tourists, even from abroad, and would therefore need to be developed. The rest of the table shows more or less the same picture: the region is close to the national average, with Jász-Nagykun-Szolnok County having the worst figures, while the other two counties are in a better position. The situation is different for the tourism-related grant applications supported under VP, but essentially positive (Table 2) the region scores better than the national average for almost all relative indicators, which we believe is due to two factors. Firstly, the economic structure of the region should be mentioned: both in terms of gross value added and the employment structure, agriculture in the North Great Plain region has higher values than the national figure (Table 3), and since rural tourism, which is a priority in the context of the grant, is closely linked to this economic sector, the region’s high values cannot be considered a coincidence.

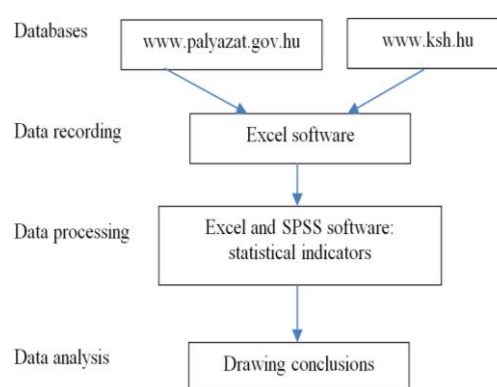


Figure 2. The methodology used to prepare the article (Source: own work)

Table 1. The situation of the Northern Great Plain region for the GINOP Priority 7 funding schemes in the 2014-2020 budget period (Source: own work relying on the website “palyazat.gov.hu”)

	Hajdú-Bihar County	Jász-Nagykun-Szolnok County	Szabolcs-Szatmár-Bereg County	Northern Great Plain region	Hungary
number of applications submitted (pieces)	8	3	9	20	164
application activity (applications submitted per 100,000 inhabitants)	1.50	0.80	1.60	1.36	1.67
number of winning applications (pieces)	5	1	6	12	102
winning rate (%)	62.5	33.3	66.7	60.0	62.2
amount of aid applied for (billions HUF)	11.83	2.88	9.73	24.44	200.74
amount of aid granted (billions HUF)	8.31	0.40	6.73	15.44	136.97
winning rate (%)	70.3	13.9	69.2	63.2	68.2
the amount per winning application (million HUF)	1,662	400	1,121	1,286	1,342

Table 2. The situation in the Northern Great Plain region for the VP-6.4.1. funding scheme in the 2014-2020 budget period (Source: own work relying on the website “palyazat.gov.hu”)

	Hajdú-Bihar County	Jász-Nagykun-Szolnok County	Szabolcs-Szatmár-Bereg County	Northern Great Plain region	Hungary
number of applications submitted (pieces)	110	48	298	456	1,401
application activity (applications submitted per 100,000 inhabitants)	20.7	12.8	53.0	31.1	14.3
number of winning applications (pieces)	47	20	141	208	577
winning rate (%)	42.7	41.7	47.3	45.6	41.2
amount of aid applied for (billions HUF)	4.65	1.90	12.70	19.25	56.36
amount of aid granted (billions HUF)	2.10	0.90	6.03	9.03	23.72
winning rate (%)	45.3	47.1	47.4	46.9	42.1
the amount per winning application (million HUF)	447.6	448.4	427.4	434.0	411.1

Table 3. The role of the agriculture, forestry and fishing sector in the Northern Great Plain region based on different indicators (%) (Source: own work relying on the website “ksh.hu”, 2020 – Dissemination database, 2016 – microcensus)

	Hajdú-Bihar County	Jász-Nagykun-Szolnok County	Szabolcs-Szatmár-Bereg County	Northern Great Plain region	Hungary
share of gross value added (2020)	10.31	8.22	10.19	9.72	4.02
share of the workforce (2016)	7.55	7.07	6.00	6.84	4.59

Another important factor, which explains the high values of Szabolcs-Szatmár-Bereg County in particular, is the characteristics of settlements (Table 4). An important characteristic of the county is the high number of settlements, which results in a low average population and a very high density of settlements. In the case of rural development tenders, preference was given to settlements with a smaller population (settlements with more than 10,000 inhabitants were only exceptionally eligible), which explains the good performance of the county's settlements. Looking at the success of individual settlements in the counties (Table 5), a double picture emerges: there are not very large differences in the overall number of applications, but there are significant differences between the individual operational programmes. For the reasons mentioned above, Hajdú-Bihar and Szabolcs-Szatmár-Bereg counties had higher-than-average scores for GINOP and VP, while the same is true for Jász-Nagykun-Szolnok County for TOP (the reasons will be discussed a little later).

Table 4. The characteristics of settlements in the Northern Great Plain region in 2017 (Source: own work relying on the website “ksh.hu”)

	Hajdú-Bihar County	Jász-Nagykun-Szolnok County	Szabolcs-Szatmár-Bereg County	Northern Great Plain region	Hungary
number of settlements (pieces)	82	78	229	389	3,155
average population of the settlements	6,493	4,790	2,454	3,774	3,105
number of settlements per 1000 km ²	13.2	14.0	38.6	21.9	33.9

Table 5. The success rate of county settlements in tourism-related projects in the different operational programmes in the 2014-2020 budget period (percentage of winning applications by settlements in the given county - %) (Source: own work relying on the website “palyazat.gov.hu”)

	GINOP	VP	TOP	all applications
Hajdú-Bihar County	3.7	35.4	13.4	43.9
Jász-Nagykun-Szolnok County	1.3	16.7	30.8	37.2
Szabolcs-Szatmár-Bereg County	2.6	37.6	5.2	40.6
Northern Great Plain region	2.6	32.9	12.1	40.6

Looking at TOP, the more favourable indicators of Jász-Nagykun-Szolnok County can be highlighted (Table 6): this county had the highest application activity, the highest winning rate and the highest grant per inhabitant. This is most likely due to the fact that the county's leaders were aware that the less favourable conditions would allow the county to compete less successfully in the nationally competitive GINOP and VP tenders, and therefore provided more substantial support for tourism development, which among other things led to higher application activity.

Table 6. Characteristics of the Territorial and Settlement Development Operational Programme in the Northern Great Plain region in the 2014-2020 budget period * the analysis does not include the county seats, as these settlements had dedicated resources (i.e. they did not have to compete with other settlements) (Source: own work relying on the website “palyazat.gov.hu”)

	Hajdú-Bihar County	Jász-Nagykun-Szolnok County	Szabolcs-Szatmár-Bereg County	Northern Great Plain region
number of applications submitted (pieces)	32	39	28	99
application activity (applications submitted per 100,000 inhabitants)	6.01	10.44	4.98	6.74
number of winning applications (pieces)	14	29	12	55
winning rate (%)	43.8	74.4	42.9	56.5
amount of aid applied for (billions HUF)	8.37	10.31	13.88	32.53
amount of aid granted (billions HUF)	4.34	7.58	9.69	21.63
winning rate (%)	52.4	73.5	69.8	66.5
the amount per winning application (million HUF)	8,205	20,287	17,233	14,736

When analysing the situation within the counties, in most cases only the TOP and VP grants were examined, as the low number of applications for GINOP would not always have allowed for drawing sound conclusions. In terms of the size of the settlements in which grants were awarded (Table 7), there were very significant differences between the two operational programmes: in the case of the VP, smaller settlements dominated, for two reasons. Firstly, as mentioned above, the call for applications stipulated that applications from settlements with populations of more than 10,000 could only be submitted in exceptional cases, and secondly, the creation/development of rural accommodation, which was considered as the main objective, was also mainly concentrated in smaller settlements.

By contrast, in case of TOP, the domination of larger settlements can be observed. In terms of the distribution of winning applications by county and by size of settlement (Table 9), the main effect is due to the characteristics of the settlements. Szabolcs-Szatmár-Bereg County is characterised by a predominance of smaller settlements (less than 2,000 inhabitants): the share of these exceeds 70%, compared to around 50% in the other two counties. By contrast, both Hajdú-Bihar and Jász-Nagykun-Szolnok counties have an above-average proportion of settlements with larger populations.

Table 7. Distribution of winning grant applications by settlement size in the Northern Great Plain region for the 2014-2020 programming period for VP and TOP (%) (Source: own work relying on the website "palyazat.gov.hu")

number of inhabitants	Rural Development Operational Programme	Territorial and Settlement Development Operational Programme
less than 1,000	22.3	5.6
1,000 - 2,000	23.3	9.9
2,000 - 5,000	33.5	19.7
5,000 - 10,000	13.6	16.9
10,000 - 50,000	4.4	23.9
more than 50,000	2.9	23.9
total	100.0	100.0

There were significant differences in the size of the winning applications between the three operational programmes (Table 8). In the framework of the GINOP programme, as mentioned above, the creation/development of attractions of national importance was the main focus, requiring substantial amounts of investment. By contrast, the development of accommodation facilities, which is in the focus of the VP grants, was concentrated mainly in smaller settlements, where it was not practical and efficient to carry out larger-scale and therefore more costly investments. The effect of the size of the settlements is only discernible in the case of VP: in case of settlements with larger populations, investments requiring higher amounts of aid were most likely made because of the need for own financial resources and the greater potential opportunities.

Table 8. The average size of winning grant applications in settlements of different sizes in the Northern Great Plain region for the 2014-2020 programming period for VP and TOP (Source: own work relying on the website "palyazat.gov.hu")

number of inhabitants	Rural Development Operational Programme	Territorial and Settlement Development Operational Programme	Economic Development and Innovation Operational Programme
less 1,000	40.58	341.5	n.e.
1,000-2,000	42.18	280.6	n.e.
2,000-5,000	44.03	410.4	n.e.
5,000-10,000	46.01	361.1	n.e.
10,000-50,000	47.07	457.6	n.e.
more 50,000	46.38	872.6	n.e.
Northern Great Plain region	43.30	507.4	1,275.0

n.e. – not interpretable due to the low number of elements

Table 9. The share of settlements of different sizes in the population of the county in 2017 (%) (Source: own work relying on the website "ksh.hu" - Dissemination database)

number of inhabitants	Hajdú-Bihar County	Jász-Nagykun-Szolnok County	Szabolcs-Szatmár-Bereg County	Northern Great Plain region
less than 1,000	24.4	20.5	41.0	33.4
1,000 - 2,000	24.4	29.5	30.1	28.8
2,000 - 5,000	25.6	23.1	22.3	23.1
5,000 - 10,000	14.6	16.7	3.9	8.7
10,000 - 50,000	9.8	9.0	2.2	5.1
more than 50,000	1.2	1.3	0.4	0.8
total	100.0	100.0	100.0	100.0

In light of the above, it is not surprising that in the case of the Rural Development Operational Programme (VP), the share of successful applications from settlements with less than 2,000 inhabitants was very high (Table 10), above 50%. In Jász-Nagykun-Szolnok County, the scores were particularly high for settlements with 2,000 to 5,000 inhabitants, mainly due to the fact that Abádszalók, one of the centres of tourism at Lake Tisza, performed exceptionally well. In the case of Hajdú-Bihar County, the proportion of winning grant applications from settlements with larger populations is surprisingly high, mainly due to places of accommodation being built on the outskirts of the settlements concerned (e.g. Berettyóújfalu, Debrecen).

Table 10. Distribution of winning applications by settlement size in each county of the Northern Great Plain region for the 2014-2020 programming period for VP (%) (Source: own work relying on the website "palyazat.gov.hu")

number of inhabitants	Hajdú-Bihar County	Jász-Nagykun-Szolnok County	Szabolcs-Szatmár-Bereg County	Northern Great Plain region
less than 1,000	12.5	9.6	26.8	22.3
1,000 - 2,000	12.5	19.0	26.9	23.3
2,000 - 5,000	27.5	52.4	32.4	33.5
5,000 - 10,000	27.5	19.0	9.0	13.6
10,000 - 50,000	15.0	0.0	2.1	4.4
more than 50,000	5.0	0.0	2.8	2.9
total	100.0	100.0	100.0	100.0

In case of TOP (Table 11), all three counties are characterised by the very good performance of settlements with larger populations (more than 10,000 inhabitants), the reasons for which have been discussed above. Nyíregyháza has a particularly high score in this category (10 of the 23 winning applications in the county are linked to the county seat),

which is the result of the intention to develop the complex, multi-element Sóstófürdő area, located in the north of the settlement and offering a wide range of recreational activities (Open Air Museum, Aquarius Experience and Park Bath, Zoo). In the group of settlements with 5,000 to 10,000 inhabitants, Hajdú-Bihar County has very high values compared to the other two counties, with strong lobbying activities by the mayors of some of the settlements (e.g. Vámospércs, Nyíradony) in this group.

Table 11. The distribution of winning applications by size of settlement in each county of the Northern Great Plain region for TOP in the 2014-2020 programming period (Source: own work relying on the website "palyazat.gov.hu")

number of inhabitants	Hajdú-Bihar County	Jász-Nagykun-Szolnok County	Szabolcs-Szatmár-Bereg County	Northern Great Plain region
less than 1,000	0.0	6.5	8.7	5.6
1,000 - 2,000	5.9	12.9	8.7	9.9
2,000 - 5,000	5.9	29.0	17.4	19.7
5,000 - 10,000	35.3	16.1	4.3	16.9
10,000 - 50,000	29.4	29.0	13.0	23.9
more than 50,000	23.5	6.5	47.8	23.9
total	100.0	100.0	100.0	100.0

CONCLUSIONS

The chief findings of the present paper could be summarised as follows. On the one hand, the specificities of the counties that make up the Northern Great Plain region (lower number of major tourist attractions, higher than average role of agriculture, higher settlement density) had a significant impact on the region's performance in case of national-level projects (GINOP - worse performance; VP - better performance).

On the other hand, when analysing the relations within the region, the influencing factors include the commitment of the leaders of the individual counties and settlements to tourism (Jász-Nagykun-Szolnok County - TOP preference, high TOP values of Nyíregyháza), the impact of the conditions set out in the calls for applications (VP - Szabolcs-Szatmár-Bereg County's privileged position and the more favourable data for settlements with smaller populations), as well as the role of political lobbying (good results of some settlements in Hajdú-Bihar County).

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MANGROVE POTENTIAL ASSESSMENT FOR DETERMINING ECOTOURISM ATTRACTION AND STRENGTHENING DESTINATION BRANDING AND MARKETING: "GUNUNG PITHING MANGROVE CONSERVATION", INDONESIA

Zainal ABIDIN* 

Universitas Brawijaya, Fisheries Agribusiness Study Program, Fisheries Socioeconomic
Department, Faculty of Fisheries and Marine Sciences, Malang, Indonesia, e-mail : z_abidin@ub.ac.id

Fadhilah Estu NURYANI 

Universitas Brawijaya, Marine Sciences Study Program, Faculty of Fisheries and
Marine Sciences, Universitas Brawijaya, Malang, Indonesia, e-mail: fadhilahestun@student.ub.ac.id

Dhira Khurniawan SAPUTRA 

Universitas Brawijaya, Marine Sciences Study Program, Faculty of Fisheries and
Marine Sciences, Universitas Brawijaya, Malang, Indonesia, e-mail: saputra.dhira@ub.ac.id

Mochammad FATTAH 

Universitas Brawijaya, Fisheries Agribusiness Study Program, Fisheries Socioeconomic Department,
Faculty of Fisheries and Marine Sciences, Universitas Brawijaya, Malang, Indonesia, e-mail : mochammadfattah@ub.ac.id

Nuddin HARAHAH 

Universitas Brawijaya, Fisheries Agribusiness Study Program, Fisheries Socioeconomic Department,
Faculty of Fisheries and Marine Sciences, Malang, Universitas Brawijaya, Indonesia, e-mail : marmunnuddin@ub.ac.id

Andriani KUSUMAWATI 

Universitas Brawijaya, Business Administration Study Program,
Universitas Brawijaya, Malang, Indonesia, e-mail : andriani_kusuma@ub.ac.id

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Abstract: Explanation of the purpose and objectives of the study (2-3 lines). Mangrove ecosystems perform biological and socioeconomic functions. Mangrove environments can be ecotourism destinations. This study analyzes mangrove potential to determine typical mangrove ecotourism attractions and strengthen the branding and marketing of mangrove ecotourism destination on the Tamban coast of Malang Regency, Indonesia. Explanation of the working methodology and the materials used (2-3 lines). Local management and communities validate mangrove potential field observations. GIS with Sentinel-2 and NDVI approach was used to analyze tides and satellite imaging data on mangrove thickness, density, and area. Analysis of mangrove potential in ArcMap utilizing five parameters: thickness, density, kind, biota, and tides. Four density classes were created using satellite imagery: non-mangroves, rare mangroves, moderate mangroves, and tight mangroves. Presentation and analysis of the obtained results (2-4 lines). The results showed that the Tamban coast mangrove area has a moderate ecotourism potential (potential value = 2.250), so it could be developed into mangrove ecotourism through conservation and limited utilization activities through marine ecotourism to provide economic, ecological, and social incentives. Mangrove ecotourism features that attract tourists and strengthen branding and marketing of this location include mangrove tourism education, canoeing, camping, spot photography, beach attractiveness, bird and violin crab biodiversity. The conclusions obtained following the application of the study (2-3 lines). Mangrove ecosystem on the Tamban coast has a high potential for conservation and marine ecotourism in order to provide economic incentives, also ecological and social benefits. The richness and distinctiveness of Tamban's mangrove ecotourism potential and attractions promotes the GPMC branding as a typical mangrove ecotourism.

Key words: between 5 and 10 keywords, Mangrove potential, GIS, NDVI, ecotourism, ecotourist attraction, destination branding, marketing

* * * * *

INTRODUCTION

Indonesia has a wide coastline and great economic potential if managed properly (Lukman et al., 2022). The coastal area is a potential area with a variety of resources that can be used in a variety of ways, one of which is tourism, particularly marine ecotourism (Prihadi et al., 2018). When ecological assets are combined with integrated planning that considers all relevant

* Corresponding author

factors, benefits can be realized in terms of ecology, aesthetics, and economics (Muflih et al., 2015). One of the potential natural resources in coastal areas are mangrove forests. Mangroves serve a variety of biological, chemical, and socioeconomic functions, including serving as a popular destination for travelers (Andiny and Safuridar, 2019; Prihadi et al., 2018; Fistingrum and Harini, 2021). Ecotourism could make mangrove ecosystems a place for people to visit. It also gives various business prospects for the community to preserve ecological sustainability if it provides economic benefit (Tjahjono et al., 2022).

One of the initiatives to obtain environmental benefits from a sustainable coastal area is the development of mangrove ecotourism (Rijal et al., 2020; Nobi and Majumder, 2019). In the coastal region of Tamban Beach, Tambakrejo Village, Sumbermanjing Wetan District, Malang Regency, the community is establishing GPMC (Gunung Pithing Mangrove Conservation) as a mangrove ecotourism destination based on the potential of the GPMC mangrove ecosystem to become an ecotourism destination. However, the difficulty of coordination in managing mangrove potential in this region persists. As a result, it is feared that the value of resources, such as mangroves, will decrease (Liu et al., 2021). As a reason, it is critical to assess the potential of mangroves, for example, using remote sensing methods. The findings can be used to enhance the development of tourist attractions and strengthen the branding of mangrove ecotourism destinations in the direction of sustainable management. Furthermore, the ecotourism branding can facilitate the green tourism marketing strategy. Green tourism marketing is a type of marketing that emphasizes natural destinations and has indicators of sustainable development based on environmental hospitality and local social, economic, and cultural characteristics (Wurarah et al., 2022).

Mapping with remote sensing and geographic information systems (GIS) have been widely utilized to process spatial data (Ayele et al., 2018; Tran et al., 2022). Remote sensing technology is suitable for mangrove observations (Maurya et al., 2021), because satellite imagery offers spectral information on chlorophyll content, which can also be utilized to assess vegetative stress levels (Razali et al., 2019). GIS can be used to digitize potential resource data and turn it into an important overlay map to promote the growth of ecotourism (Dahuri et al., 1996). GIS (geographic information system) is a type of information system that combines geography and information systems. GIS is also used extensively in planning, research, and decision making. Because it is more effective and efficient, many researchers use GIS technology to identify the potential of natural tourism with existing software (Akbar et al., 2020; Zen et al., 2018).

The Sentinel-2 was employed in this study. It provides global coverage of land and coastal regions as well as high spatial resolution (Bergsma and Almar, 2020), and broad field of view (295 km) for multispectral observation of 13 bands (Gascon et al., 2017). While the index used is the Normalized Difference Vegetation Index (NDVI). NDVI index sensitive to chlorophyll and photosynthesis vegetation (Razali et al., 2019). The image processing classifications include non-mangroves, rare mangroves, moderate mangroves, and tight mangroves (Rudiastuti et al., 2018). NDVI can assess vegetation health, density, and situation (Sukojo and Arindi, 2019). For this reason, the aim of this study is to assess the potential of mangrove ecosystems as a foundation for determining variants and locations of typical mangrove ecotourism attractions, in addition to strengthen the branding and marketing of mangrove ecotourism destinations in order to support the management of sustainable mangrove ecotourism at Gunung Pithing Mangrove Conservation.

MATERIALS AND METHODS

This study was conducted in March-April 2022 at the Tamban Beach area, Tambakrejo Village, Sumbermanjing Wetan District, Malang Regency. Figure 1 depicts the research location, whereas Figure 2 represents the stages of the research method employed. Data on the potential of mangroves were collected through field observation using the stratified random sampling method (Boschetti et al., 2016). The obtained data consists of several aspects of mangrove ecosystems, such as mangrove thickness and density, mangrove type, tides, and biota objects (Yulianda, 2019). The supporting data were collected by conducting interviews with respondents who were selected by purposive sampling (Kim et al., 2017).

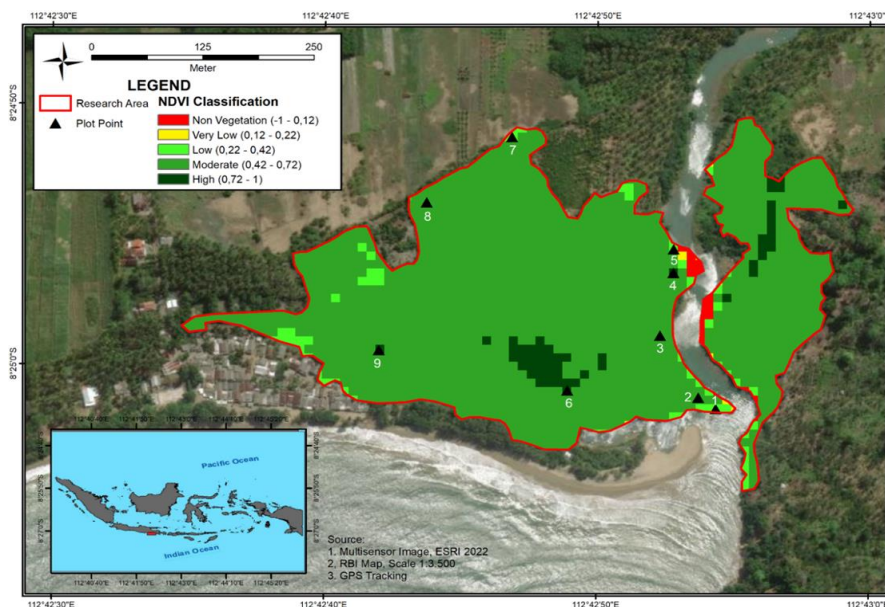


Figure 1. Research Location

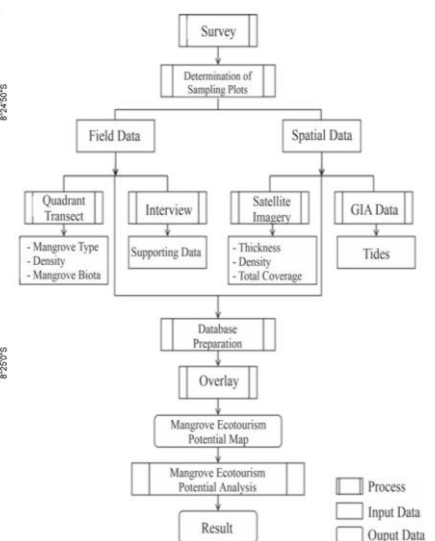


Figure 2. Steps of Research Methodology

* GIA: Geospatial Information Agency

Primary data is collected in the form of mangrove thickness by drawing a straight line from the outer mangrove to the deepest mangrove along the Tamban coast. A quadrant transect that is 10 meters by 10 meters is used to determine the mangrove species as well as the density of the mangroves (Pasaribu et al., 2020). The use of a pocket book was necessary in order to correctly identify the mangroves. By measuring the diameter of the stems in each stand of mangroves, it is possible to get an estimate of the mangrove type density (Xiong et al., 2019). Mangrove rod height was measured with the Monmang 2.0 software. The following equation is used to compute the mangrove density equation:

$$D_i = \frac{N_i}{A}$$

Information: D_i = Mangrove type density (ind/m³); N_i = Total mangrove from type I (individual)
 A = Area (m²) (Source: Dharmawan and Pramudji, 2017)

Visual observations of biota in the mangrove environment are conducted in conjunction with mangrove sampling. Interviews with management and local communities are also conducted to validate data truth (Young et al., 2018). The Geospatial Information Agency (GIA) provided the tidal data. The tidal data used is tidal in one month, and the next will be processed with Microsoft Excel using admiralty method.

Furthermore, the NDVI approach is known to be used in the categorization of mangrove vegetation density, which is a density of rare, medium, or dense class density. The following is the NDVI formula. $NDVI = \frac{(NIR-RED)}{(NIR+RED)}$ (Source: Setiawan et al., 2018). NIR is a band 5 or near-infrared band, while red is a band 4 or red band. Based on the results of the band's calculation, this will produce algorithms ranging from -1 to 1 (Chen et al., 2022). The results of the algorithm calculation from the total satellite image processing are required to group NDVI values. Furthermore, the value is separated into three class intervals based on the range of NDVI algorithms. Table 1 shows the NDVI classification. The potential of mangrove ecosystems for development into mangrove ecotourism is assessed using five indicators and four compliance categories derived from the modification of mangrove ecotourism compliance analysis (Yulianda, 2019). Table 2 showed the indicators of potential mangrove ecosystems. After organizing five mangrove ecosystem indicators in Microsoft Excel, ArcMap creates a weighting map and assessment. To create a mangrove ecosystem natural resource potential map, the class range is classified, weighted, and assessed using the overlay method. This study's examination of the mangrove ecosystem's potential was utilized to identify typical mangrove ecotourism attractions and strengthen the branding of GPMC to enable sustainable mangrove ecotourism at Gunung Pithing Mangrove Conservation.

Table 1. Classification the value of NDVI (Source: Kawamuna et al., 2017)

value	Classification
0.00 – 0.33	Rare
0.33 – 0.66	Medium
0.66 – 1.00	Dense

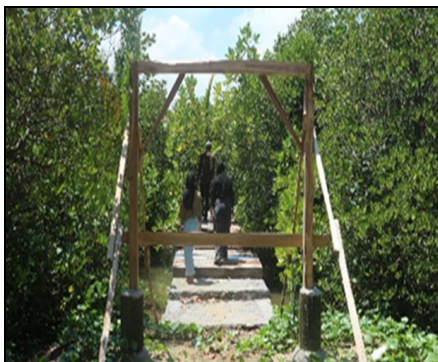


Figure 3. GPMC Mangrove Bridges for Tracking (Source: Primary Data, Nuryani, 02.12.2021)

Table 2. Indicators of Mangrove Ecosystems Potential (Source: Yulianda 2019)

No	Indicator	Weight	Category	Score
1	Mangrove thickness (m)	0.380	>500	3
			>200 – 500	2
			50 – 200	1
2	Mangrove density (ind/100 m ²)	0.250	<50	0
			>15 – 20	3
			>10 – 15; >20	2
3	Mangrove type	0.150	5 – 10	1
			<5	0
			>5	3
4	Tidal (m)	0.120	3 – 5	2
			2 – 1	1
			0	0
5	Biota Object	0.100	0 – 1	3
			>1 – 2	2
			>2 – 5	1
			>5	0
			Crabs, birds, mollusks, fish, reptiles, shrimp	3
			Crabs, birds, mollusks, fish, reptiles, shrimp	2
			Crabs, shrimp, fish, mollusks	1
			Only one aquatic biota	0

RESULTS AND DISCUSSION

Profile of Gunung Pithing Mangrove Conservation (GPMC) ecotourism

GPMC is a Tamban coast mangrove ecotourism area pioneered in 2019 by youth organization and the local community. Tamban coastline is 57 kilometers from Malang Regency's center, Kepanjen, and around 70 kilometers from Malang City. The journey from Malang City to GPMC ecotourism takes about 2-3 hours. The GPMC mangrove ecotourism area is equipped with a variety of facilities, such as mangrove bridges for tracking, gazebo, bathrooms, photo shoots, and canoeing, so that visitors can experience the natural splendor of mangrove ecosystems. Figure 3 shows a mangrove bridge that was constructed as a tourist attraction in the form of tracking. This bridge is one of several tourism facilities that have been developed.

Mangrove Thickness

Researchers collected spatial data on the thickness of the mangroves in Tamban's western section of the river, which reaches 382.96 meters (Figure 4). This area has healthy mangrove growth, making it one of the most important operating areas for mangrove ecotourism. The spatial data on the thickness of mangroves along the river's eastern side reached a depth of 140.20 meters. This area is home to a mangrove nursery area, which, in order to improve the overall density of the mangroves, is managed in collaboration with the local people. In this region, mangrove forests are located in close proximity to both residential areas and ports used by small fishing boats.

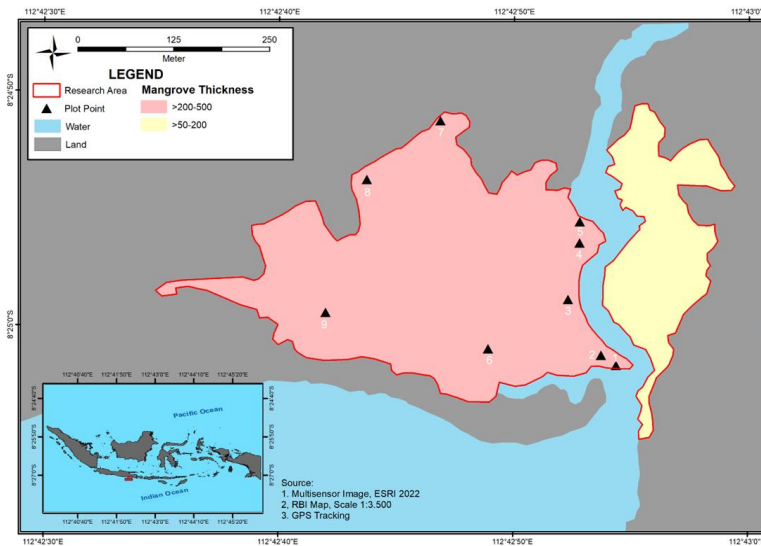


Figure 4. Mangrove Thickness in GPMC Tamban

Mangrove Density and Type

Field observations of the type and density of mangroves lead to values that vary from plot to plot. Based on Table 3, plot 9 has the largest mangroves. It has a total density of 54 individuals/100 m² and is dominated by the *Rhizophora mucronata* species, which has a type density of 42 individuals/100 m² and a relative density value of 77.78%.

This fits with the case of how *Rhizophora mucronata* grow, which is usually in groups (Noor et al., 2006). The plot with the lowest density is number 7, which has 10 individuals per 100 m² and is mostly made up of *Avicennia marina* and *Sonneratia alba*. Both have 5 individuals per 100 m² of mangrove type density and a relative density of 50%. Using identification guidelines by Noor et al., (2006), and the results of field observations in 9 plots, 9 types of mangrove plants have been found, namely *Avicennia alba*, *Avicennia marina*, *Bruguiera gymnorrhiza*, *Ceriops tagal*, *Rhizophora mucronata*, *Sonneratia alba*, *Xylocarpus granatum*, *Heritiera littoralis* dan *Rhizophora mucronata*. Table 4 depicts the mangrove vegetation identified. The pictures in the table 4 were taken by one of authors (Nuryani, 02 December 2021).

Table 3. Mangrove Type Density (Source: Primary Data and Research Data Analysis, 2022)

Plot	Mangrove Species	Mangrove Type Density (Di)	Rdi (%)
1	<i>Avicennia alba</i>	0.01	7.69
	<i>Bruguiera gymnorrhiza</i>	0.04	30.77
	<i>Ceriops tagal</i>	0.04	30.77
	<i>Rhizophora apiculata</i>	0.04	30.77
	Total	0.13	100.00
2	<i>Avicennia alba</i>	0.03	15.79
	<i>Bruguiera gymnorrhiza</i>	0.03	15.79
	<i>Ceriops tagal</i>	0.11	57.89
	<i>Rhizophora apiculata</i>	0.01	5.26
	<i>Xylocarpus granatum</i>	0.01	5.26
	Total	0.19	100.00
3	<i>Avicennia alba</i>	0.06	50.00
	<i>Sonneratia alba</i>	0.04	33.33
	<i>Xylocarpus granatum</i>	0.02	16.67
	Total	0.12	100.00
4	<i>Avicennia marina</i>	0.03	15.00
	<i>Heritiera littoralis</i>	0.02	10.00
	<i>Rhizophora mucronata</i>	0.01	5.00
	<i>Sonneratia alba</i>	0.14	70.00
	Total	0.2	100.00
5	<i>Avicennia alba</i>	0.05	29.41
	<i>Rhizophora mucronata</i>	0.12	70.59
	Total	0.17	100.00
6	<i>Avicennia alba</i>	0.06	12.00
	<i>Ceriops tagal</i>	0.4	80.00
	<i>Xylocarpus granatum</i>	0.04	8.00
	Total	0.5	100.00
7	<i>Avicennia marina</i>	0.05	50.00
	<i>Sonneratia alba</i>	0.05	50.00
	Total	0.1	100.00
8	<i>Avicennia alba</i>	0.01	3.13
	<i>Rhizophora apiculata</i>	0.07	21.88
	<i>Rhizophora mucronata</i>	0.19	59.38
	<i>Sonneratia alba</i>	0.05	15.63
	Total	0.32	100.00
9	<i>Avicennia alba</i>	0.02	3.70
	<i>Rhizophora mucronata</i>	0.42	77.78
	<i>Sonneratia alba</i>	0.1	18.52
	Total	0.54	100.00

Table 4. Mangrove Species in Tamban





Bruguiera gymnorrhiza



Rhizophora apiculata



Heritiera littoralis



Sonneratia alba



(Source: Primary data, by Nuryani, 02 December 2021)



Xylocarpus granatum



Tides

The data used for tides is from the past 31 days in March 2022 (Figure 5). The data came from the Geospatial Information Agency, and then the admiralty method was used to figure it out (Kisnarti, 2017). Using the admiralty method, the highest tide was on March 22, 2022, at 4 a.m. Western Indonesian Time, when it was 2.75 m. The water level was at its lowest on March 21, 2022, at 10:00 Western Indonesian Time. It was 0.17 m high. When trying to figure out what kind of tides were in Tamban waters, a Formzahl value of 0.512 was found. This meant that the tides were a mix of double daily leaning and single daily leaning (Hendri et al., 2019). Figure 5 shows that at Tamban Beach, there are two pairs and two recedes in one day. The first tide waveform is different from the second tide waveform. Yulianda (2019) said that the height of the sea level and the number of tides also affect how comfortable tourists are.

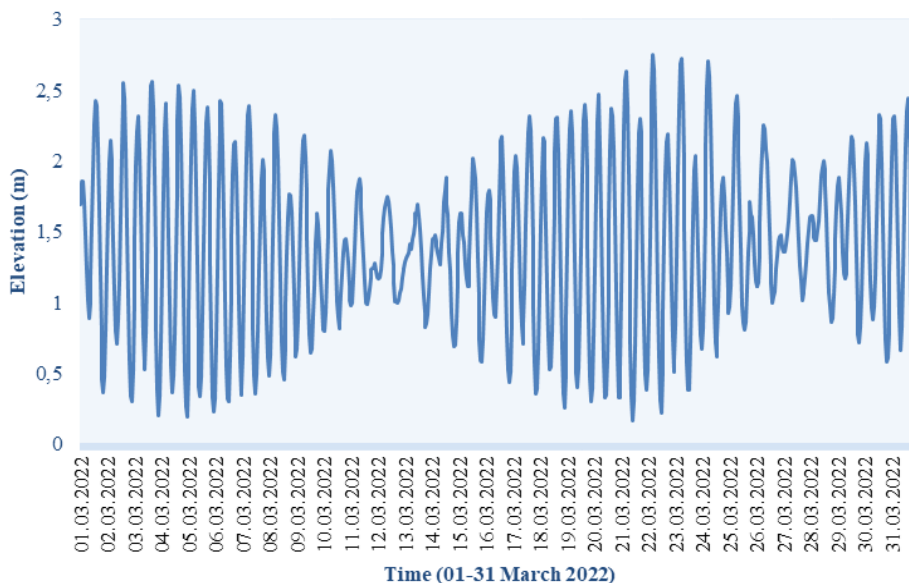


Figure 5. Coastal Area of Tamban Beach Tidal Graph
(Source: Geospatial Information Agency, 2022)

Mangrove Biota

The GPMC mangrove tourist area has terrestrial and aquatic biota (Nelly et al., 2020). According to Yulianda (2019), tourists are interested in biota variety, making the GPMC mangrove ecotourism simpler to promote. Mangrove crab (*Scylla serrata*) and crab violin (*Uca spp.*) are two crustaceans found in the GPMC area. Mollusk habitat and crustaceans are typically found attached to the roots and mangrove rods or the substrate (Irwanto, 2006; Imakulata and Tokan, 2018). In this investigation, two types of birds were discovered: “Sirtu” Birds (*Aegithina tiphia*) and “Cekakak Biru” Birds (*Alcedo coerulescens*), as well as Gelodok Fish (*Periophthalmus sp.*).

Table 5. Mangrove Biota in GPMC, Tamban



Table 6. Potential Value of Mangrove Ecotourism on the Coast of Tamban (Source: Primary Data and Research Data Analysis, 2022)

No	Parameter	Weight	Score	Value
1	Mangrove thickness (m)	0.380	2	0.760
2	Mangrove type density (100 m ²)	0.250	3	0.750
3	Mangrove type	0.150	2	0.300
4	Tides	0.120	2	0.240
5	Mangrove biota	0.100	2	0.200
Total				2.250



Potential Mangrove Ecotourism Areas

Categories of potential mangrove ecotourism area in Tamban may be examined using data processing that includes tides, mangrove biota, mangrove type density, and mangrove thickness (Table 6).

Based on the calculation of the potential value of the Tamban coastal mangrove ecotourism (Table 6), a value of 2.250 was obtained. This means carrying a mangrove ecosystem in the GPMC Tamban ecotourism has the potential of mangroves with a medium category, so that the mangrove ecosystem is very potential to be developed or managed in a sustainable manner from the ecological, economic, and social dimensions. The research results of the potential mangrove ecotourism in the GPMC Tamban are outlined in the map of the potential mangrove ecotourism area (Figure 6). GPMC has the potential of ecotourism and utilization that can meet the needs of the surrounding community. Meanwhile, there are only a few ecotourism activities in the GPMC Tamban mangrove ecotourism because the community as the manager of GPMC is continuing to improve the development of this mangrove area as a mangrove-based marine ecotourism area.

Determination of Mangrove Ecotourism Attractions in GPMC Tamban

In the GPMC Tamban mangrove ecotourism area, mangrove ecosystems have a moderate potential. There is mangrove biodiversity and both terrestrial-based and aquatic-based biota in the area. As shown on the potential map, the results of this study can be used to figure out the types and locations of typical ecotourism attractions in the GPMC Tamban (Figure 4).

According to the study findings, mangrove education is one of the prospective tourist attractions for the GPMC Tamban ecotourism region. The next potential ecotourism activity is canoeing in the Mangrove Ecotourism region of the estuary to

appreciate the natural beauty and discover the mangrove environment from the boat. In addition, tourists have the option of camping in a parking lot near the mangrove ecology. Some potential ecotourism attractions can be employed to prevent tourists' activities from becoming repetitive. At addition, there are other ecotourism activities that tourists may enjoy in the GPMC Tamban, such as taking photographs of the mangrove and beach scenery, as well as seeing birds and violin crabs. The view of the green is mangrove forest and birds that adorn the mangroves can be enjoyed by tourists when making mangroves by foot or using a boat. In addition, in the mangrove area also seen diversity of violin crab biota which is one of the uniqueness of GPMC Tamban. For lovers of natural beauty, of course this is interesting to see or photographed.

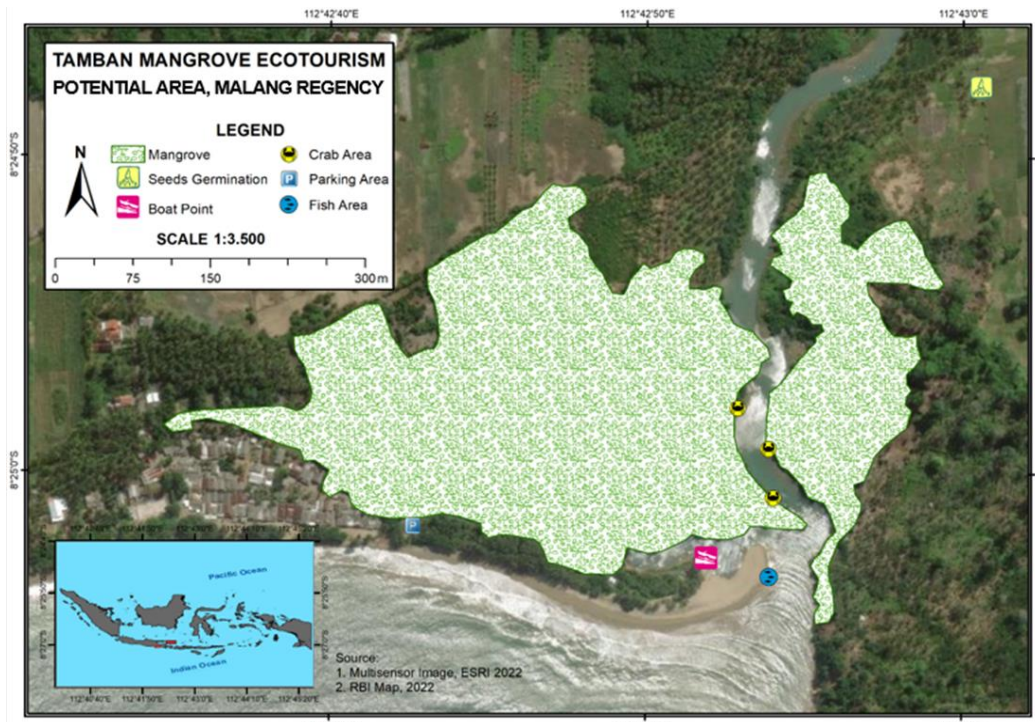


Figure 6. Map of Tamban Mangrove Ecotourism Potential Areas

Strengthening Mangrove Ecotourism Branding and Marketing Based on the Mangrove Potential in GPMC, Tamban

Initially, GPMC was the name of the mangrove conservation movement led by youth organization and the Tamban community, which was worried about the state of mangroves. This movement began four years ago (in 2019). Along with the mangrove conservation movement, they continue to prepare for the launch of mangrove ecotourism with GPMC branding, as it has been recognized through Instagram, Google searches, and direct visits from various agencies, community members, colleges, and visitors. This endeavor is anticipated to assist the economic and social sustainability of mangrove ecosystem management, in addition to its ecological sustainability, such as happened in CMC Tiga Warna that is highly sustainable (Harahab et al., 2021). This sentence reaffirms that the potential of mangrove ecosystems in GPMC Tamban is categorized as moderate, and that mangroves and terrestrial and aquatic biota are diverse.

This study not only serves as the foundation for identifying the typical mangrove ecotourism attraction in the GPMC Tamban region, but it also strengthens the GPMC's branding and marketing as a mangrove ecotourism destination. GPMC branding is part of the economic, ecological, and social capital management of mangrove ecotourism in the GPMC Tamban mangrove ecotourism. Uniqueness and diversity of mangroves and biota in the GPMC mangrove ecotourism have the potential to attract ecotourists and help the marketing of mangrove ecotourism.

Determination of the types and quality of diverse mangrove ecotourism attractions in the GPMC also begins with the potential biodiversity and density of mangroves. In terms of marketing management of tourism services based on the statement by Madiistriyatno (2013) and Lina (2018), that the product quality of ecotourism destinations, including the diversity and uniqueness of mangrove ecotourism attractions in Tamban, is the best guarantee of loyalty to ecotourism visitors, the strongest defense in dealing with ecotourism competition, and the way to maintain the marketing growth and income of the mangrove ecotourism business.

CONCLUSION

Ecotourism has a moderate potential for development in mangrove forests along the Tamban coast, indicating that this region has a high potential to be developed through conservation and limited utilization activities in the form of marine ecotourism to provide economic benefits in addition to sustainable ecological and social benefits. The wealth and uniqueness of Mangrove Tamban ecotourism's potential and attractions helps promote GPMC branding as typical mangrove ecotourism, as well as being the main input in ecotourism marketing and the most effective defense strategy in ecotourism competition. This raises the likelihood that GPMC will continue to be the best in this sector.

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PERCEPTION OF THE NECESSITY OF DIGITAL INNOVATIONS APPLICATION AS AN ELEMENT OF HEALTH PROTECTION AND SUSTAINABLE HOSPITALITY SECTOR FUTURE

Daniela MATUŠÍKOVÁ* 

University of Prešov, Faculty of Management and Business, Department of
Tourism and Hotel Management, Prešov, Slovakia, e-mail: daniela.matusikova@unipo.sk

Tünde DZUROV VARGOVÁ 

University of Prešov, Faculty of Management and Business, Department of
Tourism and Hotel Management, Prešov, Slovakia, e-mail: tunde.dzurovvargova@unipo.sk

Michal LUKÁČ 

University of Cyril and Methodius, Institute of Management, Trnava, Slovakia, e-mail: michal.lukac@ucm.sk

Emma SCHOLTZ 

University of Prešov, Faculty of Management and Business, Department
of Management, Prešov, Slovakia, e-mail: emma.scholtz@smail.unipo.sk

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Abstract: Hospitality, which suffered a huge blow during the Covid-19 period and had to adapt its operation to pandemic measures, heads for its recovery. Innovation is one of the ways to get out of an unfavourable situation having in mind that health risks can represent a significant factor affecting participation in tourism. The paper specifies the perception of the necessity of digital innovations application as health protection factor and sustainable mean of hospitality sector development. It shows how of tourism participant in domestic condition of Slovak republic perceive the need of their application to hospitality services. Through the questionnaire method it examined opinion of domestic visitors in hospitality and its direction towards the digitization of services in this sphere, and subsequently tested by Mann-Whitney and Kruskal-Wallis tests. The results show that Slovak tourists treat digital innovation in hospitality services as the ones, that are a necessary part of tourism services portfolio. Their specifics can also be defined in terms of health protection. They can act as an element of health protection by eliminating contact among individual tourism participants. At the same time, they also perceive them as a means that tends to keep the hospitality industry alive even in the post-pandemic period.

Key words: Digital innovations, digital hospitality, sustainable hospitality, health protection, hospitality recovery

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INTRODUCTION TO DIGITAL TOURISM CONCEPTS

We know that digital technologies affect every aspect of our lives. The wave of industrial digitalization is also transforming the behaviour, values and demands of consumers, making them the primary stakeholder and forcing companies to adopt digital technologies into everyday usability (Šambronská et al., 2017). Digital technology is increasingly important in achieving business goals, and its pervasive effects have resulted in the radical restructuring of entire industries. Consequently, managers' extensive interest in handling digital innovation is not surprising. A lot of research has shown how digital technologies create a huge potential for product and service innovation that is difficult to control and predict. Therefore, firms need dynamic tools to support themselves in managing the new types of digital innovation processes that emerge. The nature of these processes forces firms to challenge prior assumptions about their product and service portfolio, their digital environment, and ways of organizing innovation work.

As stated by many authors such as: Papagiannidis and Davlembayeva (2021), Van et al. (2020), users, who have already experienced tourism through some digital technologies will always look for the same level, or more, of the experience with functional and emotional values, compared to traditional tourism consumers. Currently, many studies provide insight into the perceptions and use of digital technologies in the tourism industry from different points of view. Also, the author's teams Lu et al. (2021) found that consumers strongly agree with prioritizing digital technology in both tourism and other industries and are willing to use it even after the pandemic because it is perceived as a new form of health protection. This was likewise to aim of this study. According to Deb and Ahmed (2022), numerous studies on the impacts of epidemics on the tourism and hospitality found that tourists usually took a long time to be comfortable with the post-crisis period, and they usually go through a series of mental stages to avoid their potential health crisis and to revisit destinations. This study aims to find out how the participants of domestic tourism in the conditions of the Slovak

* Corresponding author

Republic perceive the use of digital innovations in the domestic hospitality sphere. It analyses the perception of their importance by domestic tourism participants as an element of health protection and sustainable growth. The study thus fills a gap in the market, due to the lack of research on this issue in Slovak conditions so far.

Importance of digital innovations in tourism

Innovation is not only related to new ideas or research and development, but also refers to the successful utilization and commercialization of novel ideas (Charter et al., 2017). In the tourism industry, innovations are significant to enhance efficiency, improve productivity, and increase customers' loyalty (Bilgihan and Nejad, 2015). The adoption of digital technologies is also driven by the growing interest and preferences of tourists, they are a means of maintaining the health and safety of tourists and local communities (Nylen and Holmstrom, 2014; Dick-Forde et al., 2020; Fennell, 2021).

Innovation, through digital technologies, is useful to allow tourism firms to face the social constraints imposed by the pandemic while respecting the social aspect of sustainable development (Bauer et al., 2008; Saseanu et al., 2020). Sustainable tourism takes full account of the current and future economic, social and environmental impacts, while meeting the needs for both visitors and hosts while improving opportunities for future generations (Šenková et al., 2020).

Communication, mobile technologies (connected rooms, robotic room services and contactless hosting, social media, drone tourism, geospatial technologies, e-shop, etc.) may provide benefits for the tourism industries in terms of robust for health-safety and sanitary measures (Caballini et al., 2021; Mondal et al., 2021; Srivastava et al., 2021), by limiting social interaction between visitors and local population by avoiding congested areas or even minimizing massive international tourism (Streimikiene and Korneeva, 2020). Beyond the health crisis, digital technologies open the doors for sustainable business model innovations that focus on providing services that allow tourists with disabilities and the elderly to overcome the physical and space difficulties while staying at home and hiring local guides to provide real-time, interactive, and personalized tours (Kwok and Koh, 2021). This results in tourism that is more equitable. It respects the need of the different categories of tourist. Digital products and services must not only be efficient to use and easy to learn, but also provide a rich user experience. Firms must remain in phase with the technological advances in their industries to be always up to date to ensure their survival and strengthen their position within their environment (Lu et al., 2021).

Theoretical Background

The necessity of directing the hospitality sphere towards the digital future

The tourism sector is undergoing an accelerated digital transformation, augmented by the pandemic, and tourists must adapt to this new environment. Olechowski (2020) points to the facts that the tourism and hospitality industry has been at the forefront of digital and continues to be transformed by brand new technologies in virtually every aspect of operations. Considering the fact that tourism is based on cooperation between a wide range of services and products, the benefits of the digital revolution in this industry are quite obvious (Zsarnoczky, 2018). There are many options for digitalisation in the tourism sector and their success depends on the grade of tourist satisfaction (Galán et al., 2022).

The rapid growth of technology has digitally empowered tourists through the proliferation of smartphones and mobile digital devices (Buhalis and Sinarta, 2019), fostered gratification (Zollo et al., 2022) and has also increased tourists' access to information (Kotoua and Ilkan, 2017). Digital technology not only changes the strategy and structure of the firm, but also affects partners, customers, and more generally the firm's ecosystem network (Chamboko-Mpotaringa et al., 2023; Zhao et al., 2023). Lall et al. (2017) highlighted the weak ability of SMEs to make the right strategic technology investment decisions because they focus more on day-to-day operations and omit the long-term vision (Marcon et al., 2019; Le-Dain et al., 2023). This is a management barrier when the time spent on strategic vision planning is insufficient. Digitization offers many new opportunities that can be exploited by providers in the tourism industry (Bireswar et al., 2022).

At the same time, competition is being intensified and companies have to keep pace with digitization in order to remain on the same level. Without any question, "digitization can be viewed as the motor of transformation for the tourism industry in the age of the internet economy (Werthner et al., 2015). In the age of the global Internet, wide informatization of services, and digitization of economy, the tourism and hospitality industry changes quickly (Elkhwesky et al., 2022). Digitization offers promising potential in the tourism industry regarding both the supplier and customer perspective. Therefrom, all business processes before, during and after a journey are affected.

These processes include the application and preparation of travel offers, the digital implementation, post-processing or customer recovery (Ighalo, 2014). Digitization can be defined according to different levels of intensity: from the pure presentation and information (website), the sales channel function (e-commerce), business process integration (E-Business) to new business models with virtual products or services (Breier et al., 2021; Song, 2022). The H&T firms need to advance their digital capacities and skills by accelerating a large-scale use of accessible and inexpensive technologies (e.g., social media, e-commerce platforms, and smartphone applications) and then invest in more sophisticated technologies (e.g. robots, big data, AI, and VR) to achieve a high level of digital transformation (Elkhwesky et al., 2022).

Managers of the H & T firms must adopt a transformational leadership style (Elkhwesky et al., 2022) to evolve employee skills through the adoption of digital technologies while developing a shared long-term vision that integrates responsible tourism principles. The applications of digital technologies in the hotel sphere for the purpose of improving the system of services' quality, reducing the service time, increasing the competitiveness of hotel companies, and reducing the costs of servicing the consumers. Digital application will help to reduce the time requires for search for applicants, perform the initial analysis of the applicants' data, skills, and experience, and improving the organization's electronic document turnover (Kolobkova et al., 2021).

The perception of COVID-19 varies from organization to organization (Bangwal et al., 2022; Mirčetić and Mihić, 2022; Araujo-Cabrera et al., 2021). Researchers propose global strategies to reduce the consequences of COVID-19 for the hotel business (Casais and Ferreira, 2023; Bangwal et al., 2022; Wu et al., 2021).

On the other hand, organizations develop contingency plans and strategies to keep their operations running (Salem et al., 2021; Abuelhassan and AlGassim, 2022). During the pandemic, consumers developed an appetite for contactless services (Almeida et al., 2023), which led large hotel chains to implement various technologies to ensure health safety and attract tourists to a safe environment (Lin and Mattila, 2021; Fang and Partovi, 2022; Awada et al., 2022).

According to the studied studies, digital technologies for the development of tourism are mainly expected to create innovations for consumers that support sustainable competitive advantage for organizations from the point of view of suppliers as well as the sustainability of buildings within the framework of smart tourism (Bangwal et al., 2022; Awada et al., 2022; Abuelhassan and AlGassim, 2022). Digital transformations lead to the development of increasingly sophisticated electronic devices, which from a technological point of view seek to improve the user experience in tourism (Wang et al., 2023). This phenomenon of digital transformation has led to the development of increasingly sophisticated electronic devices, which in technological terms seek to improve the user experience and, in the tourism, context allow providing a better experience to tourists during their visit. In this sense, mobile technology has taken special connotation in recent years and has become an important channel for contracting tourism products and services (Félix et al., 2020).

Most studies focus on the consumer's adoption of innovations, but in many cases encounter resistance to the adoption of innovations due to the lack of time to learn how to use the new one (Wolverton and Cenfetelli, 2020). Current studies on active resistance to innovation mainly focus on investigating the relationship between consumers' perceived barriers to using innovations and consumer resistance, such as refusal and postponement of use (Lu et al., 2021). Several authors have conducted research on consumer resistance to innovation and artificial intelligence, which have great practical and theoretical implications, especially in the context of hospitality (Huang et al., 2021; Demir et al., 2023). Previous research has sought to understand consumer responses to digital innovation applications in terms of attitudes (e.g. Lin and Mattila, 2021), trust (Tussyadiah et al., 2020), experiences (Calero-Sanz et al., 2022; Huang et al., 2021), satisfaction (Seo, 2022; Lojano Chapa, 2023) and intention to use (Lee et al., 2021).

Based on the statements from several scientific studies about the perception of digital technologies, as an important tool for the health protection of tourism participants (even in the post-pandemic period), the purpose of this study was to find out the answers in Slovak conditions to the following research questions (RQ1-RQ5):

RQ1: Do domestic tourism participants using the services of the Slovak hospitality perceive digital tools as an important means of technological innovation?

RQ2: Do domestic tourism participants using the services of the Slovak hospitality perceive modern digital tools as a means of progressing towards a sustainable hospitality?

RQ3: Do domestic tourism participants using Slovak hospitality perceive modern digital tools as a means of increasing the safety of tourism participants in hospitality services?

RQ4: Do domestic tourism participants using Slovak hospitality perceive modern digital tools as a means of protecting the health of tourism participants in hospitality services?

RQ5: Do domestic tourism participants using Slovak hospitality perceive modern digital tools as a means of reducing the risk of infection/disease transmission among tourism participants in hospitality services?

All research questions were aimed at domestic tourism participants in Slovakia, who use and intend to use the services of domestic hospitality establishments.

MATERIALS AND METHODS

Methods

The aim of the paper is to specify the perception of the necessity of digital tools application as health protection factor and sustainable mean of hospitality sector development and growth. The main aim of the research was to set the profile of tourism participant using hospitality services in domestic condition of Slovak republic and its direction towards the digitization of services in this sphere. 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 digital innovations in tourism and digital hospitality in the context of its sustainability and health protection.
- questionnaire – oriented to identification of perception of the necessity of digital tools application as health protection factor and sustainable mean of hospitality sector development. Research sample consisted of tourism participants consuming the services of hospitality sector and willing to consume them in the future in domestic tourism in the territory of Slovak republic. In total 553 respondents participated in the research.
- Mann-Whitney U-test- verification of set hypothesis concerning the age.
- Kruskal-Wallis test ANNOVA- verification of the hypothesis concerning differences between age generations, education and status.

Questionnaire method was used as a primary data collection, in order to fulfil the research objective. The research sample was founded on purposive sampling. All the respondents had to fulfil the precondition of consuming hospitality services as well as that they are willing to consume them in the future and they know and are clearly familiar with the available modern digital innovations in the hospitality industry. The questionnaire was created in two versions. The first version was created in MS Forms. This online filling method has been expanded through email addresses and social networks (62%). The second group of respondents was approached to participate in the questionnaire in the form of a

personal meeting (38%). This group filled out the questionnaire in its printed version. Each of them was subsequently processed into digital form. Respondents were approached to participate in the research in the months of October to December in 2022. A total of 700 respondents were approached, of which 553 respondents were willing to fill out the questionnaire and provide correct data in domestic, Slovak conditions. Respondents were asked to answer to 20 questions of which 5 were used for the purpose of this study. All the question were based on 5-points Likert scale (disagree, rather disagree, neither agree nor disagree, rather agree, agree). As the variables, age, gender, education level and current status (employed, unemployed, student) were set. Based on them, 4 hypotheses were tested.

H1: We assume that there are statistically significant differences in the perception of digital technology as a means of health protection and sustainability of hospitality services with regard to the gender of the respondents.

H2: We assume that there are statistically significant differences in the perception of digital technology as a means of health protection and sustainability of hospitality services with regard to the age of the respondents, i.e. between generation X, Y and Z.

H3: We assume that there are statistically significant differences in the perception of digital technology as a means of health protection and sustainability of hospitality services with regard to the level of education of the respondents.

H4: We assume that there are statistically significant differences in the perception of digital technology as a means of health protection and sustainability of hospitality services with regard to the status of the respondents.

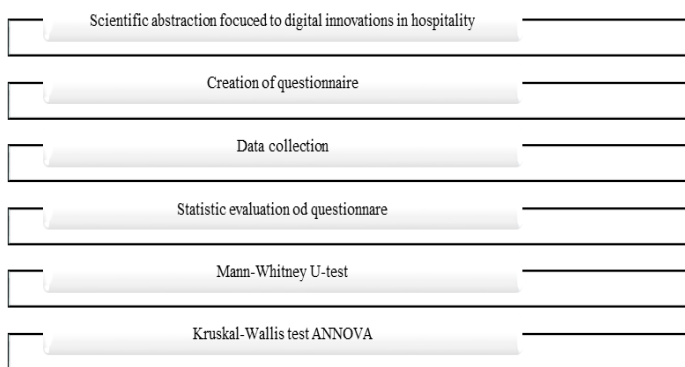


Figure 1. Methodology steps scheme

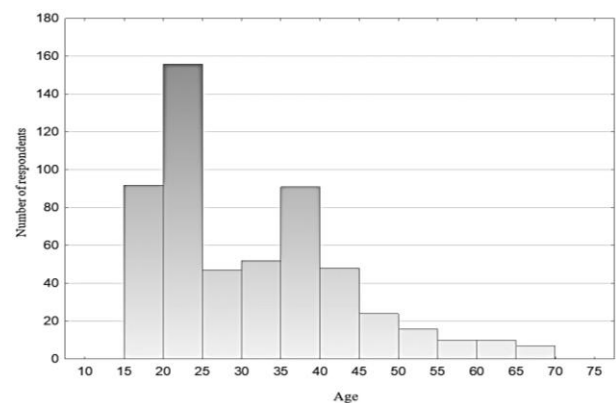


Figure 2. Histogram of the relative frequency of respondents in individual age categories

Data

The questionnaire research was performed at the sample of 553 respondents ($n=553$). In total 700 respondents were addressed, but only 553 questionnaires were valid for further evaluation. Women dominated in the sample (66.73%). The youngest respondent was in the age of 18 years and the oldest one was 69 years old (Figure 2, histogram).

Table 1 Research questions formulation

RQ	Research question formulation
RQ1	Are digital innovations an innovative mean of hospitality services?
RQ2	Are digital innovations a mean of sustainable development of hospitality in the future?
RQ3	Do digital innovations increase the safety of tourism participants in hospitality services?
RQ4	Are digital innovations a mean of health protection of tourism participants in hospitality services?
RQ5	Do the digital innovations reduce the risk of disease transmission among participants in tourism and hospitality services?

Table 2. Respondents structure according to the age of respondents

	N	Average age	Median age	Min	Max.	Standard deviation
Women	369 (66.73 %)	30.0000	25	18	69	11.7269
Men	184 (33.27 %)	35.0815	37	18	66	11.6895
Total	553 (100%)	31.6908	29	18	69	11.9468

RESULTS AND DISCUSSION

Table 3 shows the descriptive statistics of the answers to five question and their results. In general, it is possible to conclude that the results of all five questions had at the end comparable results (Table 3). The perception of Slovak tourism participants consuming hospitality services is very positive towards to digital innovation in general and as well as a health protection and sustainable development and growth factor. In the case of the first question, the respondents agreed that digital technologies are an innovative means of hospitality services.

Comparing to the first question the average values is lower. In case of the second question, the respondents perceive the digital innovations as a mean of sustainable development and growth of the hospitality in the future. According to the results of the third question, Slovak respondents think, that digital innovations increase the safety of tourism participants in hospitality services. Results of the fourth and five questions show the almost same values. Respondents think that digital innovations can be perceived as a mean of health protection of tourism participants in hospitality services as well as that they are able to reduce the risk of disease transmission among participants in tourism and hospitality services. Table 4 and 5 show the obtained values according to the respondents' gender.

Table 3. Descriptive statistics: perception of the importance of applying digital elements in hospitality- all respondents (Source: authors' processing based on data obtained in 2022)

	Average	Median	Mode	Mode frequency	Min	Max	Lower quartile	Upper quartile	Standard deviation
RQ1	4.1790	4	4	290	1	5	4	5	0.7533
RQ2	3.7993	4	4	264	1	5	3	4	0.8626
RQ3	3.6239	4	4	230	1	5	3	4	0.9087
RQ4	3.8156	4	4	244	1	5	3	4	0.9298
RQ5	3.9964	4	4	245	1	5	4	5	0.9089

Table 4. Descriptive statistics: perception of the importance of applying digital elements in hospitality- women (Source: authors' processing based on data obtained in 2022)

	Average	Median	Mode	Mode frequency	Min	Max	Lower quartile	Upper quartile	Standard deviation
RQ1	4.1978	4	4	201	2	5	4	5	0.7005
RQ2	3.8347	4	4	190	1	5	3	4	0.8091
RQ3	3.6341	4	4	157	1	5	3	4	0.8431
RQ4	3.8482	4	4	168	1	5	3	4	0.8900
RQ5	4.0407	4	4	176	1	5	4	5	0.8444

Table 5. Descriptive statistics: perception of the importance of applying digital elements in hospitality- men (Source: authors' processing based on data obtained in 2022)

	Average	Median	Mode	Mode frequency	Min	Max	Lower quartile	Upper quartile	Standard deviation
RQ1	4.1413	4	4	89	1	5	4	5	0.8503
RQ2	3.7283	4	4	74	1	5	3	4	0.9593
RQ3	3.6033	4	4	73	1	5	3	4	1.0297
RQ4	3.7500	4	4	76	1	5	3	4	1.0041
RQ5	3.9076	4	4	69	1	5	3	5	1.0228

Table 6. Evaluation of obtained results Q1-Q5 (Source: authors' processing based on data obtained in 2022)

RQ1 Digital innovations are an innovative means of hospitality services				
Question 1	Frequency	Cumulative frequency	Relative frequency	Cumulative relative frequency
disagree	4	4	0.72%	0.72%
rather disagree	12	16	2.17%	2.89%
neither agree nor disagree	56	72	10.13%	13.02%
rather agree	290	362	52.44%	65.46%
agree	191	553	34.54%	100%
RQ2 Digital innovations are a means of sustainable development of tourism in the future				
Question 2	Frequency	Cumulative frequency	Relative frequency	Cumulative relative frequency
disagree	9	9	1.63%	1.63%
rather disagree	24	33	4.34%	5.97%
neither agree nor disagree	146	179	26.40%	32.37%
rather agree	264	443	47.74%	80.11%
agree	110	553	19.89%	100%
RQ3 Digital innovations increase the safety of tourism participants in hospitality services				
Question 3	Frequency	Cumulative frequency	Relative frequency	Cumulative relative frequency
disagree	14	14	2.53%	2.53%
rather disagree	33	47	5.97%	8.50%
neither agree nor disagree	188	235	34.00%	42.50%
rather agree	230	465	41.59%	84.09%
agree	88	553	15.91%	100%
RQ4 Digital innovations are a means of protecting the health of tourism participants in hospitality services				
Question 4	Frequency	Cumulative frequency	Relative frequency	Cumulative relative frequency
disagree	14	14	2.53%	2.53%
rather disagree	25	39	4.52%	7.05%
neither agree nor disagree	140	179	25.32%	32.37%
rather agree	244	423	44.12%	76.49%
agree	130	553	23.51%	100%
RQ5 Digital innovations reduce the risk of disease transmission between participants in tourism and hospitality services				
Question 5	Frequency	Cumulative frequency	Relative frequency	Cumulative relative frequency
disagree	8	8	1.45%	1.45%
rather disagree	28	36	5.06%	6.51%
neither agree nor disagree	97	133	17.54%	24.05%
rather agree	245	378	44.30%	68.35%
agree	175	553	31.65%	100%

From the results in Table 6, it can be judged that the lowest level of disagreement was recorded for RQ1, where the respondents perceive digital innovations as an innovative means of hospitality services. On the contrary, the highest rate of disagreement at the level of 2.53% was recorded for RQ3 and RQ4. However, the final value is low. Disagreement level was comparable in the case of RQ2 (1.63%) and RQ5 (1.45%). The highest level of agreement was recorded again for RQ1 (34.54%). RQ5 had the second highest level of agreement (31.65%). The lowest one was observed in RQ3- the safety of tourism participants in hospitality services (15.91%). In all five question the respondents agreed in the most frequently chosen evaluation at a value of 4 (Likert scale-agree). The most recorded agreeable opinions were in the case of RQ3, that is, the respondents perceive digital innovations as a means of sustainable development of tourism in the future (47.74%) and safety tool of tourism participants in hospitality services (41.59%). After the evaluation of the individual questions, the established hypotheses were verified by following the selected variables. Among the four variables were: the gender of the respondents, the age of the respondents, the level of education of the respondents as well as their current economic status.

Hypothesis 1: We assume that there are statistically significant differences in the perception of digital innovations as a mean of health protection and sustainability of hospitality services with regard to the gender of the respondents.

To verify the established hypothesis 1, the Mann-Whitney U test was used, the results of which are shown in Table 9. The results of the Mann-Whitney U-test showed that there is *no statistically significant difference in the perception of the importance of applying digital innovations to hospitality services between men and women*. Hypothesis 1 is thus rejected.

Table 7. Mann-Whitney U test (Source: authors' processing in statistical program Statistica)

Dependent variable Identified factors		Independent variable: Gender		Marked tests are significant at the level $p < 0.050$				
		Valid N	Rank Sum Group	U	Z	p-value	Z Adj.	p-value
RQ1-RQ5	Women	369	103715.5	32445. 50	0.8484	0.3962	0.8484	0.3962
	Men	184	49465.50					

Hypothesis 2: We assume that there are statistically significant differences in the perception of digital innovations as a mean of health protection and sustainability of hospitality services with regard to the age of the respondents, i.e. between generation X, Y and Z. Hypothesis 2 was based on the assumption that there are statistically significant differences in the perception of digital innovations in hospitality services due to the age category of the respondents. Several studies carried out so far often divide respondents according to their age into generation X (1965-1979 – possibly we also included older respondents in this category), generation Y (1980-1995) and generation Z (1996-2010). To test the second hypothesis, we used the Kruskal-Wallis H test, the results of which are shown in Table 8.

Based on the results of the analysis, we can evaluate *that there is no statistically significant difference between age categories and the evaluation of the factor of digital innovations in hospitality services as an innovative and at the same time sustainable means of health protection (RQ1-RQ5)*. Hypothesis 2 was thus not confirmed.

There is a statistically significant difference in the multiple comparisons of p values between the oldest while consuming hospitality services, and the youngest generation Z, for which is the situation opposite.

Table 8. Kruskal-Wallis test – age generations
(Source: authors' processing in statistical program Statistica)

	RQ1-RQ5
Generation X	266.7965
Generation Y	268.6689
Generation Z	287.8952
K-W test	2.0992

Table 9. Kruskal-Wallis ANOVA – education

	RQ1-RQ5
Basic and secondary	279.3096
University- bachelor degree	308.3516
University- master, PhD.	255.1812
K-W test	8.8339
p value	0.0121

Hypothesis 3: We assume that there are statistically significant differences in the perception of digital innovations as a mean of health protection and sustainability of hospitality services with regard to the level of education of the respondents.

Hypothesis 3 was based on the assumption that there are statistically significant differences in the identified factors of perception of digital innovations as a mean of health protection and sustainability of hospitality services and respondents' education. We assumed that respondents with a higher education would perceive the importance of digital innovations more than respondents with a lower education. Based on education, we divided the research respondents into three groups. Group „1” – respondents with primary or secondary education (in the case of primary education, only younger respondents who did not have time to complete secondary education), „2” – respondents with first-level university education (bachelor) and „3” – respondents with university second level education or a higher degree (master, Ph.D. and others). The Kruskal-Wallis H test was used to test the third hypothesis, which statistically assumes that at least one population median of one group differs from the population median of at least one other group.

The test results are shown in Table 9 and graphically supplemented in Figure 3. Number 1- represents primary and secondary education, 2- higher education of the first degree, 3- higher education of the second degree and third degree. Based on the results of the Kruskal-Wallis analysis, we can evaluate that there are statistically significant differences between the evaluation (perception) of digital innovations as a mean of health protection and sustainability of hospitality services with regard to education. In this case, again, it is the respondents with higher education of second degree and even higher degree (PhD.), perceive digital innovations more as a mean of protecting the participant's health. On the contrary, respondents with a first-level university education perceive digital innovations in hospitality as a means of protection against

the pandemic the least. *Statistically significant differences were confirmed.* Multiple comparisons of p values (Table 10) again showed that the biggest differences are between the second and third groups. Thus, the hypothesis 3 was confirmed.

Table 10. Kruskal-Wallis test of education level comparison (Source: authors’ processing in statistical program Statistica)

Depend RQ1-RQ5	Multiple Comparison p values (2 tailed)		
	Independent (grouping) variable: Education =8.833873 p=,0121		
	1 R:279.31	2 R:308.35	3 R:255.18
1		0.307864	0.359093
2	0.307864		0.009246
3	0.359093	0.009246	

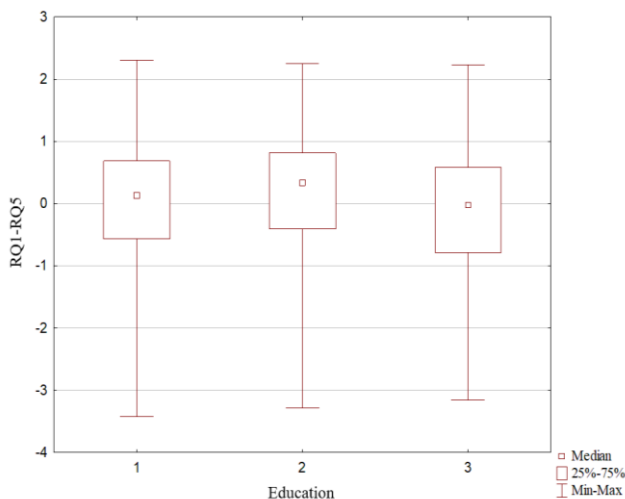


Figure 3. Box-Whiskers’ graph of factor score plot for respondents’ education (Source: authors’ processing in statistical program Statistica)

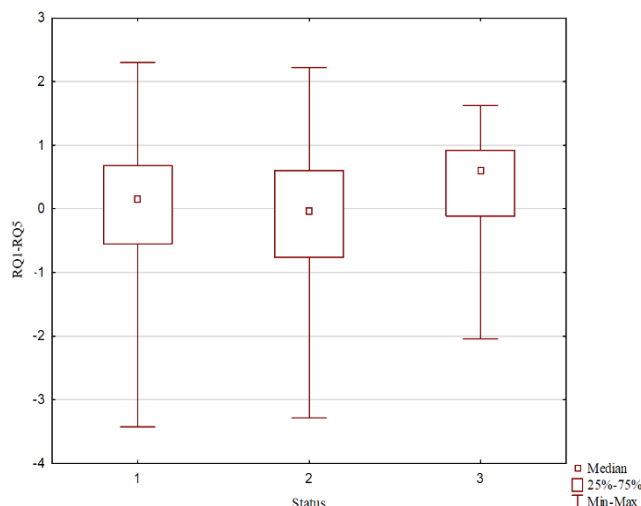


Figure 4. Box-Whiskers’ graph of factor score for respondents’ status Source: authors’ processing in statistical program Statistica

Hypothesis 4: We assume that there are statistically significant differences in the perception of digital innovations as a means of health protection and sustainability of hospitality services with regard to the status of the respondents.

As part of hypothesis 4, we assumed that there are statistically significant differences in the perception of digital innovations in hospitality with regard to the status of the respondents. We divided the respondents into three main groups: 1 – students, 2 – employed and 3 – unemployed (non-working, unemployed, pensioners, disabled pensioners, etc.). To test the fourth hypothesis, the Kruskal-Wallis H test was used, the results of which are shown in Table 11. For better clarity, the graphic representation in figure 3 is also added. Based on the results of the analysis, it can be assessed that there is again a statistically significant difference between the individual groups according to the status of the respondent and the evaluation of digital innovations in hospitality. *A statistically significant difference was confirmed.* In this case, the highest score was achieved in the group of unemployed (retired, unemployed, etc.), while the lowest level of perception of digital innovations in hospitality as a means of protecting health and sustainability was achieved by the group of workers (Table 12, Figure 4). The hypothesis 4 was confirmed.

Table 11. Kruskal-Wallis ANOVA – respondents’ status

	RQ1-RQ5
student	287.6485
employed	256.5036
non-employed	349.8889
K-W test	14.9731
p value	0.0006

Table 12. Kruskal-Wallis test of status comparison (Source: authors’ processing in statistical program Statistica)

Depend RQ1-RQ5	Multiple Comparison p values (2 tailed)		
	Independent (grouping) variable: Status; p=,0006		
	1 R:287.65	2 R:256.50	3 R:349.89
1		0.086449	0.050699
2	0.086449		0.000824
3	0.050699	0.000824	

CONCLUSION

The tourism sector is trying to get back on track after several years of unrelenting pandemic situation. Statistics from 2022 point to a sharp return to travel and the use of services in the tourism market. Due to global technological progress, hospitality services are also adapting. Digital progress is undeniable. It concerns all global areas of life, everywhere in the world. However, in the tourism industry, the pandemic has caused the initiative to develop digital elements and large contactless tools to be highlighted. They tend to decrease personal contact when providing services in a relatively mass industry. Some of them were even required by national policies in the difficult years of 2020 and 2021, which limited the participation in tourism and the use of its services due to the limitation of contact and reduction of the risk of infections transmission. For that reason, from a certain point of view, they began to be perceived as a means of protecting the health of tourism participants. Based at the example of studies carried out, taking into account the

perception of Slovak tourism participants and at the same time specifically using hospitality services, they confirm that global opinions on this issue are slowly but surely unifying. The perception of Slovak tourism participants who consume hospitality services is generally very positive towards digital innovations.

They perceive them not only as a means of innovating hospitality services, but also as a means of sustainable development and growth of the hospitality industry in the future. Considering the current direction of the tourism industry towards sustainability, this knowledge is important. Participants in the tourism industry also perceive the need to create sustainable concepts and through technology ensure that hospitality services can continuously progress.

Health protection did not remain in the background either. It also confirmed the thesis about the importance of digital technologies as an element of health protection of tourism participants. Overall, it can be assessed that digital technologies in tourism have a positive perception of their application by the public. The results also show that there are no significant personal characteristics of the respondents in their home conditions of Slovak republic, which, according to the observation, influenced this positive opinion. As can be seen, hospitality recovery thus used technological advances to support re-starting industries. The limitations of the study bring space for further research that could point to specific digital technologies that are used in domestic hospitality services and to their specific purpose.

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CONTENT VALIDITY OF AN INSTRUMENT TO ASSESS THE LOW CARBON APPROACH IN THE FRONT OFFICE DEPARTMENT OF TOURIST ACCOMODATION USING I-CVI AND MEAN ANALYSIS

Noratiqah ZASALI 

Universiti Pendidikan Sultan Idris, Faculty of Human Sciences, Tanjung Malim, Perak, Malaysia, e-mail: nuratiqah1891@gmail.com

Nor Kalsum MOHD ISA 

Universiti Pendidikan Sultan Idris, Faculty of Human Sciences, Tanjung Malim, Perak, Malaysia, e-mail: norkalsum@fsk.upsi.edu.my

Hasliza Abd HALIM 

Universiti Utara Malaysia, School of Languages, Civilisation and Philosophy, Kedah, Malaysia, e-mail: haslieza@uum.edu.my

Mohd Yazid Mohd YUNOS 

Universiti Putra Malaysia, Department of Landscape Architecture, Serdang, Selangor, Malaysia e-mail: mohdyazid@upm.edu.my

Nor Junainah MOHD ISA 

Universiti Pendidikan Sultan Idris, Faculty of Technical and Vocational, e-mail: junainah@fpm.upsi.edu.my

Hisbulloh Als MUSTOFA 

Universiti Pendidikan Sultan Idris, Faculty of Science and Mathematics, Tanjung Malim, Perak, Malaysia, e-mail: hisbulloham@gmail.com

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Abstract: The front office (FO) department manages reservation, registration, room and rate assignment, guest services, room status, concierge and bell service. The department services are crucial in developing a tourist accommodation into a low-carbon accommodation such as hotel, resort and others. The purpose of this study is to discuss the content validity of instruments for low-carbon tourist accommodation indicators in the FO department of hotels. Based on the theoretical framework, there are 53 indicators frequently used in constructing low-carbon FO instruments. The study employed the Item Content Validity Indexes (I-CVI) analysis method and mean analysis to assess content validity. The method comprised item clarity, language appropriateness, and score scale using a five-point Likert scale to analyze expert evaluations of items using a questionnaire form. The instrument was assessed by a panel of six professionals in tourism, hospitality, and industry involved in low-carbon research. An instrument is accepted and has a good level of content validity when it exceeds the take-off value of ≥ 0.80 . One item was excluded from the instrument as it did not reach the take-off value. The average mean results of each expert review on the items ranged from 3.41 to 5.00, suggesting that no questions required repetition. Overall, 17 items were refined by fitting the items to the FO department work scope. The findings revealed that the instrument was acceptable and relevant. It provides an original and useful indicator to measure the low-carbon approach in the FO department of hotels as to achieve the agenda of low carbon tourism.

Key words: Content validity, low carbon, hotel and resort, front office department, I-CVI

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INTRODUCTION

The tourism industry is a primary contributor to anthropogenic global warming, predicted to contribute 7.5% of global carbon dioxide emissions by 2035 (Chen et al., 2018). Furthermore, the tourism industry causes approximately 8% of global greenhouse gas (GHG) emissions from aviation (40%), transportation (30%), and goods and services consumption (30%), including food and accommodation (Chen et al., 2018). Moreover, tour operators and tourists' indifference instigate the rise in high carbon emissions, which impacts the environment. Hence, increasing climate action in tourism is urgent as emissions could rapidly rebound once operations resume. Ultimately, the cost of inaction on climate is greater than the cost of any other crisis in the long term. The global tourism industry suggestions to develop low-carbon tourism are critical to ensure the country's tourism sector aligns with the goal. Managing global climate change requires cooperation from tourist lodgings such as hotels, resorts, and others to minimise carbon emissions from their daily operations, including COP 21. Additionally, the hotel industry must reduce carbon emissions by 66 per cent by 2030 and 90 per cent by 2050 (ITP, 2017). Specifically, the urgency should be recognised in tourism sector countries. For instance, Malaysia pledged to reduce carbon emissions by 45 per cent in 2030 at the COP 21 conference. The tourism accommodation sector must adapt to global and government objectives to reduce carbon emissions (CO₂) by employing a low-carbon approach to hotel or resort management.

* Corresponding author

Studies and indicators of low-carbon approaches in tourism accommodation are limited and insufficient (Lee and Jan, 2019). Furthermore, no research has specifically examined the development of instruments to assess the low carbon approach in Malaysia's tourism accommodation sector, apart from the green concept that excludes carbon measurement in operations. An attempt to bridge the knowledge gap included developing low-carbon FO indicators in tourism accommodation.

LITERATURE REVIEW

Hotel Front Office Job Scope Overview

Hotels worldwide use the term "Front Office" to describe staff that interact with customers directly and are usually the initial point of contact for arrivals. The FO department is a rooms division subset comprising various functional areas, such as reception, reservations, guest relations, concierge, switchboard, bell service, and others. Moreover, FO is a significantly visible department and a vital information hub for hotel visitors and staff regardless of the hotel size or type and whether the sub-departments are involved (Nguyen, 2019). The FO job scope includes managing booking requests, collecting and providing information at check-in, or settling guest bills or known as front-of-the-house operations. Meanwhile, back-of-the-house operations include handling guest accounts, rate checks, and preparing guest bills and reports (Nguyen, 2019). The FO functions involve the different stages of the guest stay: pre-arrival, arrival, occupancy, and departure. Thus, the FO possess a crucial role in the hotel, overseeing the activities centre, customer service, hotel revenue, and hotel performance. One way to ensure the sustainability of the FO chain operation between hotel staff and guests is low-carbon practices. The hotel industry is estimated to account for approximately a quarter of tourism carbon emissions (UNWTO, 2014). Hence, the hotel sector has high and intensive energy consumption. Furthermore, implementing a low-carbon approach in FO hotels as an initial strategy is vital in influencing work culture.

Energy Consumption in Hotel Accommodation

The tourism sector contributes to energy emissions observable through hotel operations. Navratil et al. (2019) mentioned that the hotel accommodation sector grows while consuming increasing energy. Carbon emissions from the tourism accommodation industry are expected to increase by 3.2% per year, reaching 728Mt by 2035. Resultantly, the Asia-Pacific area is predicted to emit high carbon emissions in 2005, between 29% to 40% by 2035. Additionally, the tourism accommodation industry contributes 21% of all global carbon emissions (Mukhopadhyay et al., 2018). The energy consumed by accommodations includes heating and cooling, lighting, internal and external cleaning of the facilities, and salt water desalination (Isa et al., 2019; Isa et al., 2018; Isa et al., 2015; Yunos et al., 2015). Carbon emissions from the tourism accommodation sector are calculated according to energy consumption at the destination, comprising heat and electricity usage during the stay. The UNWTO (2014) highlighted that Asia's hotel accommodation energy consumption is higher than in Europe, specifically in three to five-star hotels, including Malaysia. Air conditioning systems intense operation contributes to the main energy usage. Hotel accommodations in Asia consume more water than hotel accommodations in other countries.

In Taiwanese hotels, the average air consumption is approximately 902 litres per night, the highest consumption rate in international standard accommodation hotels (Gössling, 2013). The emission of hotel liquids and solid waste causes degrading water quality and ecosystems. Furthermore, environmental maintenance costs in solid waste management are substantial. Therefore, the lack of sustainable solid waste and water management systems causes issues and contributes to carbon emissions. Table 1 presents the carbon emissions of hotels for each standard and per bed (Qiu et al., 2017). Observably, the higher the hotel rating, the higher the energy release. Carbon emissions from tourist destinations energy consumption can be lowered by considering the influence on accommodation structures. Electricity use for accommodation operations is controllable by implementing energy-efficient systems and adopting energy-saving behavioural changes (Isa et al., 2019; Isa et al., 2018). Hence, a low-carbon approach should be applied in tourism accommodation operations, including the FO Department.

Table 1. Differences in Energy Consumption Intensity and Emission Factors of Each Hotel (Source: Qiu et al., 2017)

Hotel Rating	Energy Intensity (MJ/per bed)	Emission Factors (kg/per bed/night)
5-star hotel	155	24.57
4-star hotel	130	20.61
3-star hotel	110	17.44
2-star hotel	70	11.10
1-star hotel	40	6.34

Hotel Front Office with Low-Carbon Indicators in Research Instrument Development

Tourism growth is expected to surpass 20 years, and the rising strain on natural resources and fuel consumption demonstrates the importance of low-carbon tourism. The low-carbon approach is a vital concept involving a deep appreciation for environmental issues and green ecology with energy-efficient consumption and minimal pollution (Lee and Jan, 2019; Isa et al., 2019; Isa et al., 2018; Isa et al., 2015; Yunos et al., 2015). Moreover, multiple studies highlight the elements of the low-carbon approach in hotel operations related to the FO department, such as low-carbon education and advocacy, carbon emission data and green lifestyle for staff and guests that should be employed in office management (Wejwithan et al., 2018; Rico et al., 2019; Tang et al., 2018). Apart from increasing awareness of the need to implement low-carbon practices in hotel operations, hotel operators should cooperate with the tourism industry to highlight energy consumption reduction and carbon emission policies (Wang et al., 2019a). Several low-carbon approaches in developing research indicators include using advanced technology management systems, such as green technology use in solid waste

management (Michailidou et al., 2016; Pan et al., 2018), providing energy-saving certification systems by assessing carbon-emission timeline predictions and promoting low-carbon products (Gössling and Scott, 2018).

The tourism sector can mitigate climate change by adopting low-carbon tourism accommodations, specifically in island destinations, by focusing on a low-carbon approach in daily operations. As low carbon accommodation research is still new in Malaysia, a construct is needed to develop a questionnaire instrument by investigating the expert validity evaluation of the low carbon approach items on tourism accommodation. Thus, the study examines the content level of low-carbon approach item measurement tools in the FO Department of tourist accommodations. Specifically, only a valid, reliable, and systematic questionnaire instrument can present precise and accurate data for the actual study.

Based on the literature review, there are 53 indicators used by the authors in constructing low-carbon FO instruments, as illustrated in Table 4 (Column B). After the validity process through expert evaluation and remark, the number of final items approved by the committee was reduced into 23 indicators, as presented in Table 5. The low-carbon FO indicators were divided into three primary aspects: Energy Saving, Green Waste Management, and Communicate Green Action. The following section of the study discusses the methodology and results of the questionnaire instrument validity assessment using the I-CVI and Mean Average method. The study also determined the constructs and sub-constructs of the questionnaire instrument according to experts' agreement based on the FO Department scope of implementation management.

MATERIALS AND METHODS

This study implemented Lynn's (1986) technique for item construction and validity applicable in new studies to establish low-carbon accommodation frameworks in the tourism sector. The approach comprises two stages: constructing the item and testing the item validity by experts to create a questionnaire instrument. The development strategy and item validity are divided into three stages.

Stage I. Development of Low Carbon Approach Items for Front Office Departments

The instrument development approach for the study questionnaire involved several stages. Summarily, the first step in instrument development involves identifying low-carbon approach items or indicators in the FO department of the tourism accommodation sector. The search for indicators was performed using systematic literature methodologies. The first searching number of items for the low carbon accommodation indicator was 121. Nevertheless, after considering various constraints in determining the final indicators aligning with the study objective, the acceptable items under the FO department were only 53 items included in the study instrument construction.

Stage II. Item Validity Assessment by Experts

The second instrument construction process involved experts assessing item validity before data collection and analysis by constructing questionnaires. Selected experts assess the item validity to obtain opinions and beliefs on the questions and determine the extent to which the questionnaire items reflected the examined constructs (Jansen and Hak, 2005). Additionally, expert instrument item validation is critical to achieving quality questionnaire data findings, reducing respondents' difficulties understanding item statements, and developing clear, concise, and short questionnaire questions. Generally, the instrument validity is crucial in determining the extent to which the instrument is able to measure the required aspects and represent the property substance important to researchers (Field, 2018).

Table 2. Group Profile of Study Instrument Validity Experts

List of Experts	Representative	Expertise	Position
Expert A	Public University	Tourism Hospitality	Senior Lecturer
Expert B	Malaysian Green Technology and Climate Change Centre	Green Technology and Low Carbon Approach	Senior Analyst
Expert C	Public University	Tourism Hospitality	Senior Lecturer
Expert D	Malaysian Green Technology and Climate Change Centre	Green Technology and Low Carbon Approach	Senior Analyst
Expert E	Public University	Tourism Hospitality	Senior Lecturer (Deputy Dean)
Expert F	Malaysian Construction Industry Development Board (CIDB)	Green Building	Chief Consultant

The absence of satisfactory validity impacts the psychometric characteristics of an instrument despite presenting a significantly high level of reliability (DeVellis, 2017). Hence, the process of conducting validity provides assurance that the instrument is defensible, accurate, appropriate, useful, and meaningful (Zainal, 2020). Validity is grouped into several categories with different purposes, such as face validity, content, criteria, and constructs. Additionally, content validity is an early stage in the instrument validation process (Bond and Fox, 2015; DeVellis, 2017). Hence, the study used content validity to assess every questionnaire item. Two basic aspects of conducting content validity are appropriateness and representability of the items in measuring what the researcher intends to measure (Rahim et al., 2018; Zainal, 2020). Expert review is needed to ensure item accuracy and content clarity in applying instrument validity. Thus, conducting content validation identifies a group of capable experts with the knowledge and experience of the focus of the study.

Particularly, the item validity is performed by experts in tourism hospitality and the implementation of low-carbon elements on tourist accommodations. The study selected six expert members or panels to validate the low-carbon approach items before conducting the pilot study and actual data collection. The study panel selection number is appropriate

according to Polit et al. (2007) and Lynn (1986), between three and ten experts. The panel assessed the questions according to their clarity, language use, appropriate scoring scale, and how much the experts agreed with the items presented. Each question was measured using a five-point Likert scale: (1) strongly disagree (2) disagree (3) not sure (4) agree and (5) strongly agree. Table 2 describes the experts' profiles. Furthermore, the validity testing period was one month to obtain the results of expert assessments on the items evaluated.

Table 3. Analysis of Each Indicator
Validity Criteria based on a 5-Point Likert Scale

Average	Validity Criteria
4.21-5.00	perfectly valid
3.41-4.20	valid/no revision
2.61-3.40	enough valid (average/no revision)
1.80-2.60	less valid/partial revision
1.00-1.80	invalid/total revision

Table 4. The Front Office Department Instrument's Validity Test Results

FRONT OFFICE DEPARTMENT						
A	B	C	D	E	F	G
No.	Item (Low-Carbon FO Approach/Indicators)	Sources	Number of Experts Agree	I-CVI Value	Average of Mean Percentage	Final Results of the Content Validity Test
I. Energy Saving						
A1 Energy Efficient Lighting System						
1.	Using high-intensity discharge lamps.	Tsai et al. (2014) Lin et al. (2018)	5	0.83	4.56	Dropped (not suitable with FO job scope)
2.	Use of compact fluorescent bulbs/ lights.	Hsiao et al.(2017)	4	0.67	4.67	Dropped
3.	Avoid the use of halogen lamps and incandescent light bulbs.	Lin et al. (2018)	5	0.83	4.83	Dropped (not suitable with FO job scope)
4.	Optimisation of daylighting.	Yusof and Jamaludin (2015)	6	1.00	4.67	Accepted (with a more specific statement)
5.	Using energy-efficient lights such as LED (40% electricity saving than conventional light bulbs).	Aomar and Hussain (2017)	5	0.83	4.72	Dropped (not suitable with FO job scope)
6.	Use lighting automation system with decrease level of lighting (using timers).	Michailidou et al. (2016)	5	0.83	4.72	Dropped (not suitable with FO job scope)
7.	Use of photometric sensors in the corridor to minimise electricity consumption.	Dewiyana et al. (2016)	5	0.83	4.50	Dropped (not suitable with FO job scope)
A2 Heating, Ventilation and Air-Conditioner System (HVAC)						
8.	Using split type of air-conditioning units.	Huang et al. (2015)	6	1.00	4.72	Dropped (not suitable with FO job scope)
9.	Using centralised air conditioning system in common areas.	Huang et al (2015)	6	1.00	4.83	Dropped (not suitable with FO job scope)
10.	Fresh air transfer (open window to utilise the air from outdoor).	Gupta et al. (2019)	5	0.83	4.78	Dropped (not suitable with FO job scope)
11.	Keep curtains closed (to reduce heating and cooling gains and losses during hot or cold weather).	UNEP (2008)	5	0.83	4.78	Dropped (not suitable with FO job scope)
12.	Monitor room temperature at 24 degrees celsius.	Nilashi et al. (2019)	5	0.83	4.72	Accepted
13.	Air-conditioning automation system (shut down automatically when windows or balcony doors are opened).	Michailidou et al. (2016)	4	0.67	4.39	Dropped
14.	Install air filter cleaning equipment and energy-saving variable frequency drives in air conditioning system.	Hsiao et al.,(2017)	5	0.83	4.06	Dropped (not suitable with FO job scope)
15.	Installing Zoned Temperature Control for HVAC.	Chan (2018)	5	0.83	4.28	Dropped (not suitable with FO job scope)
II. Water Saving						
A. Water Efficient System						
16.	Using solar thermal water heating systems (reduce the cost of domestic water heating).	Michailidou et al. (2016)	5	0.83	4.78	Dropped (not suitable with FO job scope)
17.	Using rain water harvesting system.	Dewiyana et al. (2016)	5	0.83	4.83	Dropped (not suitable with FO job scope)
18.	Reduce the water usage (all condensate water from air conditional system is directed to the planter box).	Dewiyana et al. (2016)	5	0.83	4.83	Dropped (not suitable with FO job scope)
19.	Equip with a low flow shower heads, toilets, and water urinals.	Wang et al. (2019b)	5	0.83	4.78	Dropped (not suitable with FO job scope)
20.	Reusing water such as grey water recycling system (provide internal or external water demand).	Nitvattananon and Srinonil (2019)	5	0.83	4.78	Dropped (not suitable with FO job scope)
21.	Install metering equipment to detect areas with higher or leaking water usage.	Gupta et al. (2019)	5	0.83	4.83	Dropped (not suitable with FO job scope)
III. Waste Management						
I. Green Waste Management						
22.	Recycling of waste.	Wells et al. (2016)	6	1.00	4.67	Accepted (with a more specific statement)
23.	Reusing item on site, reselling or donating (used linen to relief agencies).	Al-Aomar and Hussain (2017)	5	0.83	4.50	Dropped (not suitable with FO job scope)
24.	Use torn towels as clean rags.	Al-Aomar and Hussain (2017)	5	0.83	4.39	Accepted (with a more specific statement)

Content Validity of an Instrument to Assess the Low Carbon Approach in the
Front Office Department of Tourist Accommodation Using I-Cvi and Mean Analysis

A	B	C	D	E	F	G
No.	Item (Low-Carbon FO Approach/Indicators)	Sources	Number of Experts Agree	I-CVI Value	Average of Mean Percentage	Final Results of the Content Validity Test
25.	Green recycling equipment is provided in accommodation facilities.	Wang et al. (2019b)	6	1.00	4.83	Accepted
26.	Prepare bins for food waste.	Wang et al. (2019b)	5	0.83	4.39	Accepted
27.	Request supplier to eliminate or reduce excess packaging materials.	Al-Aomar and Hussain (2017), UNEP (2019)	5	0.83	4.39	Dropped (not suitable with FO job scope)
28.	Appoint a company to recover the sorted materials after sorting or storing process (prevent from risks of waste exposure).	Nitivattananon and Srinonil (2019), UNEP (2019)	6	1.00	4.83	Dropped (not suitable with FO job scope)
29.	Using both sides of the paper with small margins and font size.	Aomar and Hussain (2017)	6	1.00	4.83	Accepted
IV. Food Safety and Services						
A. Food Management and Safety						
30.	Promoting the food and vegetarian culture to the customers.	Dong and Wu (2014), Hsiao (2015)	5	0.83	4.00	Dropped (not suitable with FO job scope)
31.	Promoting local product/ ingredient.	Lee and Jan (2019), Gupta et al. (2019)	5	0.83	4.00	Dropped (not suitable with FO job scope)
32.	Promoting a healthy green food menu.	Hsiao et al. (2017), Nitivattananon and Srinonil (2019)	5	0.83	4.00	Dropped (not suitable with FO job scope)
33.	Promoting food carbon label (food consumption) to the customers.	Liu and Pan, 2016, Lin et al. (2018)	5	0.83	3.89	Dropped (not suitable with FO job scope)
V. Communicate Green Action						
A. Low Carbon Management						
34.	Use low carbon vehicles in the hotel area.	Lee and Jan (2019), Nitiva-ttananon and Srinonil(2019)	6	1.00	4.83	Dropped (not suitable with FO job scope)
35.	Promoting environmental and greening beautification in hotels/resorts via landscape design (planting trees and environmental arranging).	Cho et al. (2016), Lee et al. (2018)	6	1.00	4.83	Accepted
36.	Provide travel guides and information on low carbon destination.	(Cho et al. (2016), Hsiao (2015)	6	1.00	4.83	Accepted
37.	Promoting local people as tour guides under vacation packages.	Cho et al. (2016)	6	1.00	4.83	Accepted
38.	Promoting authentic low carbon island-based product for tourist souvenirs.	Tang et al. (2018), Chen et al., (2018)	6	1.00	4.83	Accepted
39.	Promotion of low carbon hotels/resorts on social media.	Cho et al. (2016), Zhang (2017)	5	0.83	5.00	Accepted
40.	Encourage tourist to buy local products and handicrafts.	He et al. (2018), Pan et al. (2018)	6	1.00	4.83	Accepted
41.	Enhance low-carbon service quality.	Tang et al. (2018)	5	0.83	3.78	Dropped (too general)
42.	Promoting eco-carbon label in accommodation services such as carbon label information (co ₂ emission amount).	Eijgelaar et al. (2016), Chen et al.(2018)	6	1.00	4.72	Dropped (not suitable with FO job scope)
43.	Promoting the extension and the operational lifespan of tourist service facilities to avoid indirect energy consumption and carbon emission.	Hsiao (2015), Tang et al. (2018)	6	1.00	4.17	Accepted (with a more specific statement)
44.	Monthly training for employees (low-carbon knowledge and awareness among staff).	Hsiao et al. (2017), Wang et al. (2019b)	6	1.00	4.89	Dropped (can be classified as item 48)
45.	Actively participate in low-carbon activities.	Cho et al. (2016)	6	1.00	4.50	Accepted
46.	Allocate low-carbon funds.	Cho et al. (2016)	6	1.00	4.50	Accepted (with a more specific statement)
47.	Promoting waste reduction and cycling practices to the customers.	Hsiao et al. (2017)	6	1.00	4.50	Accepted (separate into two items)
48.	Organise low-carbon activities among employees.	Wang et al. (2019b)	6	1.00	3.83	Accepted
49.	Develop employees' habits and attitude for low-carbon behaviours.	Wang et al. (2019b)	6	1.00	4.61	Accepted
50.	Report documentation on carbon emission level and reduction (carbon audit).	Gössling and Scott (2018)	6	1.00	4.83	Accepted
51.	Promoting short haul travel (slow travel packages) with provided carbon efficient itineraries.	Rico et al. (2019)	6	1.00	4.56	Accepted
52.	Using e-marketing for low-carbon accommodation travel information.	Cho et al. (2016), Hsiao (2015)	6	1.00	4.00	Accepted
53.	Promoting discounts offered to tourists participating in low-carbon travel (participating in low-carbon vacation packages such as practicing low carbon behaviour throughout the vacation)	Huang et al. (2017), Zhang (2017)	6	1.00	4.83	Accepted

Stage III. Validity Analysis

Researchers use several methodologies to determine the validity results in the content validity process (Zainal, 2020). The study used the I-CVI analysis and the Mean Average analysis method. The analysis determines inter-expert reliability and measures quantitative content validity procedures (Mustapha, 2017). The technique also assists in establishing the requirement and acceptability of maintaining each item in the instrument. The I-CVI method was determined by calculating the relevant and agreed-upon mean score for each item using the formula below by Mustapha (2017).

$$\text{Item Content Validity Indexes (I - CVI)} = \frac{\text{The total score agreed by the expert}}{\text{Number of experts}}$$

To assess the acquired value (I-CVI), the total average of the scale was obtained by dividing the total score agreed by the experts by the number of experts. The value of an acceptable and relevant newly designed instrument is 0.80 (Polit et al., 2007). Results surpassing the take-off value (depending on the number of experts participating) suggest a good validity value of the instrument item. The next step is classifying the item validity criteria using the mean average calculation based on the following formula by Arikunto (2010):

$$\bar{X} = \frac{\sum x_i}{n} \quad \bar{X} = \text{The average of each indicator}; \quad \sum x_i = \text{Total number of the answers scores of the respondents}; \quad n = \text{Numbers of respondents}$$

The average mean result of each expert evaluation demonstrated the mean value in the range of 3.41 to 5.00. The results signified that the evaluated item was within the acceptable range of 3.41 to 5.00 and did not need an item repetition process. The mean classification used in this research is presented in Table 3. Experts' comments on the item statement were also considered, and actions were taken to aid respondents in understanding when answering the questionnaires, such as placing the item statement based on the suitability of the FO department work scope.

RESULTS AND DISCUSSION

Table 4 summarises the results of expert agreement on the content validity index items and mean average, including item clarity, language appropriateness, and an appropriate scoring scale ranging from strongly disagree to strongly agree. The I-CVI findings demonstrated certain items with a low value of 0.67, the sub-item under A1: energy-efficient lighting system. In selecting the final indicator of low carbon accommodation, the sub-item using bulbs or compact fluorescent lamps was excluded. The deletion was based on the experts' opinion that the item statement is unclear and difficult to grasp. Moreover, several appraisers with expertise in tourism hospitality management recommended deleting 31 items due to not fitting the scope of low carbon implementation tasks under the FO department. For example, the use of energy-saving equipment is more suitable in the Maintenance and Logistics Department. After considering the comments and recommendations, the content validity test findings were applied based on the construct in Table 4 (Column G).

Table 5. Low-Carbon Front Office Indicators

Low-Carbon FO Indicators	Low-Carbon FO Sub-Indicators
Energy Saving	<ul style="list-style-type: none"> • Optimisation of daylighting in office spaces/areas. • Open windows to utilise the air from outdoor (if without air-condition operation). • Set the office room temperature at 24 degrees Celsius.
Green Waste Management	<ul style="list-style-type: none"> • Recycle office waste collection (usable paper, cardboard, office and toilet equipment, packaging products, food and beverages waste, and others). • Use both sides of the paper with small margins and font size. • Use torn towels as clean rags for cleaning purposes. • Provide green recycling equipment in the office; Prepare bins for food waste.
Communicate Green Action	<ul style="list-style-type: none"> • Promote travel guides and information on low carbon destinations. • Promote authentic low carbon island-based products for tourist souvenirs. • Promote low carbon accommodation on social media. • Encourage tourists to buy local products and handicrafts. • Actively participate among staff in low-carbon activities. • Organise low-carbon activities (in accommodation management). • Allocate low-carbon funds (provide low-carbon moneybox at the front counter). • Encourage waste reduction practices; Encourage cycling practices. • Develop low carbon habit and attitude among employees. • Provide report documentation on carbon emission level and reduction (carbon audit). • Promote short haul travel with carbon efficient itineraries. • Use e-marketing for low carbon accommodation travel information to tourist guest. • Promote discounts offered to the tourists participating in low carbon travel (low carbon vacation packages from practicing low carbon behaviour throughout the vacation).

In the I-CVI and Mean Average item analysis, several low items were rectified or adjusted according to the FO department work scope in hotel and resort operations. Previously confusing items were summarised as clear and concrete as expert opinions. The method corresponds with Saleh (2020), whereby the listed items should be re-examined before refining. For instance, identifying the terms present in the items and the similarities with other items, specifically overlapping items. The experts' evaluations and comments demonstrated that several item statements were difficult to understand and overlapped meaning. Resultantly, the outcome of the items for the research instrument is 23 items to be used in the field study as shown in Table 5.

CONCLUSION

Developing research instruments is crucial in ensuring reliable and useable questionnaire data. To ensure that the instruments produced can be reused, instrument development must be performed precisely and appropriately from the standpoint of validity (Ahmad and Abdullah, 2020). A correctly constructed instrument will not pose problems in assessing the study variables. Hence, the I-CVI content validity test was employed to evaluate whether the experts' agreement on the item statement is high and surpasses the set boundary values. The study instrument (questionnaire) indicated a high and acceptable level. The experts' evaluation of the mean average on the extent to which the questionnaire items were clear, with appropriate language and an appropriate scoring scale were also satisfactory. Thus, recurrent expert re-evaluation was not needed. The results suggested that the questionnaire items construction can be considered and applied in future studies to measure low-carbon FO practices among the hotel operators.

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FACTORS INFLUENCING THE DECISION OF TOURIST BUSINESSES TO ADOPT DIGITAL MARKETING

Mohammad Shabeeb KHASAWNEH* 

Tourism Management Department, Ajloun College, Al-Balqa Applied University, Irbid, Jordan, e-mail: khasawnehmohammad79@bau.edu

Khalil Saleh ALADWAN 

Tourism Management Department, Ajloun College, Al-Balqa Applied University, Amman, Jordan, e-mail: dr_aladwan@bau.edu.jo.

Samer Fandi ABABNEH 

Tourism Management Department, Ajloun College, Al-Balqa Applied University, Ajloun, Jordan, e-mail: Samerfandi2007@bau.edu.jo.

Issam Mohammad AL-MAKHADMAH 

Tourism Management Department, Ajloun College, Al-Balqa Applied University, Ramtha, Jordan, e-mail: isammakhadmeh@bau.edu.jo.

Mohammad Issa ALZOUBI 

Faculty of Administrative and Financial Sciences, Irbid National University, Ramtha, Jordan, e-mail: Mzoubi@inu.edu.jo

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Abstract: The purpose of the current study is to investigate how the views of domestic tourists affect their propensity to adopt platforms and tools for digital marketing. On the basis of the perceived organisational E-readiness and the revised information systems success model, regression analyses were employed to evaluate the assumptions based on 375 self-administered questionnaire surveys done with tourist businesses. The selection of questionnaires was based on a convenience strategy and a stratified proportional sampling method. The results of the research indicate that user satisfaction, system quality, IT infrastructure, information quality, service quality, and top-level management support are substantially associated with the use of digital marketing platforms and tools. The results of this study have practical and policy implications for legislators, marketers, and managers as they design successful and efficient digital marketing strategies to satisfy the requirements and expectations of tourist businesses.

Key words: organisational E-readiness, digital marketing, information systems success model, developing country, tourist businesses

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BACKGROUND TO THE STUDY

The rising usage of the Internet and technical advancements have transformed communication (Jansson, 2022), information collection, and distribution within the tourist business. With the spread of smartphones and other electronic devices, the fast development of technology has digitally empowered visitors, encouraged gratification, and expanded tourist businesses' access to information (Misganaw and Singh, 2020; Zollo et al., 2022). Digital marketing (D-M), a marketing approach that leverages company success on visitors' ubiquitous touchpoints the internet and cellphones was developed as a result of technology's disruption of the business status quo and levelling of the marketing playing field. D-M enables companies to react to technical advancements, including websites, social media, and travel apps that are readily accessible to tourists. D-M methods attempt to entice potential buyers and encourage current customers to continue utilising the seller's services, hence establishing buyer-seller connections (Ababneh, 2022).

Digital marketing's technical mediatization has upset the conventional marketing and purchasing bubble by creating dynamic D-M channels that enable the virtual purchase of tourist items. Travelers are hence no longer apathetic targets of advertising or solitary individuals (Kotoua and Ilkan, 2017; Fan et al., 2019). They now have a role to play in the production, dissemination, and transmission of material (Villamediana et al., 2019). Moreover, when travelling, visitors increasingly communicate and interact digitally with family, friends, employers, service providers, and other tourists via various platforms, including social networks. As a result, it is now commonplace for visitors to discuss their trip experience and submit feedback about service providers through social media (Narangajavana Kaosiri et al., 2019).

Tourism is an experience-rich industry. Visitors cannot anticipate the quality of tourist items based on internet information provided by marketers and other visitors who have tried the goods. However, tourists do utilise the various

* Corresponding author

D-M platforms and tools accessible to them in order to obtain tourism-related information (during the tour planning phase, during the tour, and after the tour), and visitors have the independence to choose when, how, or whether to utilise digital marketing platforms and tools. With D-M tools and platforms, tourism businesses could only exist if clients engaged their services, their demands were met, and their satisfaction was exceeded (Sotiriadis, 2021; Yusuf and Tanvir, 2022). Prior studies (Shrestha, 2019; Misganaw and Singh, 2020; Mavis and Tembi, 2023) have attempted to comprehend the behavioural intentions of technology individuals in various circumstances. Shrestha (2019) analyses the several elements impacting the acceptability and utilisation of D-M by the tourist sector. Misganaw and Singh (2020) examine the influence of organisational characteristics on the proliferation of D-M among outbound visitors. The results of Jaafar and Khan's study in 2022 demonstrate that perceptions impact behavioural intentions.

Notwithstanding past research on the behavioural intentions of individuals, numerous gaps remain in the literature. Numerous research (Adam, 2012; Demeke and Olden, 2012; Acheampong and Siiba, 2020) have examined demographics as predictors of individual intentions. The younger generation has been given a lot of focus recently (Bermeo-Giraldo et al., 2022). Thus, less emphasis has been put on the variety of visitors. Second, the influence of technology on the behaviour of visitors has often been studied (Kurniawan et al., 2019; Nikolić et al., 2022; Seshadri et al., 2023). Several researches have examined social media as a advertising tool (Atshaya and Rungta, 2016; Key, 2017; Agus et al., 2021); the influences of D-M tools (Chamboko-Mpotaringa and Tichaawa, 2021; Anuj et al., 2023); and the influence of digital word of mouth on tourist product and service marketing (Nuseir and Aljumah, 2020; Piñeiro-Otero and Martínez-Rolán, 2016; Pradhan et al., 2020) The researchers did not investigate how different factors affect the acceptance of technology by tourism-related businesses. This research tries to address these limitations.

Furthermore, since the tourism industry's acceptance of technology continues to increase, it is crucial to understand visitors' perspectives on their desire to utilise D-M platforms and tools for tourism objectives. Considering the competitive nature of the industry, tourist firms have demonstrated a growing interest in adopting and implementing D-M. In addition, it is essential to identify the gaps in the literature that must be filled in order to obtain a more comprehensive and refined grasp of where the tourism industry is headed and what academics, practitioners, and policy analysts can do to better comprehend the industry. Utilizing ICT in internationally competitive marketplaces (Jaafar and Khan, 2022; Zollo et al., 2022) provides firms with a substantial competitive advantage. The research employed the DeLone and McLean Information Systems success model (D&M ISSM) and theory of organisational e-readiness to examine the impact of domestic tourism enterprises' usage and anticipated use of D-M platforms and tools. Integrating organisational e-readiness elements with the revised D&M ISSM provides new explanations for uptake of technology and use.

Consequently, the proposed framework contributes to a more complete model that may provide a more explicit explanation of the technology acceptance behaviour of tourist enterprises in D-M, particularly in the setting of developing countries. It is essential for tourism managers, policymakers, and marketers to understand the perspectives of tourist business in D-M. Tourism places that use D-M are able to increase their competitiveness. This is due to the fact that the method by which tourists look for and acquire tourist business goods and services is evolving (Mavis and Tembi, 2021). The purpose of this article is to increase understanding of D-M by examining the information systems success model, the theory of organisational e-readiness, and their uptake in the tourism business, with a focus on developing prospects for Jordan, using an integrated literature review and quantitative analysis as the research methodology. Thus, the objective of this research is to analyse the factors that affect the decision of tourism businesses to adopt D-M platforms and tools.

THEORETICAL FRAMEWORK

Updated information systems success model

The D&M ISSM was established after the previous D&M ISSM (1992) was critically criticised by several researchers (Mason, 1978; Alzoubi et al., 2014). According to the original concept, individual assumptions about the IQ and system come before actual technological usage and satisfaction. Actual utilisation is impacted by satisfaction, which is created by actual technology use, and this has personal and organisational implications (Yel et al., 2020). DeLone and McLean (2003) offered a revised D&M ISSM that incorporated "service quality" and "net benefits" in response to the feedback obtained. The new D&M ISSM consists of the following five aspects: Information Quality (IQ), System Quality (SQ), Service Quality (SeQ), use or intention, user satisfaction, and net benefit. These aspects aid in comprehending customer goals and technological success. Alkawsi et al. (2018) argued that the advantages of new D-M technology are only realised when the novel technology is widely recognised, adopted, and utilised. The effectiveness of D-M tactics used by the tourism industry is contingent upon the usage and acceptance of D-M platforms and tools by visitors. Knowing the many factors that influence a person's willingness to adopt new technologies is crucial for the effectiveness of D-M efforts.

Perceived organisational E-readiness (POER)

In addition to the perceived benefits of the D-M solution, the readiness of individuals who have access to their jobs is influenced by internal organisational factors. In terms of D-M adoption, scholars identify them according to their Perceived Organisational E-Readiness (POER) (Molla and Licker, 2005; Lokuge et al., 2018; Misganaw and Singh, 2020). This research applies this approach to the adoption of D-M. POER refers to the extent to which workers are eager and able to accept D-M, according to their assessment of the organization's capacity to adopt the innovation. IT infrastructure, Human Resources (HR), and Top Management Support (TMS) are three organisational elements often highlighted in the literature on technology acceptance (Misganaw and Singh, 2020). POER is characterised by its internal desire, preparation, and readiness to accept new technologies (Molla and Licker, 2005). The organisations without such a

capability will be less inclined to adopt new technologies since they lack preparedness, as suggested by Leung et al. (2015). Molla and Licker (2005) observed that enterprises in developing countries lack financial, technical, and HR; therefore, they have little experience conducting business online. Consequently, POER has emerged as the most significant barrier to the adoption and institutionalisation of new technology. However, Lokuge et al. (2018) observed that despite the abundance of new technologies, firms struggle to enjoy their benefits due to inadequate organisational preparation.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Information quality

QI elicits emotions, generates memorable experiences, and is linked to purpose. With the aid of technology and the internet, clients all over the globe have access to accurate information in today's society. Though tourist businesses have less of an alternative, they should transition to offering QI in an efficient and effective way (Li et al., 2017). QI is multidimensional, as it encompasses format, accuracy, comprehensiveness, reliability, and appropriateness. Mavis and Tembi, (2023) indicate that D-M platforms and tools are virtual gates to destinations that primarily give information to reduce the perceived dangers associated with a visit. Barreto et al. (2020) agree that visitors to destination websites see promoted information as credible. Hence, informational value influences trust (Wengel et al., 2022; Seshadri et al., 2023; Anuj et al., 2023), which influences individuals' intentions. In light of the preceding discussion, the research hypothesised the following:

H1: IQ has a significant impact on the usage of/intention to utilise D-M platforms and tools.

H2: IQ significantly impacts tourists' business satisfaction.

System quality

In this research, "system" refers to D-M platforms and tools, including websites, social networking sites, travel apps, and electronic review sites. SQ covers navigation, interface design, visuals, and user interface, according to Dedeke (2016). This research assumes the viewpoint of DeLone and McLean (2003), who contend that SQ incorporates technical elements including usability, navigability, and aesthetics. In D-M, the system's design is a crucial basis for persuasion. The revised D&M ISSM concept is that digital tourism destination marketing strategies are platforms where prospective visitors-to-be obtain destination information and develop their first impressions of the location. If, for instance, the quality of the system is poor, it is predicted that prospective tourists may abandon the system, search for an alternative information source, or even change their vacation destination. Barreto et al. (2020) stated that users' impressions of a visually appealing website elicit positive emotions that may boost their search behaviour. As shown by Li et al.'s (2017) research, one of the goals of destination management organisations is to drive traffic to local tourist firms and their websites. This is done rather than trying to maximise the commercial advantage that destination management organisations get. In light of the preceding discussion, the research hypothesised the following:

H3: SQ has a considerable impact on the intention to utilise D-M tools and platforms.

H4: SQ has a considerable impact on the overall level of satisfaction experienced by tourists.

Service quality

Nowadays, the way in which users perceive the delivery of service is essential to the success of the company since it determines the loyalty of clients. However, technology has introduced new metrics for measuring good customer service that did not exist on conventional service delivery platforms, thus altering the conceptual understanding of service quality (Wengel et al., 2022; Tavitiyaman et al., 2022). These factors involve speed, interaction, navigation, and the availability of service providers 24 hours a day, seven days a week. High SeQ is seen when companies give timely service, clients feel engaged while utilising interactive D-M tools, the information supplied is reliable, and businesses react to customer inquiries. Perceived SeQ represents the judgements visitors make based on their demands about product and service quality, which subsequently influences the use intentions of visitors. In light of the preceding discussion, the research hypothesised the following:

H5: SeQ has a substantial impact on the intention of D-M platforms and tools.

H6: SeQ has a substantial impact on tourists' overall travel satisfaction.

Satisfaction

D-M provides consumers with a variety of advantages, such as information that is tailored to their specific requirements, interfaces that enable users to utilise mobile devices or desktop computers, and the ability to participate in content development (Du Plessis, 2017). Visitors may freely publish evaluations of their travel experiences in a user-friendly environment, as well as comment, like, and share news stream material (Wang et al., 2020). According to Jiménez-Barreto et al. (2020), technology users are most engaged with systems that are consistent, dynamic, and vibrant. For example, Kuhzady et al. (2020) found that participation leads to familiarity. Visitors have distinct wants and expectations that they anticipate will be met by D-M platforms. For the purposes of this research, expectations indicate the net advantages that consumers anticipate from D-M. The idea of customer satisfaction may also be referred to as consumer fulfilment (Buhalis and Sinarta, 2019), in which tourists are satisfied with the locations they visit. Quality is essential for technology users who have positive, vivid, and familiar pictures of places, as it leads to greater satisfaction and more robust uses and intents of D-M for tourism. Generally, satisfaction has a favourable relationship with usage (Agha et al., 2020). In light of the preceding discussion, the research hypothesised the following:

H7: Tourist satisfaction is significantly related to the use and intention to use digital marketing tools and platforms.

H8: Tourists, overall satisfaction is significantly related to benefits.

H9: The use of/intention to use digital marketing tools and platforms is significantly related to net benefits.

IT infrastructure Human resource, and top management support

IT infrastructure is required for a company to accept new systems since it offers the required supporting software, hardware platform, physical facilities, and computer network (Zhu et al., 2004; Oliveira and Martins, 2010; Seshadri et al., 2023; Anuj et al., 2023). Hence, IT infrastructure shows the capacity to build and manage information systems and is a crucial element of corporate competitiveness. The more developed an IT infrastructure is, the simpler it is for a company to use D-M to enhance the performance of its tourism business (Vandewater and Shim, 2007; Xin and Levina, 2008). Human Resource (HR), which refers to the availability and accessibility of workers and employees with certain critical IT skills and expertise necessary to carry out D-M projects and initiatives Studies revealed that the greater the IT knowledge and expertise of ministry personnel, the greater the likelihood of early acceptance, and vice versa (Heeks, 2002), the absence of resources would result in the failure of D-M technologies. Top Management Support (TMS) for the uptake of a technology is particularly crucial for businesses (Bradford and Florin, 2003), as chief executive officers or their equivalents often have the final word on IT strategy and expenditure. Transitioning from conventional in-house IT operations to the new D-M tools is a strategic choice for the majority of these firms. If the executives comprehend D-M and have a favourable attitude towards the innovation, they will likely support its implementation. In regards to the decision to adopt itself, the extent to which D-M apps will be employed is primarily determined by the degree of executive support (Low et al., 2011). Hence, organisational readiness is a first-order formative construct consisting of IT infrastructure, HR, and TMS. It is a pillar that, like technical readiness, contributes to the establishment of D-M readiness at a higher level. This results in the following assumption:

H₁₀: IT infrastructure significantly affects the use of/intention to use digital marketing tools and platforms.

H₁₁: HR significantly affects the use of/intention to use digital marketing tools and platforms.

H₁₂: The TMS has a significant impact on the usage and intent to utilise digital marketing platforms and tools.

The research provided a framework (Figure 1) that depicts the many variables and the interactions between them. This framework was derived from the literature that was discussed previously. The suggested model used both POER factors and the revised D&M ISSM. The framework hypothesised that IT infrastructure, HR, TMS, SeQ, SQ, IQ, and satisfaction had a substantial impact on the usage and intent to utilise D-M platforms and tools. Consequently, the research contends that SeQ, SQ, and IQ have a considerable impact on the overall pleasure of travellers. Also, the research indicates that visitors' general contentment and usage of D-M platforms and tools are highly associated with net benefits.

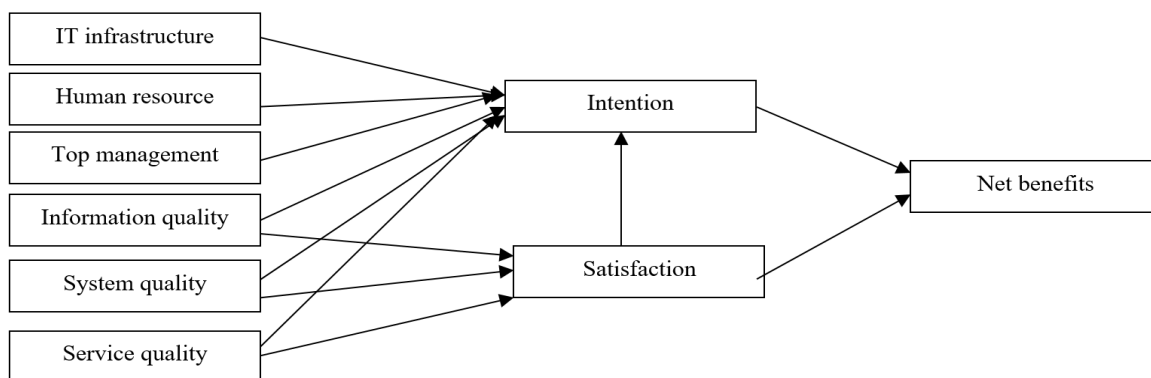


Figure 1. Proposed model for analysing the adoption of D-M platforms and tools

METHODOLOGY

This study used a quantitative research methodology. A questionnaire was constructed to test the study constructs based on an in-depth evaluation of the relevant literature. The first portion of the survey requested respondents' demographic information. The following sections included questions related to the study's constructs. In this research, a five-point Likert scale survey was employed. Research factors include IT infrastructure, HR, TMS, SeQ, SQ, and IQ. The POER factor measurements were generated in accordance with Misganaw and Singh's (2020) research, while the D&M ISSM evaluations were largely developed and modified from Mavis and Tembi (2023).

After completing the data analysis, the present research drew conclusions and made recommendations on the topic of study (Figure 2). Before conducting the full-scale study, the survey employed in this study was pilot-tested on a sample of tourist businesses, including hotels and tour and travel businesses, to determine its ease of administration, appropriateness, reliability, and validity. To achieve high-quality responses, the author describes the questionnaire's criteria. In addition, the various questions were designed to categorise tourist businesses.

From November to December 2022, 395 questionnaires were sent to the various tourist businesses. After the conclusion of data gathering, 375 valid questionnaires were deemed to have contributed to the findings. Due to the fact that 20 of the surveys were missing information, they were declared worthless and deleted from the study. On the gathered data, descriptive and inferential statistics were conducted. Version 19 of SPSS was used to analyse the data. To evaluate the factors, descriptive and regression analyses were conducted to test hypotheses in the study.

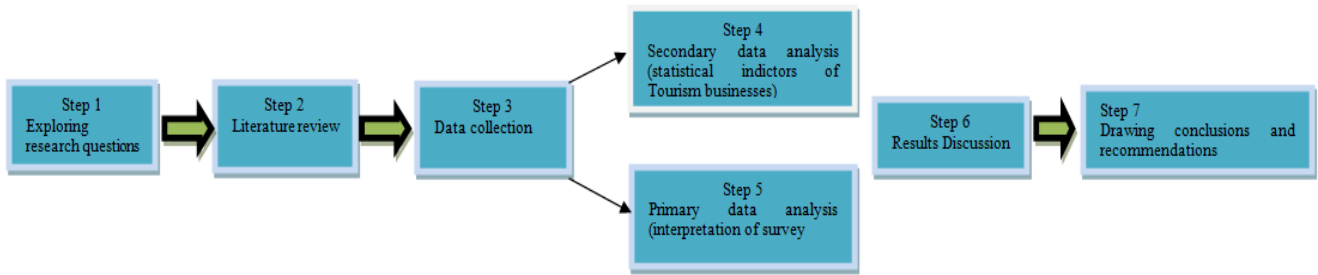


Figure 2. Methodology flowchart

Sample description

As indicated in Table 1, of the 375 completed surveys, the majority of participants were young (73.3%), falling between the ages of 18 and 39. Regarding occupation, it was discovered that around 77.6% of participants were managers (marketing, sales, reservation, and general managers). In addition, the rest, 22.3% of respondents, were active e-marketing owners and employees. In regards to gender, 80.2% of participants were male. The majority of tourist businesses (84%) have corporate websites and are linked to the internet infrastructure.

Reliability of the constructs

The components' reliability was determined employing Cronbach's alpha, a well-known approach for assessing research involving multiple Likert scales. The sample's adequacy was evaluated using the Kaiser-Meyer-Olkin (KMO) and Bartlett tests. The Cronbach's alpha reliability findings indicated that the constructs are trustworthy with a minimum score of 0.833, suggesting internal consistency and dependability. The findings are presented in Table 2.

Table 1. Respondents' demographic information (Source: Researchers survey, 2022)

Variables	data
Age	18-29 (N=104; 27.7%)
	30-39 (N=171; 45.6%)
	40-49 (N=75; 20%)
Gender	Above 50 (N=25; 6.6%)
	Male (N=301; 80.2%)
	Female (N=74; 19.7%)
company websites	Yes (N=315; 84%)
	No (N=60; 16%)
Job title	Mangers (N=291; 77.6%)
	Owners (N=55; 14.6%)
	Employee (N=29; 7.7%)

Table 2. Reliability results (Source: Researchers survey, 2022)

Variables	No of items	Cronbach's alpha
IT infrastructure	5	0.911
HR	5	0.903
TMS	6	0.941
SeQ	5	0.859
SQ	4	0.875
IQ	3	0.901
Satisfaction	3	0.833
Intention	9	0.925
Net benefits	5	0.943

Table.3 KOM and Bartlett's test (Source: Researchers survey, 2022)

KMO	0.819	
Bartlett's test of sphericity	Approximate Chi-square	4233.656
	Df	6
	Sig.	0.00

According to Table 3, the computed KMO for the scale variables was 0.819 percent more than the suggested value of 0.6. (Hair et al., 1998). Bartlett's test of sphericity determined Chi-Square = 4233.656, P 0.00, showing that it is statistically significant, hence supporting the study's sample size of 375. To examine the statistical significance of the variables, regression analyses were conducted. The items were evaluated for multicollinearity using collinearity statistics, namely tolerance and Variance Inflation Factor (VIF). The statistical significance of the factors was determined by regression analysis. The hypotheses were tested for multicollinearity using collinearity statistics, namely tolerance and Variance Inflation Factor (VIF). According to Table 4, the obtained tolerance values varied between 0.29 and 0.64. Tolerance levels less than 0.70 are judged appropriate since they imply no multicollinearity problems. The Variance Inflation Factor (VIF) was less than five, suggesting that there were no collinearity issues.

Table.4 Multicollinearity and Correlation analysis (Source: Researchers survey, 2022)

Independent	Path	Dependent	Correlation	Tolerance	VIF
IT	→	Intention	0.645	0.354	3.656
HR	→	Intention	0.439	0.297	4.254
TMS	→	Intention	0.712	0.352	3.540
SeQ	→	Intention	0.534	0.341	3.452
SQ	→	Intention	0.654	0.643	2.147
IQ	→	Intention	0.687	0.524	2.635
Satisfaction	→	Intention	0.577	0.478	2.81
SQ	→	Satisfaction	0.498	0.468	4.39
IQ	→	Satisfaction	0.589	0.542	4.25
SeQ	→	Satisfaction	0.645	0.391	3.26
Intention	→	Net benefits	0.761	0.376	3.79
Satisfaction	→	Net benefits	0.684	0.421	4.51

Table 5 displays the outcomes of model 1. The multiple regression analyses were undertaken to determine the impact of seven perception factors on visitors' usage of digital marketing platforms and tools for tourism businesses. The model describes 41.2% ($R^2 = 0.412$) of the variation in the intention to use D-M for tourism business objectives across tourism businesses. Six of the seven perception factors are significantly connected to visitors' usage of D-M for tourism objectives in Model 1: IT ($\beta=0.464$; $t=4.709$; $p=.000$); TMS ($\beta=0.380$; $t=6.241$; $p=.000$); IQ ($\beta=0.321$; $t=0.433$; $p=.000$); SQ ($\beta=0.233$; $t=5.554$; $p=.000$); service quality ($\beta=0.257$; $t=5.849$; $p<.000$) and satisfaction ($\beta=0.214$; $t=0.485$; $p=.001$).

Table 5. Results of Model 1 (Source: Researchers survey, 2022)

Dependent variable: Intention							
Goodness of fit: R=0.725, $R^2=0.412$, Adjusted R ² =0.356, estimate= 0.701							
Analysis of variance		Df		Sum of squares		Mean square	
Regression		7		145.723		19.547	
Residual		295		199.811		0.513	
<i>F</i> static=40.478							
Significant <i>F</i> =.000							
	Independent variables	Unstandardized coefficients		Standardized coefficient Beta	<i>t</i> -Value	Sig.	supported
		B	Standard error				
Intention		1.425	0.166		9.015	.000	
	IT	0.464	0.078	0.389	4.709	.000	Yes
	HR	0.023	0.071	0.402	3.541	.162	No
	TMS	0.380	0.099	0.347	6.241	.000	Yes
	SeQ	0.257	0.033	0.198	5.849	.000	Yes
	SQ	0.233	0.087	0.273	5.554	.000	Yes
	IQ	0.321	0.046	0.072	0.433	.000	Yes
	Satisfaction	0.214	0.056	0.064	0.485	.000	Yes

Table 6. Results of Model 2 (Source: Researchers survey, 2022)

Dependent variable: satisfaction							
Goodness of fit: R=0.691, $R^2=0.409$, Adjusted R ² =0.338, estimate= 0.95							
Analysis of variance		Df		Sum of squares		Mean square	
Regression		5		184.625		25.608	
Residual		287		205.907		0.668	
<i>F</i> static=74.479							
Significant <i>F</i> =.000							
	Independent variables	Unstandardized coefficients		Standardized coefficient Beta	<i>t</i> -Value	Sig.	supported
		B	Standard error				
Satisfaction		1.516	0.159		7.245	.000	
	SQ	0.327	0.078	0.344	6.564	.000	Yes
	IQ	0.177	0.059	0.173	0.203	.000	Yes
	SeQ	0.219	0.071	0.240	0.891	.000	Yes

Table 7. Results of Model 3 (Source: Researchers survey, 2022)

Dependent variable: Net benefits							
Goodness of fit: R=0.711, $R^2=0.510$, Adjusted R ² =0.352, estimate= 0.89							
Analysis of variance		Df		Sum of squares		Mean square	
Regression		3		165.719		35.658	
Residual		317		255.609		0.689	
<i>F</i> static=91.589							
Significant <i>F</i> =.000							
	Independent variables	Unstandardized coefficients		Standardized coefficient Beta	<i>t</i> -Value	Sig.	supported
		B	Standard error				
Benefits		0.494	0.139		2.941	.000	
	Intention	0.334	0.259	0.164=7	0.239	.000	Yes
	Satisfaction	0.221	0.083	0.654	0.987	.000	Yes

The model describes 41.2% ($R^2 = 0.412$) of the variation in the intention to use D-M for tourism business objectives across tourism businesses. Six of the seven perception factors are significantly connected to visitors' usage of D-M for tourism objectives in Model 1: IT ($\beta=0.464$; $t=4.709$; $p=.000$); TMS ($\beta=0.380$; $t=6.241$; $p=.000$); IQ ($\beta=0.321$; $t=0.433$; $p=.000$); SQ ($\beta=0.233$; $t=5.554$; $p=.000$); service quality ($\beta=0.257$; $t=5.849$; $p<.000$) and satisfaction ($\beta=0.214$; $t=0.485$; $p=.001$). The IT infrastructure has the highest impact ($\beta=0.464$) on usage/intention, followed by TMS ($\beta=.380$). In light of the findings (Table 7), the hypotheses H1, H3, H5, H7, H10, and H12 were confirmed, whereas H11 was rejected.

Three perceived quality factors were integrated into Model 2 (Table 6) to examine their impact on total visitor satisfaction. 41% ($R^2 =.41$) of the variation in visitors' overall satisfaction after utilising D-M for tourism objectives may be described by tourists' judgements of the IQ, SeQ, and SQ, according to Model 2. Statistically, the model is significant ($p = 0.00$), as are the three quality-related perceptual factors: IQ ($= 0.177$; $t = 0.203$; $p = .000$), SQ ($= -0.327$; $t = 6.564$; $p = .000$), and SeQ ($= 0.219$; $t = 0.891$; $p = .000$). According to the initial model, it was discovered that SQ had the greatest

impact ($\beta=0.327$) on total satisfaction. According to the results (Table 6), H2, H4, and H6 have been verified. Model 3 evaluated the significance of intention to employ D-M platforms and tools, as well as satisfaction about net benefits.

The findings are summarised in Table 7. Model 3 is significant statistical ($p<0.00$), with tourist overall satisfaction ($\beta=0.221$; $t=0.987$; $p=0.000$) and use of or desire to use significant ($\beta=0.334$; $t=0.239$; $p=0.000$) variables strongly connected to net benefits. The findings demonstrate that the use/intention of visitors ($\beta=0.423$) is a more accurate predictor of expectations than overall satisfaction ($\beta=0.221$). Following the results (Table 7), hypotheses H8 and H9 were accepted. By evaluating the structural links between the various constructs, eleven of the twelve hypothesised correlations were confirmed to be substantiated by empirical evidence (Tables 5–7). The pathways were favourable.

RESULTS AND DISCUSSION

The primary objective of the research was to determine the impact of domestic tourism businesses on their usage and intent to utilise D-M platforms and tools. To accomplish this, a theoretical framework, including POER and the revised D&M ISSM, was used. The findings revealed that integrating widely accepted models as described in the literature yields an all-encompassing model that may aid in comprehending technology use and the uptake of D-M by tourism businesses. According to the findings of the study, the intention to employ D-M platforms and tools for tourist businesses was impacted by D-M aspects. It was discovered that IQ, SQ, SeQ, TMS, IT, and tourists' overall satisfaction were important predictors of the propensity to employ D-M for tourism-related business purposes.

According to the study's findings, IT and TMS are the most significant influences on D-M among tourism businesses. Similarly with the findings of Alzoubi et al. (2014), Arghya et al. (2020), Tavitiyaman et al. (2022), Mavis and Tembi (2023), which emphasise the importance of views in technological innovations, these findings highlight the importance of views in the adoption of new technology. The impact of perceived quality in terms of IQ, SQ, and SeQ on visitors' overall satisfaction was another significant finding of the research. Tourist satisfaction is subjective and technical, and it is determined by their specific exposure to available information. Prause, (2019) emphasises that the highest-quality D-M could be satisfying if it matches the user's requirements and prevents user unhappiness. Remarkably, of the three factors, SQ factors had the most impact on the overall satisfaction of travellers. Hence, SQ was a more accurate predictor than the other factors. These results concur with those of previous researchers (Yang et al., 2013; Udoka et al., 2022;), who contend that SQ is a reaction to meeting user requirements. SQ is a significant predictor of usage in the tourist business. While using D-M, tourist businesses already have expectations and realise net benefits in our digitally advanced environment. The research revealed a correlation between the usage of or intention to utilise D-M and the expected net advantages for visitors. Prior research demonstrated a favourable association between visitors' overall satisfaction, their desire to utilise the facility, and their expectations being met (Jeng et al., 2017).

CONCLUSIONS AND RECOMMENDATIONS

The research demonstrated the effect of perceptions as a psychological process behind the intention of visitors to utilize D-M and expanded the applicability of the POER and the revised ISSM inside the D-M environment. The research reveals that tourists' views impact their intentions to use D-M platforms and tools. The research elucidated how IQ, SQ, SeQ, IT, TMS, and tourists' overall satisfaction serve as significant determinants in the use and adoption of D-M. Moreover, the research claims that tourists' perceptions of IQ, SQ, and SeQ have a substantial impact on their overall satisfaction as well as their usage of or desire to utilise D-M in the future.

Furthermore, the research reveals that tourists' satisfaction and usage of D-M, as well as their desire to employ them in the future, are highly connected to their net benefits and expectations. This research has contributed to the existing literature on the use and acceptance of D-M platforms and tools in the tourism business. The ongoing advancement of technological innovation necessitates the regular updating of information. The research provides a complete knowledge of the impact of views on tourists' desires to utilise D-M platforms and tools for tourism. Furthermore, the constructed, verified, and statistically validated model adds to the existing body of knowledge. Considering measurement quality parameters including reliability, validity, multicollinearity, and fit, the constructed model was determined to be statistically robust. Despite the researchers' best efforts, the study had several drawbacks. Due to the effects of the pandemic, the survey was confined to domestic tourism businesses only. The survey respondents were restricted to the Jordan province of Aqaba. By performing the study in several municipalities, towns, and tourist destinations around the province, the constraint was mitigated. Notwithstanding its limitations, the study sets the path for future research on the adoption of D-M that might concentrate on disruptive technology in developing countries.

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GASTRONOMIC EXPERIENCE AS A MOTIVATION FOR TOURISTS TO CHOOSE TOURIST DESTINATIONS IN INDONESIA AND VIETNAM

Any SUTIADININGSIH* 

Culinary Art Department, Universitas Negeri Surabaya, Surabaya, Indonesia, e-mail: anysutiadiningsih@unesa.ac.id

Niken PURWIDIANI 

Culinary Art Department, Universitas Negeri Surabaya, Surabaya, Indonesia, e-mail: nikenpurwidiani@unesa.ac.id

Ila Huda P. DEWI 

Culinary Art Department, Universitas Negeri Surabaya, Surabaya, Indonesia, e-mail: iladewi@unesa.ac.id

Ayu Tiara HAMDANI 

Tourism Department, LSPR Communication and Business, Jakarta, Indonesia, e-mail: ayu.rth@lspir.edu

Hoac THO LE 

Social Sciences and Humanities Department, Ton Duc Thang University, Ho Chi Minh, Vietnam, e-mail: hoacthole@gmail.com

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Abstract: Culture-based traditional food experience (gastronomy) has become an exciting topic for tourists worldwide. This is because gastronomic tourism offers a new alternative to a tourist destination. Until now, studies that discuss how the intentions of Vietnamese and Indonesian tourists to choose traditional food for their tourism activities are still limited. Therefore, this study aims to explore the antecedent factors that shape the intention of tourists to choose traditional food as a reason for tourism activities using the Theory of Planned Behavior (TPB) approach. This study involved 345 Vietnamese and Indonesian tourists in providing information on the antecedent factors that shape the intention to choose traditional food. Data were analyzed using structural equation modeling (SEM). The results of the study reveal that the attitude toward consuming traditional food and perceived control towards consuming traditional food influence the intention of tourists to choose gastronomy as the reason for their tourism activities. However, subjective norms towards consuming traditional food have not been able to influence tourists' intention to choose traditional food for travel. These findings provide important implications for the government and tourism practitioners to develop gastronomic tourism as a new alternative. In addition, various gastronomic tourism promotion programs consider tourist behavior need to be carried out.

Key words: gastronomy, gastronomy tourism, food tourism, traditional food, TPB

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INTRODUCTION

The development of the tourism sector in various countries has become one of the priorities of national development sectors. Specifically in Indonesia, foreign exchange earnings from the tourism sector increased in 2019 by 18.6 billion USD; in the previous year, it only reached 270 trillion rupiahs (Kementerian Pariwisata and Ekonomi Kreatif Indonesia, 2020). The same thing was shown in Vietnam; before the Covid-19 pandemic, state revenue from the tourism sector increased every year (Nguyen, 2020). The interesting point from the data is what reasons encourage tourists to travel. One of the motivational trends for tourists to travel or choose tourist destinations is because of the motivation for gastronomic experiences (Berbel-Pineda et al., 2019; Durmaz et al., 2022; Komariah et al., 2020; Pavlidis and Markantonatou, 2020). One of the main criteria for choosing a tourist location today is gastronomy (Berbel-Pineda et al., 2019).

The motivation for a gastronomic tour is not only to get a culinary dining experience, but tourists want a culinary tourism experience along with the cultural values of local food in each area they visit. Tourists are very interested in the historical value of food in each area they visit (Pavlidis and Markantonatou, 2020; UNWTO, 2017). So, tourists travel not only to enjoy culinary offerings but also to transfer knowledge about the cultural values of these foods. The United Nations World Tourism Organization claims that one of the key elements influencing global sustainable tourism and a strong force is gastronomic tourism (UNWTO, 2017). Theoretically, gastronomy studies food and culture, focusing on gourmet cuisine. So, gastronomic tourism is a type of tourism that aims to provide tourists with a culinary taste and cultural experience (Ketaren, 2021). Many locations rely heavily on gastronomic tourism. In fact, one of the topics featured in the US is to improve local food (Mejia et al., 2018). For some tourists, this makes local cuisine one of the most important factors in assessing the cultural heritage of a location (Björk and Kauppinen-Räsänen, 2016). According to Chen and Huang (2015),

* Corresponding author

food plays a vital role in the image and attractiveness of a place. The cultural aspect of food is the main attraction for tourists to visit certain places (Chavarria and Phakdee-auksorn, 2017). Considering that more than a third of visitors' spending is spent on food, gastronomic tourism is a new phenomenon being explored as a new tourist offer (Quan and Wang, 2004). According to recent research, local cuisine is a major attraction for tourists and an integral part of the travel experience, not only for those with a particular interest in food but also for those with a more relaxed approach to eating and cooking (Henderson, 2009). In addition, as one of the essential elements of gastronomic tourism, culture is generally expressed by one's desire to get to know a different culture. Therefore, in many ways, gastronomic tourists are also cultural tourists. Gastronomic tourism is considered very important because it can make a tourist's journey unique, help destinations develop and gain a good reputation, and also shows that consuming food and beverages can have symbolic meanings other than just physiological needs. From this point of view, gastronomic tourism is an essential indicator of sustainable tourism development and relates to what, where, when, and with whom they eat. Many studies highlight the importance of developing gastronomic tourism (Berbel-Pineda et al., 2019; Kumar, 2019; Pavlidis and Markantonatou, 2020; Sanchez-Canizares and Lopez-Guzman, 2012). However, studies that discuss the behavior and motivation of tourists and what factors cause tourists to choose gastronomy as a tourist destination are still limited. Information about the motivation or intention of tourists to choose a gastronomic destination as a reason for traveling is critical to be understood as a consideration for the development of gastronomic tourism. The study of the intention of tourists to choose gastronomic tourism is part of the study of personality traits. Therefore, this tourist intention study approach can use the Theory of Planned Behavior (TPB) approach. The choice of TPB is very appropriate because TPB has proven suitable for testing individual intentions. The use of TPB to express tourist intentions has been widely used in previous studies (Dedeoğlu et al., 2022; Pahrudin et al., 2021; Vesci and Botti, 2019). This theory is based on the idea that the intention to perform a specific behavior is shaped by an individual's desire to perform their behavior and belief in their ability to perform it. Unfortunately, until now, studies that explore how tourists' intentions to choose food as a reason for their tourism activities in the two countries of Vietnam and Indonesia have not been discussed. Therefore, this study aims to use the Theory of Planned Behavior to determine how tourists intend to choose gastronomy as a tourist destination among Indonesian and Vietnamese tourists. This study also reveals the antecedent factors shaping tourists' intention to choose gastronomy as a tourist destination.

LITERATURE REVIEW

Gastronomic potential as a new tourism

Until now, different terms have emerged that describe food tourism in tourism, for example, culinary tourism, gastronomy tourism, gastro-tourism, food tourism, and gourmet tourism. All these terms refer to the development of food-based tourism. In principle, gastronomic tourism refers to tourism activities to seek unique eating and drinking experiences. This term is similar to culinary tourism but does not associate cultural values when traveling (Ketaren, 2021). Gastronomic tourism generally refers to the originality of a dish and its authenticity to a place, region, or country (Groves, 2001; Hall and Mitchell, 2005; Nesterchuk et al., 2022; Pavlidis and Markantonatou, 2020; Rivza et al., 2022). In addition, gastronomic tourism is a trip to primary and secondary food and beverage producers, gastronomic festivals, dining venues, and specific locales where tasting and experiencing the unique local culinary attributes is the main reason for the trip (Hall et al., 2003; Rivza et al., 2022; Seyitoğlu and Ivanov, 2020). There is a growing term regarding gastronomic tourism and culinary tourism. Although the two terms use food objects as tourist destinations, they differ fundamentally. Culinary tourism is only limited to enjoying processed culinary products without the introduction of the cultural values of the food. Often, culinary tourism activities do not include the transfer of knowledge of cultural values. Meanwhile, gastronomic tourism offers an experience of food culture as a tourist destination. Gastronomic tourism not only serves food tourism but also collaborates with socio-cultural elements where the food becomes the local identity of the area. Gastronomic tourism can be called a branch of cultural tourism because it offers the ins and outs of the food culture of a particular area (Henderson, 2009).

A particular type of traveler who is increasingly identified with the search for what is genuine and one of the cultural elements of the geographical area this traveler is visiting, gastronomy has emerged as one of the main factors of attraction determining the competitiveness of tourist destinations. In addition, culinary has recently received support as a representation of the cultural character of a region. Tourism and gastronomy work perfectly to allow visitors to experience new places and purchase unique items, driving the economic growth of several regions based on sustainable development. The food, or more specifically, the eccentricities of the people, is reflected in the people's social, cultural, and natural heritage, a fact that should not be ignored (Brunori and Rossi, 2000). Gastronomic tourism seeks to combine elements of local food and culture. In general, gastronomic tourism is a way a country can touch the heart or attract the world community's interest through food coming to their country. In addition, the emphasis on gastronomic tourism highlights the local wisdom of local people's cuisine, whose activities are often associated with other cultures, such as clothing, music, dance, and other activities. Theoretically, gastronomy is knowledge about food (food knowledge) which includes: (1) food stories that aim to study the relationship of food concerning historical and cultural knowledge; (2) food assessment, which is an effort to provide an assessment (quality, taste, service) on food and non-food items, such as rating qualifications for restaurants, cafes, bistros, restaurants, stalls, and the street food; and (3) the art of good eating, also known as "table manners" (Ketaren, 2021).

The gastronomy developed in Southeast Asia, especially Indonesia and Vietnam, is very complex compared to western gastronomy. Gastronomy that can be developed in Indonesia and Vietnam contains food stories related to the background of food or food culture and philosophy. There are at least two dimensions of food culture that can be studied through gastronomy: tangible and intangible. The tangible dimension of food culture highlights food as a symbol of artificial material culture created by society as a cultural heritage for its people. Meanwhile, the intangible dimension highlights food as a

cultural value obtained from elements of ritual, custom, and local wisdom in society. Currently, gastronomic tourism has been developed in many countries, for example, Greece (Pavlidis and Markantonatou, 2020), America (Pérez Gálvez et al., 2017), India (Kumar, 2019), Turkey (Durmaz et al., 2022), and Israel (Hillel et al., 2013). Gastronomic tourism trends in various countries have created new opportunities for developing tourist destinations that highlight gastronomy as a tourist destination.

Theory of Planned Behavior (TPB): Intention to gain gastronomic experience

The Theory of Planned Behavior (TPB) is used to reveal the intention of tourists to choose gastronomy as a tourist destination. In the context of tourist intentions, previous studies have used TPB as a theoretical basis to test tourist intentions and their influencing factors (Dedeoğlu et al., 2022; Pahrudin et al., 2021; Vesci and Botti, 2019). In addition, TPB has also been used in several research fields, including studies on food consumption intentions (Dowd and Burke, 2013; McDermott et al., 2015). TPB is based on the idea that the intention to perform a particular behavior is shaped by an individual's desire to perform their behavior and belief in their ability to perform it. This theory suggests that people's intentions to engage in specific actions are influenced by their desire to perform them and beliefs in their capacity to do so. TPB also underlines that the desire to take action is the most direct factor influencing behavior.

At TPB, individual behavioral intentions are influenced by three factors, including (a) attitudes toward the conduct, (b) subjective norms, and (c) perceived behavioral control (TPB) (Ajzen, 1991; 2011). The extent to which a person has favorable or unfavorable opinions or judgments about the intended activity is called attitudes. Subjective norms are perceived social influences to engage in an activity or refrain from doing so. Finally, perceived behavioral control describes how easy or difficult it feels to do the activity and is considered to reflect the previous experience and consider potential obstacles. In the end, this theory found that the stronger the individual's intention to engage in the planned behavior, the better the subjective views and norms towards the behavior, and the greater the perceived behavioral control (Ajzen, 2011). In the context of this study, attitudes toward are interpreted as a person's assessment of the implementation of the behavior of choosing gastronomy as a tourist destination. Other people's expectations of those who choose gastronomy as a tourist destination are subjective norms. The ease or difficulty of choosing gastronomy as a tourist destination is perceived as behavioral control. In general, the TPB method serves as a theoretical basis for constructing this research model. Referring to the TPB theory, we argue that attitudes towards traditional food consumption, subjective norms towards traditional foods, and behavioral control towards traditional foods all impact tourists' intention to choose gastronomy as a tourist destination. In this study, we compare the intention of tourists to choose gastronomy as a tourist destination in two countries, namely Indonesia and Vietnam. In particular, this study examines the structural model that shapes the intention of tourists to choose gastronomy as a tourist destination by involving antecedent factors of attitudes towards consuming traditional foods, subjective norms towards traditional foods, and behavioral control over traditional foods.

Although these three elements have a significant role in influencing tourist intentions, currently, there is little empirical research examining whether these three factors influence tourists' intentions to choose gastronomy as a tourism destination among Indonesian and Vietnamese tourists. The conceptual model in Figure 1 shows the interaction of the model on each variable. This study examines the antecedent factors of tourists' intention to choose gastronomy as a tourist destination. In addition, we also tested the comparison of tourist intentions to choose gastronomy as a tourist destination between Indonesian and Vietnamese tourists using a moderation test. Overall, the hypotheses we tested were as follows:

H1 = Attitude towards consuming traditional food has a positive effect on tourists' intention to choose gastronomy as a tourist destination

H2 = Subjective norm towards consuming traditional food has a positive effect on tourists' intention to choose gastronomy as a tourist destination

H3 = Perceived control towards consuming traditional food has a positive effect on tourists' intention to choose gastronomy as a tourist destination

MATERIAL AND METHODS

In this study, we involved 345 local Vietnamese and Indonesian tourists to collect information about their intention to choose gastronomic tourism. 200 Vietnamese tourists and 145 Indonesian tourists applied to provide information about their intention to select gastronomy as their tourism destination.

There were 107 male tourists and 238 female tourists who filled out questionnaires about their intention to choose gastronomy, attitude towards consuming traditional food, subjective norms of traditional food, and perceived control of traditional food. They provide this information through an online questionnaire using the Google Form platform. Each volunteer assists in data collection in each country. They distribute online questionnaires to tourists. The procedure of this study is shown in Figure 2.

This study used a modified previous study questionnaire. Information regarding the intention to choose gastronomy, attitude towards consuming traditional food, subjective norms of traditional food, and perceived control of traditional food was collected using a reference questionnaire developed by Ting at al., (2019). In the questionnaire, each contains five items to explain the intention to choose gastronomy (for example, I have a strong preference to try to consume traditional

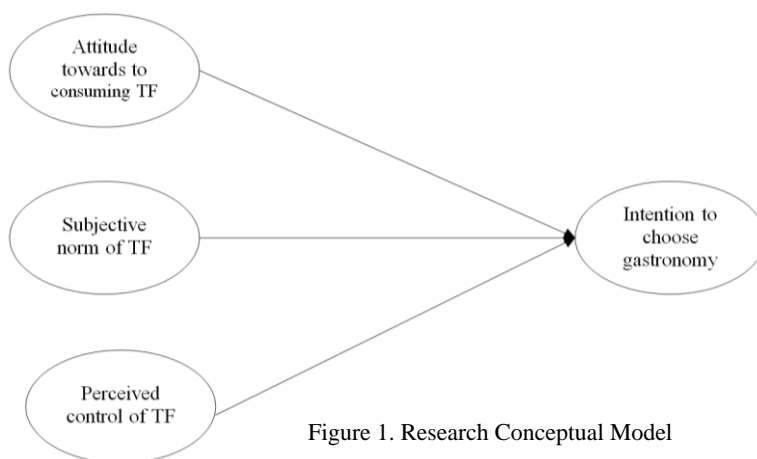


Figure 1. Research Conceptual Model

food when on vacation), attitude towards consuming traditional food (for example, I will feel satisfied when I vacation by taking the time to eat traditional food), subjective norms of traditional food (for example, A recommendation from a close friend made me want to try traditional food while on vacation), and perceived control of traditional food (for example, It's easy for me to try traditional food when on vacation) for tourists. The four research variables used a 5-level Likert scale consisting of Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5).

Furthermore, after the data regarding each variable is collected. We analyzed the data using structural equation modeling (SEM). The software used to analyze the SEM model is the intention to choose gastronomy tourism, namely Smart-PLS. A model is considered good if it fits model criteria consisting of NFI (Normed Fit Index) > 0.800 and SRMR (Standardized Root Mean Square Residual) < 0.080 (J. F. H. Hair et al., 2017). The PLS (Partial Least Squares) analysis uses two analytical approaches: the outer model and the inner model. Outer model analysis is used to measure the validity of the items or measurement indicators for each variable. The indicator is declared valid if it has a loading factor parameter value of more than 0.7 (Ghozali, 2014). Meanwhile, the inner model is used to test the research hypothesis. A hypothesis is accepted if it has a significance value of less than 0.05 (Ghozali, 2014).

RESULTS AND DISCUSSION

Results: Validities and reliabilities questionnaire

The first step of this study analysis is the analysis of the validity and reliability of each questionnaire. This test uses Confirmatory Factor Analysis on the outer SEM model using SmartPLS (v.3.2.9). The Figure 3 is presented the results of the first running model. The analysis of the outer SEM model using SmartPLS reveals that several items have a loading factor of less than 0.7.

In the Perceived control of TF questionnaire, there is only an item that has a loading factor below 0.7, namely PC5. It is removed from the model. Next, running the modified model after removing an invalid item is shown in Figure 4.

The loading factor test in Figure 4 shows the acquisition of validity and reliability test scores for the questionnaires of Subjective norm of TF; Attitude towards to consuming TF; Perceived control of TF; Intention to choose gastronomy. The results of

the outer model analysis on all variables showed valid (.752 ~ .894) and reliable (.898 ~ .935) results (see Table 1). Testing the validity of each item has a loading factor value above 0.70. In addition, reliability testing also shows an AVE value above 0.50. This result found that the questionnaire used in the study accurately measures tourist's intention to choose gastronomy as destinations that are effected by subjective norm of TF, attitude towards to consuming TF and perceived control of TF.

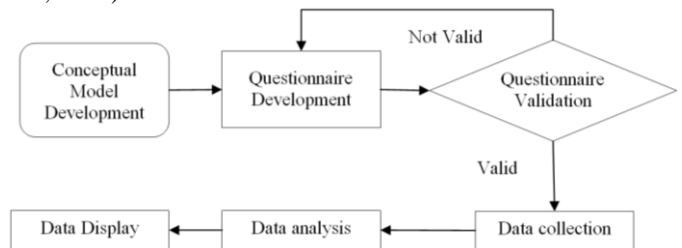


Figure 2. Research Procedure

Table 1. Validity and reliability

Variables (N)	Validity	Cronbach's Alpha	Composite Reliability	AVE
Attitude towards to consuming TF	.803 ~ .894	.913	.935	.743
Subjective norm of TF	.752 ~ .874	.879	.911	.673
Perceived control of TF	.762 ~ .874	.849	.898	.689
Intention to choose gastronomy	.786 ~ .879	.896	.923	.706

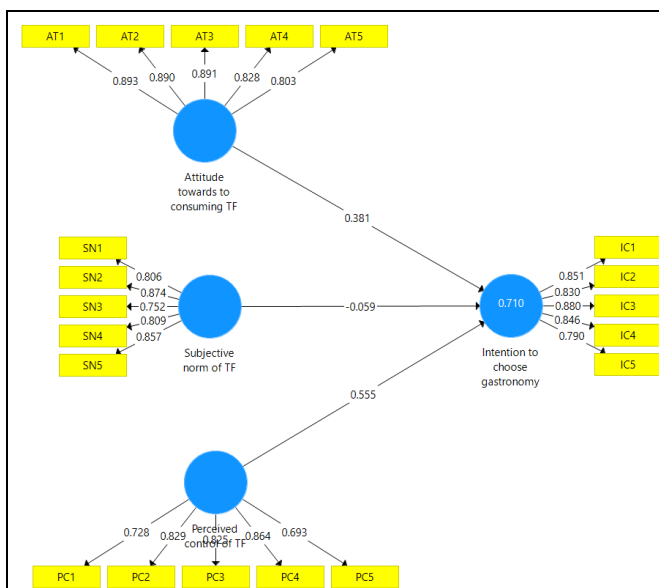


Figure 3. First SEM Model (Note: SN1-SN5 = items of Subjective norm of TF; AT1-AT5 = items of Attitude towards to consuming TF; PC1-PC5= items of Perceived control of TF; IC11-IC53= items of Intention to choose gastronomy)

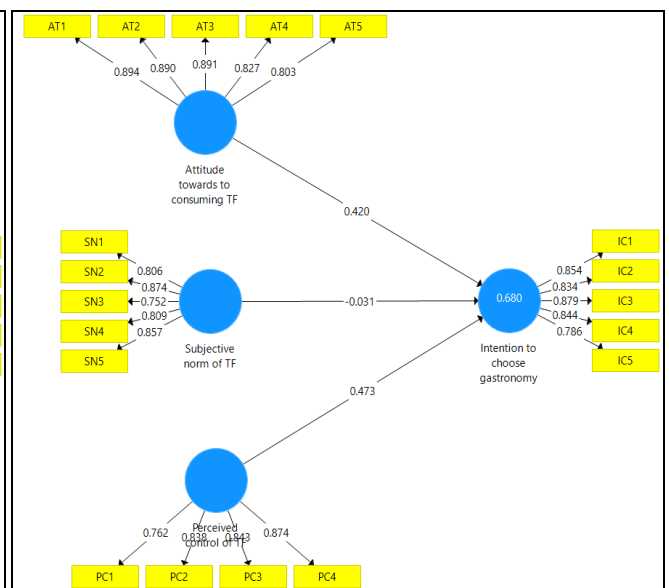


Figure 4. Modification of SEM Model

Table 2. Criteria for Goodness of Fit Model

Criteria	Saturated Model	Estimated Model
NFI	0.868	0.868
SRMR	0.066	0.066

Hypothesis testing using SEM analysis

Firstly, it is necessary to ascertain whether the model has

met the goodness of fit criteria or not before testing the hypothesis through the path coefficient test. The goodness of fit criteria test refers to the acquisition of NFI (Normed Fit Index) and SRMR (Standardized Root Mean Square Residual) scores. The model is said to be fit if it has an NFI value above 0.8 and an SRMR below 0.08 (Ghozali, 2017; Hair et al., 2010). Based on the results of the model fit test through SmartPLS-SEM, NFI and SRMR values are obtained that meet the criteria as shown in Table 2. Next, testing the study hypothesis using inner model analysis.

The inner model analysis aims to test the hypothetical path (path analysis) modeled in this study. There are three hypotheses tested in this study, namely: 1) attitude towards consuming traditional food has a positive effect on tourists' intention to choose gastronomy as a tourist destination; 2) subjective norms towards consuming traditional food has a positive effect on tourists' intention to choose gastronomy as a tourist destination; 3) perceived control towards consuming traditional food has a positive effect on tourists' intention to choose gastronomy as a tourist destination.

The results of the inner model test are shown in Table 3.

Table 3. Hypothesis Testing Results

Hypothesis	Original Sample	P-Values
Attitude towards to consuming TF -> Intention to choose gastronomy	0.420	0.000
Subjective norm of TF -> Intention to choose gastronomy	-0.031	0.569
Perceived control of TF -> Intention to choose gastronomy	0.473	0.000

Referring to Table 3, there are several hypotheses that are accepted and rejected. Withdrawal of the decision is based on the acquisition of P-Values less than 0.05 (P-Values < 0.05). Research results show that attitude towards consuming traditional food has a positive effect on tourists' intention to choose gastronomy as a tourist destination (P=0.000), this finding supports hypothesis 1. Regarding hypothesis 2, subjective norm towards consuming traditional food has a positive effect on tourists' intention to choose gastronomy as a tourist destination, the results show that this theory is not supported (P=0.569>0.05). Finally, hypothesis 3 is supported because (P=0.000), perceived control towards consuming traditional food has a positive effect on tourists' intention to choose gastronomy as a tourist destination.

Discussion

Tourism is an enthralling pastime that allows individuals to learn new countries, cultures, cuisines, customs, and ways of life. People travel because distance and difference pique their interest, something they cannot realistically experience when sitting at home. Traveling has its benefits since it makes individuals feel comfortable, cheerful, and relieves the daily stresses of life. The activity for "food experiences" at the location is crucial to assist visitors understand more about the traditional culture and the residents, regardless of the style of travel or the reason. Activities about food experience or often known as gastronomy experience, are hot topics that tourists often discuss. Therefore, this study aims to reveal what are the critical factors that encourage tourists to choose gastronomic reasons for choosing their tourist destinations.

This study found that a tourist's desire for culinary experiences is influenced by numerous aspects, including attitude toward consuming traditional cuisine, subjective norm for consuming traditional food, and perceived control over consuming traditional food. These three elements are significant in influencing tourists' decision to pick gastronomy as a tourism activity. The findings of testing the first hypothesis show that tourists' intentions to travel for gastronomy are positively influenced by their attitude toward consuming traditional food.

These findings support prior ideas that indicate that three elements influence individual intentions: (a) attitudes about the behaviour, (b) subjective norms, and (c) perceived behavioral control (Ajzen, 2011). Also, this finding is rational and consistent with past research that has shown a favorable link between attitudes and behavioral intention. In the context of food choice, previous study has indicated that good attitudes contributed to purchase intent for organic food (Chen, 2007), and attitude toward traditional eating effects behavioral intention to adopt a healthy eating pattern positively and considerably (Sogari et al., 2023). In this study, attitude toward consuming traditional food refers to the extent to which visitors' ideas or judgements regarding traditional food serve as their motivation for engaging in tourism activities. The choice of traditional food attitude comprises good or unfavorable judgments about food as the rationale for their tourism activities. Visitors, for example, will be satisfied if they go on a tour and taste traditional food, or if tourists try traditional food; this will make my vacation more delightful. The more favourable travelers' perceptions of traditional food, the more likely they are to try it when participating in tourism activities.

Another finding of this study is that subjective norms around eating traditional food have been shown to play no significant role in influencing the tendency of tourists to choose gastronomic reasons when engaging in tourism activities. This result is contrary to previous studies, which state that the influence of social norms is significant in determining individual intentions (Ajzen, 2002, 2011; Ajzen and Fishbein, 1980). In addition, Quintal et al. (2010) conducted a similar study of prospective Chinese, Japanese and Korean tourists to Australia. They found that subjective norms were an important positive determinant of tourist propensity to visit Australia. These different findings indicate that the influence of the social environment of tourists does not influence their decision to choose food as the destination of their visit. For example, if they get suggestions from prominent people in their life, they will eat traditional food according to their preferences. The impact of the social environment in this context also involves culinary trends in the mass media; positive assessment of traditional food has not been able to motivate tourists to taste it.

Finally, this study shows that perceived control over traditional food consumption has a beneficial effect on tourists' decision to travel for gastronomy. Perceived behavioral control explains how easy or difficult it is to choose traditional

food as a tourist activity in this study. Tourists, for example, have personal autonomy over selecting traditional foods when participating in tourism events. This finding is relevant to previous studies, which state that local food consumption intention is positively influenced by attitudes toward local food and perceived behavioral control (Dedeoğlu et al., 2022). Other research have found that perceived control over traditional food eating influences the propensity to travel for gastronomy (Hsu et al., 2018).

In their study, Zhang et al. (2018) also demonstrated that three antecedents from the original theory of the planned behavior model (attitude, subjective norm, and perceived behavioral control) have a beneficial effect on domestic visitors' behavioral intention to consume local food. Besides most of the tourists who find it advantageous, there are still some tourists who have difficulties or perceive potential risks in experiencing TF at the destination. This is suitably reasonable for some popular reasons such as the taste of dishes that are not suitable for personal taste, or tourists' concerns about the origin of ingredients or preparation of dishes safety and hygiene.

Overall, this study provides reinforcement and support regarding TPB. Tourists' intention to choose traditional food is influenced by three critical antecedents: attitude toward consuming traditional food, subjective norms towards consuming traditional food, and perceived control towards consuming traditional food. This study provides a clear understanding of the behavior of tourists to choose gastronomy as the reason for their tourism activities. Currently, the development of tourism that directs traditional food as a tourist destination is in great demand by tourists, despite the increasing industrialization and globalization of the food system. Traditional food studies are closely related to gastronomic heritage, which indicates that food has cultural value. Therefore, the experience of tourists exploring food culture through gastronomic tourism activities needs to be developed as an alternative to tourism development.

There are policies developed by the Vietnamese and Indonesian governments for the development of gastronomic tourism. In Vietnam, culinary culture has been firmly entrenched in every Vietnamese household, gradually being recognized through worldwide acquaintances. From here, Vietnamese food has spread its wings into export channels. In the current trend of globalization, Vietnam continues to innovate and enhance its role in various industries, including cooking, which plays a vital role in improving the nation's cultural values. As a result, the Vietnamese government encourages traditional food to survive through the Vietnam Cuisine Culture Association (VCCA). The Vietnam Cuisine Culture Association (VCCA) was established in 2017 to introduce and promote Vietnam's cultural and historical characteristics to the world, with particular emphasis on promoting Vietnamese tourism. The Indonesian government also demonstrated the same policy. Through the Indonesian Ministry of Tourism & Creative Economy, the Indonesian government is trying to increase foreign exchange earnings from the tourism sector, especially gastronomic tourism.

In terms of limitations of this study, because it only used the questionnaire to collect data and did not directly interview tourist's opinions, we do not have specific evidence to explain clearly on some conclusions. Next, the research topic is wide, not taking into specific characteristics of tourists (demographic characteristics), type of tourism and tourist destination area, etc. So the results of the study did not have any differences and comparisons. Besides, the collected data show a large gender disparity between male and female tourists participating in the survey (female rate is twice as high as male) but the reason for this phenomenon is not clear. So we just assume that women are more interested in the research topic of tourism (gastronomy) in general than men? If have the opportunity to continue to deepen research on this topic, we will explore more about gender factor to answer this question.

Finally, this study has shown important implication and constructive conclusions in the field of tourism research in general to contribute to building and promoting tourism development policies in Vietnam and Indonesia. Understanding tourists' traditional food consumption behavior will be essential for developing innovative products that focus on culture-based traditional food. The presentation of an enjoyable culture-based food experience also encourages the curiosity of tourists to visit tourist attractions. In addition, the government can also carry out various promotional programs to introduce gastronomic products across countries, primarily through bilateral relations between Vietnam and Indonesia. Although the research results are inclusivity, they are an important premise to continue for other future studies to explore more deeply on topics such as: The advantages and disadvantages of tourists during the gastronomy experience at the destination; How social media factors have positive or negative impacts on tourists' gastronomy experience; The needs or expectations of each kind of tourists (with demographic characteristics such as gender, age, income level, etc.) in gastronomy experience at the destination. Thus, tourism in general and gastronomy tourism in particular is a broad and potential topic for further exploitation and research to develop the tourism industry of countries with unique culinary cultures such as Indonesia and Vietnam.

CONCLUSION

This study proves that the theory of planned behavior (TPB) plays a role in determining the intention of tourists to choose traditional food as the reason for their tourism activities. In particular, attitudes toward consuming traditional food and perceived control towards consuming traditional food influence the intention of Vietnamese and Indonesian tourists to choose traditional food as their reason for visiting. However, subjective norms towards consuming traditional food have not been able to influence tourists' intention to choose traditional food for travel.

Understanding tourist behavior in determining their tourism decisions must be a significant consideration in developing gastronomic tourism. This study also provides important implications for the two countries' governments and tourism practitioners in gastronomic tourism development programs. Bilateral cooperation for developing gastronomic tourism to introduce the food culture of each country is possible, given the geographical location of the two countries close together. The story subsequent studies need to be carried out to find out how tourist behavior is compared between the two countries, namely Vietnam and Indonesia, regarding gastronomic tourism. In addition, various other factors need

to be highlighted in the development of gastronomic tourism in future studies, such as how gender, age, and income level factors moderate the antecedents of tourist behavior at TPB.

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THE EMERGENCE OF LEISURE TRAVEL AS PRIMARY PREVENTIVE TOOLS IN EMPLOYEE HEALTH BEHAVIOR

Antonia KINCZEL* 

University of Debrecen, Faculty of Health Sciences, Institute of Health Sciences, Debrecen, Hungary, e-mail: antokincz@gamil.com

Anetta MÜLLER 

University of Debrecen, Institute of Sport Economics and Management, Debrecen, Hungary, e-mail: muller.anetta@econ.unideb.hu

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Abstract: In our current modern world, it can be said that it is very difficult to live a balanced and healthy life, and to always perform well in the world of work, so it is very important to pay attention to our leisure time and our primary prevention activities, which can help preserve our health and improve our fitness. The purpose of the research is to examine the appearance of leisure tourist trips among employees, and how tourist trips appear among the primary prevention tools. Our research found answers to the main questions of what activities employees try to regain their ability to work, and whether trips are popular as primary prevention activities. The recreational activities of the employees are primarily filled by various obligations, but at the same time, the use of primary prevention activities is pushed into the background during everyday life. During the research, we established that medical and wellness holidays are very popular among the respondents, as 22.5% of the sample (133 people) take part in medical tourism holidays and 50.3% of the respondents (297 people) take part in health care on a focused wellness holiday. The quiet, calm environment and the closeness to nature, which helps the employees to regenerate, appeared prominently in the motivation for the choice of destination. Among primary prevention tools, leisure activities spent with family, relationships, and friends, healthy eating, and walking and nature walks are the ones that appear dominantly in the everyday life of employees. In order to reduce the problem of burnout, pressure to perform, and stress among employees and to enable them to perform well in their tasks, it is very important to assess their needs and provide them with programs that contribute to improving their health and regaining their ability to work, such as appropriate recreation programs and various trips.

Key words: travel, employees, primary prevention, recreation.

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INTRODUCTION

Everyday stress, overwork, and nervousness are not considered foreign concepts these days. As time progresses, many researches highlight the negative effects of workplace stress and pressure to perform, which not only endanger the health of employees, but also affect their work. In addition, the absences resulting from these also involve expenses for employers, and at the same time they also impose serious burdens on the health care system (Soós, 2008; Bajsz et al., 2013; Hassard et al., 2017). Salavec (2013) in his research, came to the conclusion that the harmful health consequences of workplace stress in the Hungarian labor market have threatened more and more workers in recent years. That is why he draws attention to the urgent need to comply with the legal requirements for reducing workplace stress and to introduce interventions aimed at improving workplace mental health. According to a 2018 survey by the European Union Occupational Safety and Health Information Agency (EU-OSHA), 440 billion forints in Hungary and 136 billion euros in the European Union are lost due to absences caused by untreated stress at work. In order to preserve and improve the state of health, the health awareness of employees needs to be developed, and employers can also do a lot to achieve this process (Molnár, 2012; Pázmán et al., 2020), however, the primary key to creating a healthier lifestyle is in the hands of the employees.

The numerous external factors and stimuli that affect us every day, such as everyday tasks, challenges, stress, pressure to perform, after a while have a negative effect on our mental health if we do not take care of them and do not take time to rest and regenerate (Fodor, 2013). Mental illnesses, the rate of which is rising sharply compared to other illnesses in our world today, are long-lasting and their treatment also imposes serious economic burdens.

Prevention, both physically and psychologically, would be a much more cost-effective method for everyone, since it does not matter how the individual processes the various stressful situations and how he handles the upcoming changes and challenges (Juhász, 2014; Fodor, 2014). In order to achieve organizational unity and completeness in companies, individual health and completeness must be placed in the center of attention, since the totality of individuals makes up the organization as a whole (Madarász and Bácsné, 2016; Bácsné et al., 2017). Among the health determinants of the 21st century, Kickbusch (2021) listed the rush virus, unsustainable lifestyles, growing health inequalities and the flow of people in a 2012 study. Although employees have a need to spend their free time as meaningfully as possible, their free time is very limited, since they spend most of their time at work (Princz, 2020). It is extremely important to recognize recreational

* Corresponding author

opportunities (Beregi, 2021), since various recreational activities, sports activities, relaxation, massage, sauna, and various trips can help in establishing and maintaining emotional balance (Révész et al., 2015; Molnár et al., 2021; Pálinkás et al., 2022). As a result of little free time and overworked lifestyles, people are looking for services in their free time where the focus is on rest, recreation, relaxation and recharge (Lengyel, 2015, 2016; Hidvégi et al., 2019; Bíró et al., 2019; Lengyel 2019, 2020). According to Lőrincz and Sulyok (2017), nowadays we have to consider tourist activities as one of the defining forms of spending free time, which is why surveys of the motivational factors for choosing a destination are very important. Thanks to the accelerated lifestyle, for the health-conscious person, tourism becomes one of the important factors of recreation in order to achieve rest and recharge (Tütümkov et al., 2021) and activity is becoming more and more important not only in recreation, but also in tourism (Szabó et al., 2022). Nowadays, however, it can be said that travel has also become a very important factor in shaping the quality of life (Gonda et al., 2019).

Rác (2020) in his research examining 5,002 randomly selected people, came to the conclusion that 73.9% of the Hungarian adult population took a trip of one or more days between May 2018 and June 2019, for which the primary motivation was none other than rest and recreation, but also active leisure activities, bathing and sightseeing. The results of the research by Bíró et al. (2018a, b) showed that people mostly visit spa services in order to relax and also use the relaxation and well-being improvement services associated with spa services (Bíró et al., 2019). However, the restrictive measures and uncertainty caused by COVID reduced the desire to travel (Váczi et al., 2022) and changed leisure habits (Rice et al., 2020; Hansen et al., 2022; Agybetova et al., 2023). In his study, Sivan (2020) drew attention to the lifestyle changes caused by Covid: the transition to home activities, the spread of online supply and use, the need for connectivity, the increase in inequality, the survival of the leisure industry, the increased need for psychological support, and helping hands and increasing volunteerism. In this regard, the COVID-19 pandemic disrupted visits to the natural environment, outdoor leisure activities and natural healing (Spennemann-Whitsed, 2021; Liu et al., 2022). As a result of changes in leisure habits, the popularity of various sports or outdoor activities that can be practiced in nature has increased (Yang and Smith, 2023; Mertzanis et al., 2023). We also experienced this change in leisure activities in tourism during the COVID, as among the tourist trips, the activities taking place in the natural environment increased (Buckley and Westaway, 2020) and the health tourism activities (Cheng and Yin, 2022; Csobán et al., 2022).

Mai and Nguyen (2023) developed a framework for push and pull factors influencing the wellness tourism experience. They found that multiple factors together influence participation in wellness tourism, including destination characteristics, social impacts, and the tourist's motivation for a healthy lifestyle. Garjan et al. (2023) consider the quality criteria of wellness services and available discounts as factors influencing destination choice. Li and Gao (2023) also highlight service quality, as well as the availability of environmentally friendly services and healthy food options, as factors in consumer decision-making or destination choice. Author couple Praprom and Laipaporn (2023) considered the gastronomic offer, the favorable natural features of the destination and the development of creative tourism products and services to be important in attracting wellness tourists. Lyulicheva et al. (2023) emphasize the importance of personal transformation and self-discovery among the motivations of tourists participating in holistic wellness retreats. Gan et al. (2023) highlight the perceived value of wellness vacations, which can increase the intention to participate in wellness tourism. Li and Huang (2023) examined how COVID-19 risk perception affected wellness tourism intention among Chinese Generation Z and found that a higher perceived risk level is associated with an increased intention to participate in wellness tourism. Li and Wen (2023) examined forest-based health tourism based on online questionnaire data collected from 383 Chinese respondents. They found that during COVID, knowledge of health preservation, rather than disease prevention, had a positive effect on urban residents' use of forest-based health tourism services. Therefore, the implementation of health preservation, primary prevention, was the main reason for engaging in health tourism.

MATERIALS AND METHODS

The topic of our research was the examination of employees' recreational and travel habits, focusing on their primary prevention activities. Our goal was to assess the activities with which employees try to regain their ability to work, and to be able to provide data that can be used to determine the direction of different health improvement strategies. The purpose of the research is to examine the appearance of leisure tourist trips among employees, and how tourist trips appear among the primary prevention tools. Examining leisure habits is also important, since these leisure programs are also used by consumers during travel and tourism, i.e. the leisure pattern also determines the recreational offer related to travel. Another goal was to find out at what intervals the employees take time to travel in order to improve their health, and to what extent health and related services appear during their trips, in terms of travel motivation. In our research, we also examined the elements involved in the motivation of choosing a destination. These results can be considered important from a tourism point of view and can be used to develop the range of holiday programs.

In relation to our topic, we formulated two hypotheses: H1: Primary prevention activities take a back seat in employees' free time. H2: The majority of employees make time for a holiday trip 1-2 times a year, and the quiet, calm environment plays a role among the most important motivational factors for choosing a destination.

In our research, we used the opportunities provided by both primary and secondary research. As the basis of our primary research, we conducted a quantitative, online and paper-based questionnaire survey among current employees who have already reached the age of 18. In order to reach our target group, we first of all visited online groups that were made up of employees, and we managed to deliver our paper-based questionnaire to various workplaces. Filling out online and on paper was anonymous and voluntary. The final number of respondents, after data filtering and data cleaning, was a total of 591 people, from whose answers we calculated basic statistics and frequency. We also used χ^2 and independent t tests to

examine the various relationships. Our secondary research was used to compare our results with the results of other domestic and international literature, and at the same time to support the topicality and key importance of our research topic.

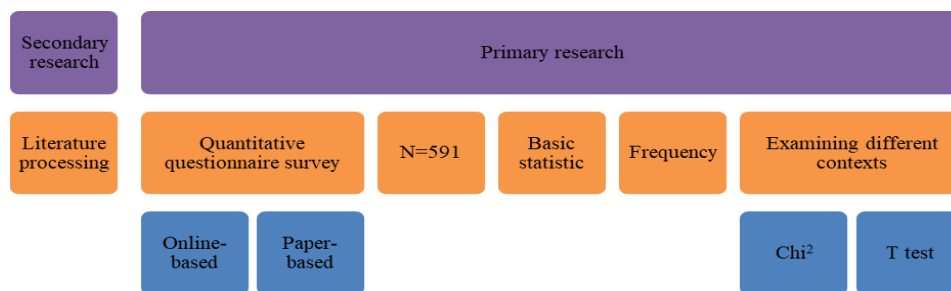


Figure 1. Research methodology (Source: Authors)

Presentation of the test sample

Looking at the gender distribution of the 591 people, it can be said that the female respondents were more dominant, since they give 73.3% (433 people) to the respondents, while men make up the remaining 26.7% (158 people). According to age, the applicants can be classified into the following groups: 40.4% (239 people) 18-24, 33.2% (196 people) 25-39, 20.1% (119 people) 40-54, and 6.3% (37 people) 55 years or older. Assessing the highest level of education, it can be said that 0.5% (3 people) of those who completed less than eight classes, 1.9% (11 people) completed eight classes, 8.5% (50 people) graduated from vocational training/vocational school, 39.6% (234 people) have a high school/high school diploma, 10.8% (64 people) have a higher vocational qualification, and 38.7% (229 people) have graduated from a college/university.

Table 1. Distribution of gender, age group and highest educational level of the examined persons (Source: Own editing)

Criteria		Total	
		Frequency	Percentage
Gender	Male	158	26.7%
	Female	433	73.3%
Age-based Group	18-24 year	239	40.4%
	25-39 year	196	33.2%
	40-54 year	119	20.1%
	55+	37	6.3%
Education	Less than 8 th grade	3	0.5%
	8 th grade	11	2.2%
	Vocational school	50	8.5
	Secondary school/ high school graduation	234	39.6%
	Tertiary qualifications	64	10.8%
	College/University	229	38.7%

Since our target group was employees, at the beginning of our survey we also asked the respondents some general questions about work. 63.6% (376) of the examined persons work in subordinate positions, and 13.7% (81 people) are occasional workers, as they are also studying in addition to working. 4.6% (27 people) as a group leader, 7.3% (43 people) as a middle manager, 2.0% (12 people) as a senior manager, 2.9% (17 people) as a company owner, 3.4% (20 people) as a freelancer, as an individual entrepreneur, and 2.5% (15 people) as an expert main works. In terms of their job, 43.1% of the respondents (255 people) had mixed (both physical and mental activities), 25.4% (150 people) heavy mental work, 17.1% (101) light mental work, 9.1% (54 people) light physical activity, 5.2% (31 people) perform heavy physical activity. In terms of sectors, a truly colorful range can be described, however, most of them perform their daily tasks in the fields of manufacturing, construction, production, child care, social care, sales, trade, hospitality, tourism, and healthcare.

RESULTS AND DISCUSSION

The health status of employees is affected by many factors, among which the tasks during work and the working conditions must also be taken into account. 68.5% of respondents (405 people) are exposed to the harm of unilateral use, while 52.6% (311 people) are affected by excessive stress and pressure to perform at work. In addition, 53.1% (314 people) eat irregularly, 43.7% (258 people) suffer from some kind of locomotor system complaint and pain, and 42.6% (252 people) live a sedentary lifestyle. For 33.8% of the total sample (200 people), it is true that they take some kind of cognitive supplement, for 33.2% that they consume more than two coffees a day, for 27.7% that they struggle with frequent headaches and high blood pressure, for 23.0% (136 people) that they smoke, while 14.0% (83 people) that they drink at least one energy drink a day. In terms of gender, significant differences were detected in some of the aforementioned results. A higher proportion of women suffer from some form of locomotor complaints and pain (t=-2.250, p=0.000), they are more likely to have frequent headaches and high blood pressure (t=-1.123, p=0.011) and take dietary supplements (t=-1.467, p=0.002). On the other hand, the statements that they smoke (t=5.812, p=0.000), that they consume more than two coffees a day (t=1.898, p=0.001) and that they consume at least one energy drink a day (t=2.094, p=0.000). Despite all this, similar to the 2019 data of the National Statistics Office, according to which 6 out of 10 Hungarians considered their health to be good or very good in the year of the survey, 52.6% of the employees I interviewed considered their health to be good and 14.2% to be very good. . With the increase in educational level, a very strong significant decrease was observed regarding disordered eating (chi²=28.842, df=5, p<0.001). A very strong significant decrease in smoking was also detected with increasing education (chi²=59.048, df=5, p<0.001).

After the end of work, the free time of the employees is mostly filled, based on the answers given on a Likert scale ranging from one to five (1-not at all, 5-completely), dealing with family and relationships (average=4.13, standard deviation=1.048). This is followed by the time devoted to housework and chores around the house (average=3.84, standard deviation=1.134), then Internet access, mobilephone, online games and TV (average=3.58, standard deviation=1.136).

After that, spending time with friends and peers was the most chosen recreational activity (average=3.38, standard deviation=1.189), while passive relaxation (average=2.99, standard deviation=1.240), sports and nature walks (average=2.87, standard deviation=1.241) the employees we interviewed take little time. Overtime and doing special work are not considered to be very regular (average=2.52, standard deviation=1.368), as is the use of relaxation, massage, and wellness services (average=2.00, standard deviation=1.133).

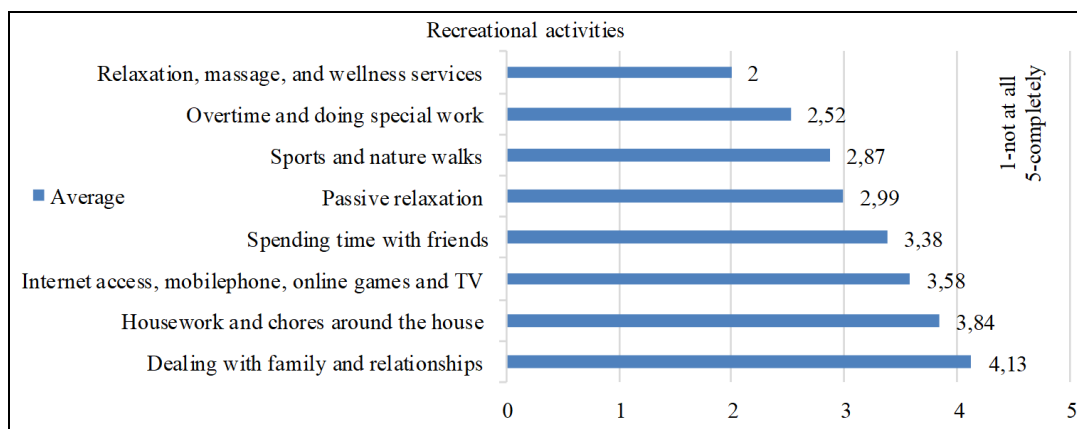


Figure 2. Average distribution of employees' leisure activities (Source: Authors)

In terms of gender, significant differences were observed in recreational activities. Dealing with family and relationships ($t=3.681, p<0.001$), as well as housework and activities around the house ($t=8.036, p<0.001$) appear in a larger amount of time in women's free time, while for men internet and phone calls are more typical, online games and watching TV ($t=-2.489, p=0.012$), playing sports, nature walks ($t=-2.949, p=0.003$), at the same time overtime, doing separate jobs ($t=-4.322, p<0.001$) in the time left after work.

Table 2. Appearance of recreational activities in the light of gender (Source: Own editing)

Recreational activity	Mean, standard deviation (1-not at all, 5-completely)		Difference by gender
	Female	Male	
Dealing with family and relationships	4.22; 1.017	3.87; 1.089	$t=3.681, p<0.001$
Housework and activities around the house	4.06; 1.051	3.25; 1.145	$t=8.036, p<0.001$
Surf the Net, mobilephone, online games, TV	3.51; 1.143	3.77; 1.100	$t=-2.489, p=0.012$
Dealing with friends and peer groups	3.36; 1.217	3.44; 1.109	$p>0.05$
Passive rest	2.94; 1.246	3.11; 1.221	$p>0.05$
Sports, nature walks	2.78; 1.176	3.11; 1.378	$t=-2.949, p=0.003$
Overtime, doing separate jobs	2.38; 1.343	2.92; 1.359	$t=-4.322, p<0.001$
Use of relaxation, massage, wellness services	2.00; 1.114	1.98; 1.186	$p>0.05$

Among the primary prevention activities, also based on the results assessed with a Likert scale ranging from one to five (1=not at all, 5=completely), leisure activities spent with family, relationships, and friends (mean=4.02, standard deviation=1.042) are the most used methods, which is also confirmed by other Hungarian research (Kiss and Laoues, 2022). Healthy eating (average=3.10, standard deviation=1.076) and walking and nature walks (average=3.08, standard deviation=1.140) can also be considered primary prevention activities that appear in the everyday life of employees. However, regular exercise and physical training (average=2.88, standard deviation=1.319), regular screening tests (average=2.53, standard deviation=1.230), development of self-confidence and competence (average=2.47, standard deviation=1.290), relaxation, meditation, yoga (average=2.02, standard deviation=1.206) and the use of wellness services (average=1.91, standard deviation=1.081) received a lower average value.

Table 3. Travel habits of employees (Source: Own editing)

Type of trip	Regularity					
	Not at all		Monthly		1-2 times a year	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Resort tourism	124	21.0	82	13.9	385	65.1
Medical tourism	458	77.5	35	5.9	98	16.6
Wellness tourism	294	49.7	67	11.3	230	38.9
Event tourism	186	31.5	124	21.0	281	47.5
Visitor tourism	91	15.4	268	45.3	232	39.3

Based on these, it can be said that our first hypothesis has been confirmed, since we stated that primary prevention activities take a back seat in employees' free time. A very strong significant difference can be observed in terms of regular exercise and physical training ($t=-3.702, p<0.001$), as primary prevention activity is more typical for men (average=3.21,

standard deviation=1.396) than for women (average=2.76, standard deviation =1.270). Similarly, a significant difference was discovered in regular screening tests ($t=2.041$, $p=0.042$) and it can be said that women (average=2.59, standard deviation=1.220) go for regular screening tests more often than men (average=2.36, standard deviation= 1.248).

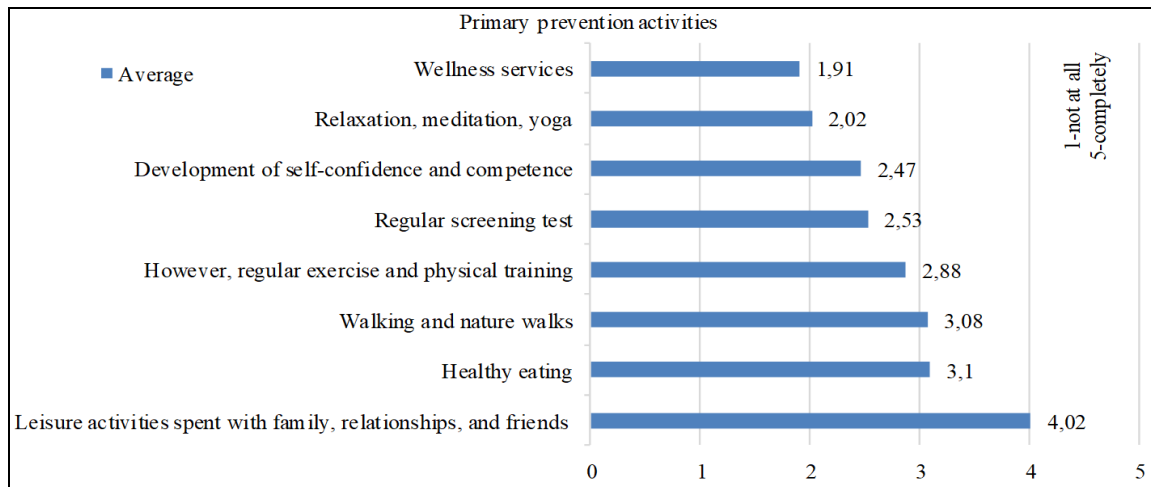


Figure 3. Average distribution of primary prevention activities used (Source: Authors)

In our research, we examined whether and, if so, how often the employees we interviewed used to take time for various trips, the detailed results of which are illustrated in Table 3. 22.5% (133 people) of the examined sample participate in medical tourism, and 50.3% (297 people) spend time on wellness trips on a regular basis. Visiting tourism is the most popular type of travel on a monthly basis, for almost half of the respondents (45.3%, 268 people). 65.1% of the respondents (385 people) devote time to holiday tourism and 47.5% (281 people) to event tourism 1-2 times a year.

In choosing the destination, the biggest motivating factor was the quiet, calm environment (mean=4.10, standard deviation=1.089). The second most popular motivational factor is proximity to nature (average=3.87, standard deviation=1.097), followed by tasty, varied, healthy food (average=3.69, standard deviation=1.116). The availability of water services and wellness elements (average=3.48, standard deviation=1.261), and the offer of entertainment and animation programs (average=3.22, standard deviation=1.221) can also be classified as more important motivational factors. Sports opportunities have the least motivational role (average=2.78, standard deviation=1.292) among the respondents. In terms of gender, significant differences were also observed in this question. Proximity to nature ($t=2.285$, $p=0.023$) and the presence of water services and wellness elements ($t=2.174$, $p=0.030$) had a greater motivational role among women, while sports opportunities among men ($t=-3.300$, $p=0.001$) play a greater motivational factor.

Table 4. Motivational factors for choosing a destination (Source: Own editing)

Motivational factor	Mean, standard deviation (1-not at all, 5-completely)			Difference by gender
	Total	Female	Male	
A quiet, calm environment	4.10; 1.089	4.12; 1.109	4.02; 1.031	$p>0.05$
Close to nature	3.87; 1.097	3.93; 1.070	3.70; 1.155	$t=2.285$, $p=0.023$
Tasty, varied, healthy food	3.69; 1.116	3.68; 1.118	3.70; 1.115	$p>0.05$
Availability of water services and wellness elements	3.48; 1.261	3.55; 1.155	3.29; 1.278	$t=2.174$, $p=0.030$
Entertainment opportunities, animation programs	3.22; 1.221	3.23; 1.242	3.20; 1.165	$p>0.05$
Sport facilities	2.78; 1.292	2.68; 1.246	3.07; 1.374	$t=-3.300$, $p=0.001$

Based on the results detailed above, our second hypothesis was also confirmed, since the majority of employees spend time on holiday travel 1-2 times a year, and the quiet, calm environment that ensures relaxation plays a role among the most important motivational factors in choosing a destination. The exploration of the role of the environment in the field of sports, leisure and travel is also confirmed by other international researches (De Valck et al., 2016; Ilies et al., 2018).

CONCLUSION

The main goal of our research was to assess among currently working employees over the age of 18 what activities they use to try to regain their ability to work, and whether trips are popular for them as primary prevention activities. Our results revealed data that show that there is a real need to examine and improve the health of employees in our current world, perhaps even by introducing as many workplace health improvements as possible, and by promoting various activities and trips that help improve health (Dongen et al., 2011; Hidvégi et al., 2017; Molnár and Müller, 2021a; Molnár and Müller, 2021b).

More than half of the respondents, 68.5% (405 people) are exposed to the harm of unilateral use and 52.6% (311 people) face the problem of excessive stress and pressure to perform at work. The confirmation of our first hypothesis confirmed that the employees' free time is largely filled by various obligations, and that primary prevention activities are pushed into the background. Most of the employees' free time is spent dealing with family and relationships (average=4.13, standard deviation=1.048), but this activity is also the primary primary prevention activity for them (average=4.02,

standard deviation=1.042). Trips can help employees break away from the grind of everyday tasks and help restore their ability to work. 22.5% of the respondents (133 people) take part in a medical tourism holiday and 50.3% of the respondents (297 people) take part in a wellness holiday focusing on health preservation. Visitor tourism is also popular, which was experienced by almost half of the respondents (45.3%, 268 people). 65.1% of the respondents (385 people) spend time on holiday tourism 1-2 times a year, while 47.5% (281 people) spend time on event tourism. When choosing a destination, the quiet, calm environment (average=4.10, standard deviation=1.089) and proximity to nature (average=3.87, standard deviation=1.097) play the role of the biggest motivational factor.

The health status of employees is influenced by many factors, so it is not surprising if after a while they feel stressed, tired, exhausted, and nervous. Taking all of this into account, it is very important to make everyone aware that in order to achieve health, you are the first person who can do something about it. In leisure activities, priority should be given to those that promote refreshment and rest (De Valck et al., 2016; Scholte et al., 2018) and those that encourage physical activity and sports (Kavanagh et al., 2002; Sorensen et al., 2003, Gilson et al., 2008; Flynn et al., 2010; Ojo et al., 2013; An et al., 2015; Bredahl et al., 2017; Casey et al., 2017), but it takes time to spend on trips, as they have many beneficial effects (Kardos, 2011; Tütümkov et al., 2021), as they tear employees away from their usual surroundings. The restrictions during covid and home office work had a negative effect on the health and well-being of employees by strengthening the lack of exercise and sedentary behavior (Ráthonyi et al., 2021a, b). Health-related travel is popular among employees. The role played by travel and leisure programs in health has been recognized by the government and workplaces and is supported and encouraged in the form of non-wage benefits provided to employees (Széchenyi rest card).

Limitation

We examined the group of employees, the leisure activities they pursue, the primary prevention tools used to maintain health, and their travel habits. In the group of employees, those working in the construction industry, performing clerical office work or raising children dominated. The dominance of the circle of employees does not change, this can affect the results.

The questionnaire was filled out by the respondents based on self-report, so in the answers the accurately with which they remember certain leisure activities, primary prevention tool and travel habits influences the answers. Another limitation of the present study is derived from the cross-sectional study design, which cannot be used to analyze behavior over a period to time and does not help determine a cause and effect relationship. The well-known drawbacks of online survey data collection can also be a limitation of this study. These limitations should be considered in future studies.

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THE POWER OF AIRPORT BRANDING IN SHAPING TOURIST DESTINATION IMAGE: PASSENGER COMMITMENT PERSPECTIVE

Al-Amin Abdel-Hameed ABOUSEADA 

Social Studies Department, College of Arts, King Faisal University, Al Ahsa, Saudi Arabia, e-mail: aabouseada@kfu.edu.sa

Thowayeb H. HASSAN* 

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: thassan@kfu.edu.sa

Mahmoud I. SALEH 

Graduate School of Management, Saint Petersburg State University, Saint Petersburg, Russia; Tourism Studies Department, Faculty of Tourism and Hotel Management, Helwan University, Cairo, Egypt, e-mail: st084542@gsom.spbu.ru

Salaheldeen H. RADWAN 

Tourism Studies Department, Faculty of Tourism and Hotel Management, Helwan University, Cairo, Egypt, e-mail: salah.helal@fth.helwan.edu.eg

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Abstract: To providing an empirical investigation into how affective, continuance, and normative commitment could build airport branding. A quantitative content analysis was conducted by analyzing 400 passengers' reviews of Cairo International Airport from the following platforms (Skytrax, Tripadvisor, traveller, and flight report). Affective and continuance commitment are likely to build a strong brand rather than normative commitment. Passengers' negative experiences with airports make them feel less emotionally attached, resulting in lower levels of affective and continuance commitments. Terminal problems can decrease affective and continuance commitment among passengers. The study identified factors that affect all three types of commitments (affective, continuance, and normative) at international airports, providing significant theoretical contributions and managerial implications.

Key words: airport branding, commitment theory, affective commitment, continuance commitment, normative commitment, passenger behavior

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INTRODUCTION

Tourism plays a vital role in countries' economic growth. Therefore, it has become fundamental for tourism sectors to attract the largest possible number of tourists to gain high revenues (Cărbunar et al., 2022; Song et al., 2014; Tsai, 2016). The airport is considered one of the essential tourism sectors (Monterrubio et al., 2020). Airports play a crucial role in helping tourists to move among different countries (Datta et al., 2018; Martín-Cejas, 2006). Airports help to form tourist impressions about the image of the country in which they are located; if this impression is positive (vs. negative), it will increase the positive word of mouth (vs. negative) about the host destination (Zhang et al., 2009).

Thus, revenues will be increased (vs. decreased), and the airport will attract more visitors (Fasone et al., 2016). Consequently, airport marketers have always thought about converting the airport into a tourism brand (e.g., Dubai and Changi international airports) (Jacobs and Hall, 2007; Kotsi et al., 2018; Lohmann et al., 2009). So, visitors can do many tourism activities (e.g., shopping, dining at international restaurants, experiencing new tourism activities, rallying for business meetings, etc.) (Kotsi et al., 2018). This will increase revenues (Fasone et al., 2016), and airports tend to attract more service providers (e.g., tourism stakeholders) and service recipients (e.g., passengers) (Akamavi et al., 2015) to increase revenues, as well as ensure positive passengers' behavioral outcomes (Castro and Lohmann, 2014).

Therefore, tourism and aviation management scholars studied the determinants that affect passengers' behaviors toward airport branding. For instance, tourism and aviation studies argued that many factors could affect passengers' perceptions of the airport to be branded, for example, incentive reward programs (Wu and Tsui, 2020), tourists' time pressure at airports, size of the corridors between terminals, services' areas at the airports, and services qualities (Castro and Lohmann, 2014; Figueiredo and Castro, 2019; Halpern and Regmi, 2011; Paternoster, 2008) which also influence the passengers' behaviors (Lin and Chen, 2013), and airport staff efficiency (Antwi et al., 2020). However, no study investigates how passengers' commitments to airports, from a commitment theory types perspective (affective, continuance, normative), could shape airport branding. A commitment theory describes the promise that drives individuals to follow a particular course of action, have a strong feeling toward something, or adopt a point of view of a specific entity (Curras-Perez and Sanchez-Garcia, 2015; Wei et al., 2016).

* Corresponding author

Commitment theory has three main types that could shape individuals' behavioral outcomes to build brands: Affective commitment is crucial for building a strong brand image because it is based on the individual's emotions and fond perception that the service providers offer value and meet their demands (Claffey and Brady, 2019; Prada et al., 2017). A strong brand can also be developed through normative commitment based on the consumers' sense of duty to utilize the services provided (Jaros, 2017). Finally, strong branding can also be influenced by continuance commitment, based on the consumers' perception of being "locked in" to utilizing specific services due to convenience or cost-switching considerations (Fullerton, 2014).

However, no study has investigated how passengers -as consumers- view these kinds of commitment when it comes to airport branding – as a service provider-; most studies have instead concentrated on studying the commitment from the employees' viewpoints in human resource studies. This study broads the previous research in commitment theory and airport branding by showing that additional study is required to determine how passengers perceive these kinds of commitment (normative, continuance, and affective) and how they might be utilized to develop compelling airport branding.

THEORETICAL FRAMEWORK

1. Airport branding

Airports play a crucial role in forming the first and last impression for visitors about countries (Martín-Cejas, 2006) because airports are the ambassador for the countries' image (Martín-Cejas, 2006). Passengers compare their actual experiences at the airport with the destination image. Then, Positive (vs. negative) impressions have significant impacts on increasing positive word of mouth (vs. negative) (Zhang et al., 2009) and increasing revenues (Fasone et al., 2016). Thus, airport managers consider expanding airport services to include visits to practice more tourism activities, not only to travel through the airport (Kotsi et al., 2018). For instance, in Dubai and Singapore international airports (Lohmann et al., 2009), passengers can do many tourist activities (e.g., shopping, day-use vacation, etc.). Consequently, this will increase revenues (Fasone et al., 2016), and the number of service providers (e.g., tourism stakeholders) and service recipients (e.g., airport visitors) will be increased (Akamavi et al., 2015). Accordingly, to attract more visitors to airports and expand airport services, tourism managers modified the airport visions to achieve this goal (Castro and Lohmann, 2014).

Therefore, researchers have studied the determinants that affect changing the airport to a multi-Service tourism Center as a brand to attract numerous passengers, making them travel through the airport as transit or visit the host country itself. For instance, Wu and Tsui (2020) studied the impact of incentive reward programs to attract more visitors to the airports; the results revealed that tourists prefer to interact with airports with substantial incentive reward programs. Additionally, Lin and Chen (2013) have found that tourists' time pressure at the airport and the type of services and airport facilities affect attracting more passengers and passengers' behavioral outcomes. These airport services improvement campaigns were to build an airport branding strategy (Paternoster, 2008). The airport brand explains the airport label's/products/ service's essential beliefs, mission, and identity (Figueiredo and Castro, 2019). It serves as the cornerstone of an effective strategy and aids in setting an airport apart from competitors (Castro and Lohmann, 2014). Establishing airport brands for services could gain many advantages by effectively communicating the airports' beliefs and mission to passengers; it can help to establish an emotional connection with them (Paternoster, 2008). Airport brands help develop recognizable services to make passengers remember when deciding what to buy/use. It can also boost sales by giving customers a unique and memorable experience and creating customer loyalty (Castro and Lohmann, 2014; Halpern and Regmi, 2011). In this vein, given the importance of branding "services," we argue that branding airports will increase airports' positive reputation and revenues. However, the commitment of passengers and how commitment types could affect shaping airport destination branding is still vague.

2. Passengers' commitment

According to the Behavioral Commitment Theory, when consumers feel emotional toward service providers, they are more likely to attach to these service providers (Curras-Perez and Sanchez-Garcia, 2015; Wei et al., 2016). According to this theory, consumers' emotional attachments to products or services determine how strongly they interact with them and make it easy to predict consumers' behaviors (Curras-Perez and Sanchez-Garcia, 2015; Lee et al., 2016).

The Behavioral Commitment Theory has also been used to explain why consumers stick with certain services regardless providers are more cost-effective. In this study, we examined how passengers' Affective, Continuance, and Normative Commitment, as postulated by Commitment Theory, can enable the building of an Airport Brand (Curras-Perez and Sanchez-Garcia, 2015; Lee et al., 2016; Wei et al., 2016) (Figure 1).

2.1. Affective commitment

The foundation of affective commitment is consumers' emotional connection to a good or service (Claffey and Brady, 2019). Emotionally committed consumers are more inclined to stick with a product or service even if it is not the most cost-effective (Johnson et al., 2008). The term "affective commitment" refers to the thoughts, feelings, and actions of consumers who are actively attached to a specific business (Evanschitzky et al., 2006). Understanding that affective commitment strongly affects consumers and the service providers as a whole entity (Pimentel and Reynolds, 2004). Affective commitment needs a certain amount of trust in the service provider's quality because trust creates a connection based on respect and understanding between the consumers and the service provider (Johnson et al., 2008). Service providers are more likely to gain from consumers' affective commitment if consumers trust them (Evanschitzky et al., 2006; Pimentel and Reynolds, 2004). In the aviation industry, especially the airports, we can predict the passengers' affective commitment in a terminal environment when passengers contribute to the success and enjoyment of their journey. When passengers at airports have an affective commitment, they will take the initiative to suggest changes or

report issues, ensuring that their trip arrangements run smoothly and effectively. Given that positive emotions shape affective commitment (Claffey and Brady, 2019), passengers shape positive emotions when they are pleased about that airport's qualities in a personalized way. Personalizing airport services to specific types of passengers is critical to ensure that all passengers have positive emotions (Figueiredo and Castro, 2019). Also, passengers could have when they have positive memories of the airport services (Claffey and Brady, 2019). Convenience and emotion can be combined to promote such commitment since passengers may be pulled to an airport by comfort, nostalgia, or anticipation. For example, they may have grown up using that airport for inbound and outbound flights or have fond memories of it with their friends or family (Halpern and Regmi, 2011). This is because the fond memories of certain services increase the probability of using them (Johnson et al., 2008). Thus, this emotional attachment due to the strong affective commitment (Lee et al., 2016) drives passengers at airports to demonstrate their familiarity with the layout, adhere to rules and directions, or kindly request assistance, when necessary (Batouei et al., 2020), leading to building strong airport branding.

2.2. Continuance commitment

Continuance commitment is determined by how much consumers believe it would cost to switch services (Chu and Li, 2010) because they believe switching would be expensive or inconvenient (Xiang et al., 2018). The idea of continuance commitment is crucial in the service sector, especially for businesses that depend heavily on passengers, like airports (Raju, 2017). This kind of commitment is when passengers use certain airports because they don't have an alternative airport that provides the same services. In the case of airports, customers may be willing to travel with a particular airport because of its convenient location, links to other airports, an array of commercial amenities, and high service quality compared to other airports (Castro and Lohmann, 2014; Figueiredo and Castro, 2019).

Moreover, the service quality at airports is considered the critical feature that shapes positive passenger behaviors (Halpern and Regmi, 2011; Paternoster, 2008), leading to continuance commitment and reducing the switching behavior to other airports. The availability of services and overall experience at the airport positively influences passengers (Halpern and Regmi, 2011). When the services at airports are consistent and reliable, it increases the likelihood of passengers continuing to use the same airport instead of switching to a different one. The simplified security screening process, Easy check-in, helpful staff, and various services such as amenities, shopping, and dining options influence the continuance commitment to an airport because of the quality of current and future services (Batouei et al., 2020; Bezerra and Gomes, 2020).

Moreover, positioning and repositioning airport locations and services among their peers can lead to continuance commitment rather than switching behavior (Bezerra and Gomes, 2020). By providing convenient airport access, passengers are more likely to use a particular airport instead of switching it (Bogicevic et al., 2013). Offering various services such as restaurants, shops, and other amenities can create an enjoyable experience that encourages passengers to return (Bezerra and Gomes, 2015; Bogicevic et al., 2013). Furthermore, by strategically positioning airports in areas with high demand for air travel among their peers, airports can increase their customer base and create a sense of loyalty among passengers (Bezerra and Gomes, 2015; Bogicevic et al., 2013). By creating a convenient and enjoyable environment for passengers, airports can ensure that passengers remain committed to their services rather than switching to another provider, leading to avoiding adverse behavioral outcomes, which is one reason for building strong brands.

From the previous arguments of passenger affective commitment and continuance commitment, we argue that passenger-affective commitment has many benefits over passengers' continuance commitment (Raju, 2017). Affective commitment is based on an emotional attachment to the service providers (Chu and Li, 2010; Fullerton, 2005), which can lead to increased loyalty and a greater willingness to recommend airports to others. In addition, passengers with an Affective commitment are more likely to be willing to pay a premium for their flights and more likely to take advantage of the additional services offered by airports. However, the continuance commitment of passengers also has advantages. It can help eliminate switching behavior (Chu and Li, 2010; Xiang et al., 2018) by providing passengers with incentives such as loyalty programs and discounts for frequent flyers. It can also help airports build relationships with their passengers by providing them with personalized services and experiences (Batouei et al., 2020; Bezerra and Gomes, 2015, 2020; Bogicevic et al., 2013). And therefore, both of these types of affective and continuance commitment could build strong airport branding.

2.3. Normative commitment

The foundation of normative commitment is consumers' sense of responsibility or obligation to specific services (Jaros, 2017). Regardless of the service's worth, consumers with normative commitment are more likely to use it because they feel obligated (Lariviere et al., 2014). Consumers who exhibit normative commitment will act in a way they think is necessary to meet the expectations of their social context (Bergman, 2006). This commitment goes beyond polite behavior; it is a drive to behave in a way that benefits the consumers and the service providers in a particular environment, like an organization (Fullerton, 2014; Lariviere et al., 2014). It can be observed in airports when passengers try to follow service rules such as schedules, luggage allowances, and social distance if passengers are obliged to travel through certain airports for political, health, or price reasons. Normative commitment can have negative impacts on passengers at airports.

For example, if a passenger is committed to a particular airport, they may be less likely to seek alternatives for better deals or services (Bezerra and Gomes, 2020). In contrast, if the airport is not providing quality services, the passengers may be stuck in a contract and unable to switch providers without incurring additional costs (Batouei et al., 2020). This can lead to frustration and dissatisfaction with the airport, resulting in a negative passenger experience (Bezerra and Gomes, 2020; Lariviere et al., 2014) and less likely to recommend the airport as a strong brand. From the previous argument about the three commitment types (normative, continuance, and affective). The argument has shown that passengers with higher levels of affective and continuance commitment are more likely to build attachment airports than normative ones. Affective and

continuance commitment are two critical factors that can be used to construct strong airport branding. Affective commitment is the emotional attachment a passenger has to an airport, while continuance commitment is the perceived cost of switching to another airport (Xiang et al., 2018). Thus, affective and continuance commitment leverages positive individuals' positive behavioral outcomes (Claffey and Brady, 2019; Evanschitzky et al., 2006; Johnson et al., 2008; Pimentel and Reynolds, 2004), given that positive behavioral outcomes help establish brands. Therefore, this research will investigate the factors that can build affective and continuance commitment to building strong airport branding. It examines how airports can create a positive passenger experience by providing good customer service, offering amenities, and creating a pleasant atmosphere.

Additionally, it will explore how airports can reduce the perceived cost of switching to another airport that remains a continuance commitment and avoids normative one. By understanding these factors, airports can create an environment where passengers feel emotionally attached and perceive low costs associated with switching (Fullerton, 2014; Jaros, 2017; Lariviere et al., 2014), leading to an increase in the probability of recommending airports as a strong brand.

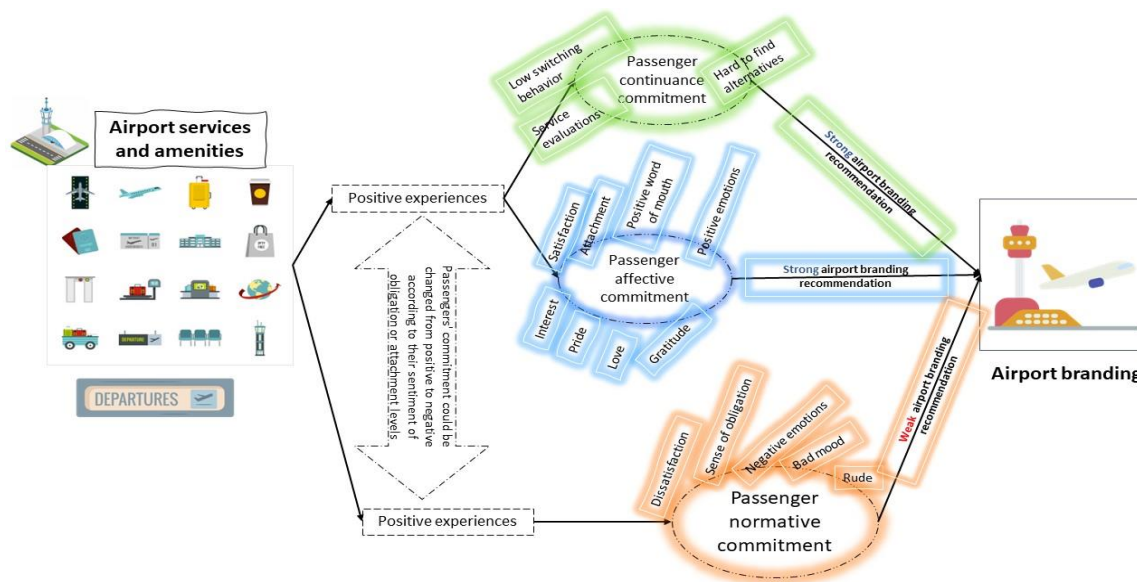


Figure 1. The theoretical framework

MATERIALS AND METHODS

1. The study context

We employed content analysis of passengers' reviews from passengers who used Cairo international airport (CAI) in Egypt to travel. With more than 16 million annual passengers, Cairo International Airport is Egypt's most significant airport (Cairo International Airport, 2021). This airport, 15 kilometers northeast of Cairo, is EgyptAir's central hub and a global entry point to Africa and the Middle East. In addition to domestic flights within Egypt, Cairo International Airport accepts passengers from several other countries, including the United States, Europe, and Asia. The Egyptian-inspired architecture, luxurious carpets, and couches in the terminal lobbies give the airport a distinctively Egyptian feel. The Cairo International Airport has three spacious terminals. Even though Terminal 1 is the oldest, all three offer various services. Each terminal has duty-free stores, gift shops, ATMs, dining options, cafes, and rest facilities (Ahmed, 2017). Numerous eateries also provide traditional Egyptian cuisine and unique menu items.

An official tour company that takes visitors on a tour of Cairo is also available at the airport. Numerous services and facilities created to offer convenience and safety are present at the airport to ensure that it meets all of the needs of its visitors (Cairo International Airport, 2021). All passengers have access to a medical facility, lost-and-found business facilities, and a prayer area. The airport contains a library, numerous murals, and works of art all over the terminal. The airport offers convenient access to Wi-Fi, allowing passengers to access the internet easily. The Cairo International Airport is making a lot of effort to accommodate its patrons. For instance, it recently unveiled a brand-new terminal designed especially for low-cost airlines and promises to receive fresh, cutting-edge renovations soon. The airport will continue to enhance its standing as one of the major airports in the area (Abou ElGheit and Nageh, 2018).

2. Content analyses procedures

We employed quantitative content analysis to investigate passenger reviews of Cairo International Airport. According to Vitouladiti (Vitouladiti, 2014), quantitative content analysis is an efficient method to classify and organize review texts by mining them using a quantitative analytical approach. Content analysis is efficient when the content is significant, so it could be more appropriate to increase the results obtained from the individual reviews. Also, it helps to find the richness of the text with careful interpretation of the texts (Vitouladiti, 2014). Content Analysis is efficient for our research scope because it can help us to observe and evaluate the notions behind individuals' emotions toward the services they reviewed (Camprubí and Coromina, 2016). We conducted the content analysis and coding in four stages.

First, we downloaded 400 passengers' reviews from the following platforms (Skytrax, Tripadvisor, traveller, and flight report). We selected these reviews on these platforms because there is a scarcity of reviews about Cairo International

Airports on other platforms. Also, these platforms, especially Skytrax and flight reports, are specialized in the aviation industry, which increases credibility in content research operations (Lincoln et al., 1985).

Second, we employed the Voyant Tool software to extract data from the review texts. This enabled us to create more comprehensive visualizations, identify the most used terms, uncover themes, and take advantage of a range of visualization features provided by Voyant Tools as a web-based platform for reading and analyzing digital texts (Miller, 2018).

Third, we followed (Stepchenkova et al., 2008) recommendation to find the best approach to prepare data by identifying the potential frequent terminology results which reflect commitment types according to the study literature; emotion words are mainly for the affective commitment, the services-related terms are primarily the continuance commitment, and the words that attributed to bad feeling are attributed mainly to normative commitment (Figure 2). To achieve the content analysis reliability and validity and keywords assumptions, we observed the Creswell’s (Creswell, 2002) suggestions to ensure the validity of the content analysis. We checked the potential keyword results with experts who have worked previously in such analysis in tourism destinations. By utilizing these keyword descriptors, we can ascertain passengers' evaluations of the airport based on their commitment type and the ensuing sentiment of these reflections with the potential results. For instance, if the potential results contain any keywords of the affective commitment, it will enable us to locate discrepancies in the airport and improve the airport to maintain Affective commitment with passengers and build a strong airport brand image; the same for other commitment types (continuance and normative) according to the current study literature arguments.

Fourth, we improved text mining procedures by increasing the interjudge reliability of the analysis (Camprubí and Coromina, 2016), meaning that we drew text mining operations many times with different experts and procedures to achieve reliability. Then, we provide three themes to analyze the study results: 1) Passengers' significant concerns toward the airport, 2) the correlation between passengers' concerns and related amenities, and 3) tracking passenger behavior across different concerns levels.

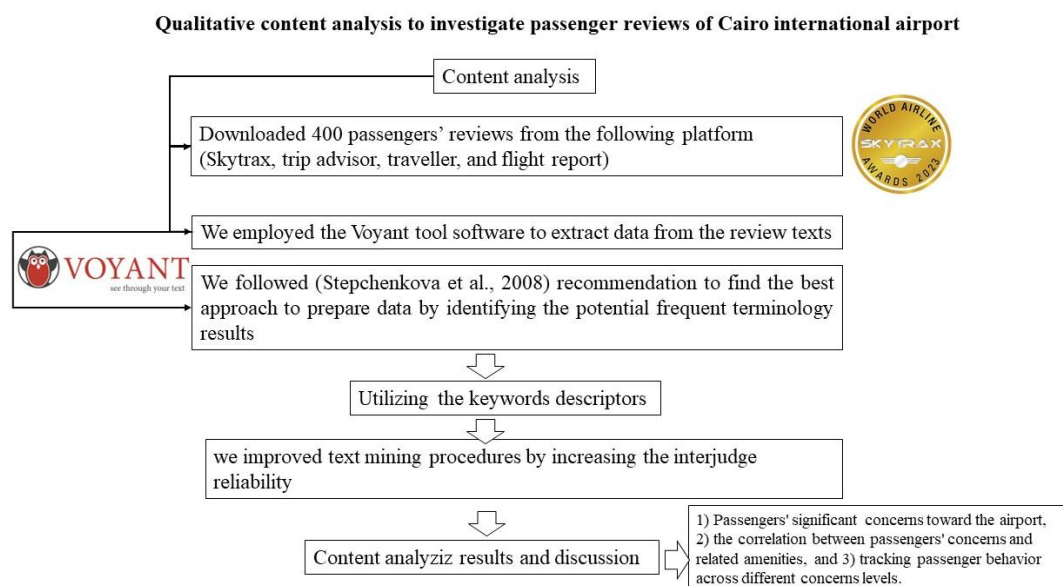


Figure 2. The methodology framework

CONTENT ANALYSES RESULTS AND DISCUSSIONS

1. Passengers' big Concerns toward the airport

The content analysis results show that most passengers who have reviewed their experiences with airports had negative experiences due to terminal services’ quality, security tips, passports and check areas, WIFI, staff, boarding, and luggage (Figure 3). According to the commitment theory, this has led to strong negative emotions, leading to lower continuance commitment. Passengers also show negative emotions such as rude, worse, bad, and other negative feelings, leading to lower affective commitment according to the commitment theory (Xiang et al., 2018).

The commitment theory is a psychological theory that states that people are more likely to remain committed to service providers if they feel loyal or attached to them. As mentioned in the literature, The theory suggests that there are three types of commitment: what is based on emotional attachment is the affective commitment (Claffey and Brady, 2019), what is based on a sense of obligation is the normative commitment, and what is based on the cost of leaving is the continuance commitment (Chu and Li, 2010; Fullerton, 2005; Raju, 2017).

The content analysis results suggest that passengers’ negative experiences with airports make them feel less emotionally attached, resulting in lower levels of affective and continuance commitments. Furthermore, these negative experiences also lead passengers to perceive leaving an airport as less costly than staying with it (Batouei et al., 2020), resulting in lower levels of continuance commitment, according to the theory. Also, it increases the feeling of being obliged to remain, negatively impacting their emotions and increasing their feelings of normative commitment (Raju, 2017).

Therefore, according to the study arguments, passengers with normative commitment are less likely to recommend the airport as a brand. The results of this content analysis suggest that airports need to improve their services for passengers to

The previous three themes of passengers' reviews revealed that most passengers' reviews were negative. The main concerns covered were the service provided by the Cairo International Airport's physical environment. This finding indicates that the overall customer sentiment towards the airport is not favorable, which may affect customer behavioral outcomes. Our results contradict Raju's (Raju, 2017) findings that consumers in continuance commitment are less likely to build brands like affective commitment. We found that low affective and continuance commitment to the airport leads passengers not to have an emotional attachment to the airport and their likelihood of continuing to use it. In comparison, normative commitment involves a passenger's sense of obligation toward the airport, which is higher than expected in the Cairo international airport. This suggests that passengers' commitment to the airport is mainly driven by a sense of obligation and not by any emotional attachment to the airport or any likelihood of using it in the future.

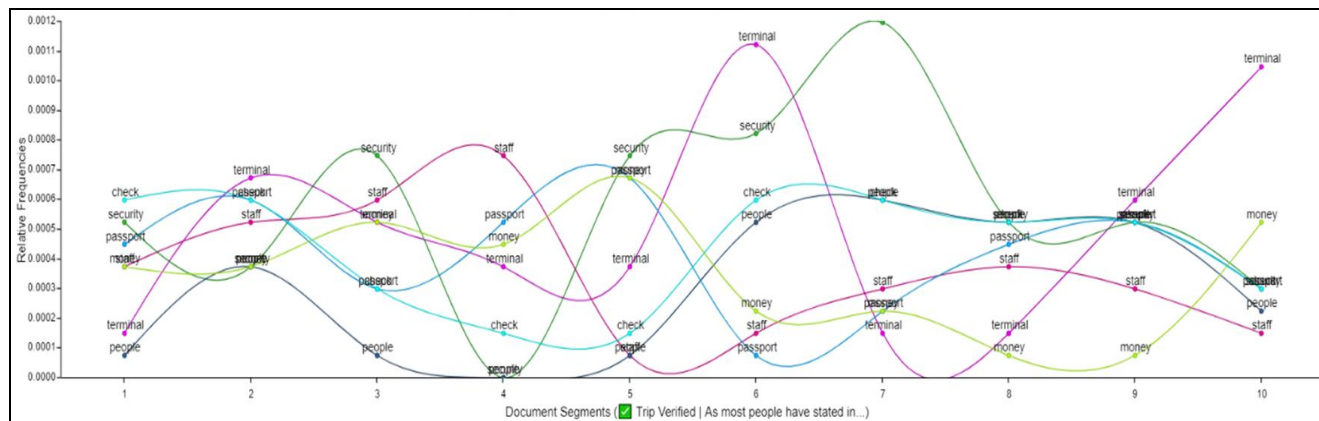


Figure 6. The linear terminology forecast

Therefore, we argue that airport branding couldn't be built without fixing these issues because the decline in affective and continuance commitment (Xiang et al., 2018), coupled with the increase in normative commitment, can damage the service providers' reputations (Bergman, 2006; Fullerton, 2014; Jaros, 2017; Lariviere et al., 2014), which here will damage airport's branding. The decline in affective commitment lowers the passengers' emotional attachment (Claffey and Brady, 2019) to the airport, which reduces the likelihood that the customer will spread positive word-of-mouth about the airport. While the increase in normative commitment increases the passengers' sense of obligation (Bergman, 2006; Fullerton, 2014; Jaros, 2017; Lariviere et al., 2014) toward the airport, this sense of obligation eliminates emotional attachment, decreasing the probability of recommending airport as a strong brand.

Our study elucidates novel insights for airport policymakers, which suggest paying due attention to the factors that may diminish affective and continuance commitment to form a well-established brand. It is further advocated to reduce normative burden while augmenting passengers' positive behavioral results concerning airport branding. The following section will introduce our study's managerial and theoretical implications.

CONCLUSION AND IMPLICATIONS

This article provided insights into how different types of commitment can affect airport brands from the commitment theory perspective. Through a content analysis of passenger reviews, we identified novel factors that could negatively impact the commitment types, particularly affective and continuance commitment, which is likely to build airport branding. We also discussed the factors that can contribute to normative commitment at airports, which should be eliminated because it leads to decreased airport brand building. Eventually, this research highlights the importance of understanding the effect of different commitment types on airport brands and offers recommendations on maximizing passenger affective and continuance commitment and mitigating the normative commitment to building strong brands. The content analysis findings found crucial theoretical and managerial implications for tourism, aviation scholars, and policymakers.

1. Theoretical contribution

Theoretically, the current study is the first to examine airport branding from the standpoint of three different types of commitment theory (continuance, affective, and normative), making it a significant theoretical contribution to the literature on airport developments and passengers' behavioral outcomes. The study adds to the existing literature on factors that shape airport branding (e.g., (Figueiredo and Castro, 2019; Gitto and Mancuso, 2019; Halpern and Graham, 2021; Nghiêm-Phú and Suter, 2018)) by shedding light that affective and continuance commitment is more likely to build destination branding than normative commitment. The study also presents service quality amenities (staff, terminals, security, gates, shops, boarding, etc.), airport positioning, and repositioning that help airports grow through passengers' affective and continuance commitment instead of normative to travel through the airports. This study offers thorough insights into how passengers build their affective and continuance commitment to using airports and how normative commitment is not a big deal in building airport brands. Thus, it contributes to the theory of consumer commitment (Krishen et al., 2023; Maduku et al., 2023; Wong, 2023). Our findings go beyond the significance of their results for marketers and airport management in terms of how they might leverage these revelations to develop more successful tactics for fostering passengers' affective and continuance commitment rather than normative commitment.

2. Managerial implication

Managerially, our study has several crucial managerial implications for Cairo International airport managers to build a strong airport brand; according to the study findings, affective and continuance commitment are more likely to create airport branding than normative commitment. Airport quality, positioning, repositioning, innovation, and service personalization can achieve this purpose. Therefore, Cairo international airport managers must consider the airport's service quality, market positioning, how that positioning changes over time, and how effectively balanced communication is employed to reach passengers. As any successful brand must prioritize quality, thus Cairo International airport must work to give passengers a high-quality experience.

To address these issues, airports must improve their amenities and services. This includes providing better customer service by training staff on handling difficult situations, improving security procedures so that passports are checked quickly and efficiently, and ensuring that check-in areas are not overcrowded. Additionally, airports should strive to create a pleasant atmosphere for passengers by providing comfortable seating and free Wi-Fi or charging stations. Cairo international airport managers can provide stroller rentals, diaper-changing stations, and family-friendly restaurants for families traveling with young children. By personalizing airport services to specific types of passengers, airports can ensure that all passengers have affective/continuance commitment. Positioning in Cairo International airport is also crucial because airports need to distinguish themselves from their competitors and compete in the market.

Repositioning is also required because Cairo International airport needs to be flexible enough to react to shifting consumer demands and fashion trends over time. This could include providing friendly staff members willing to help passengers with queries and ensuring that all staff members always treat passengers respectfully, leading to more affective or continuance commitment.

To foster passengers' commitment through positioning the airport facilities according to our results, Cairo International airport needs to be able to deliver its message to passengers in an effective manner. According to our results, Cairo International Airport managers' authorities must address these issues head-on to improve passenger effectiveness and continuance. Long wait times at security checks can be reduced by introducing more efficient processes or increasing staffing levels during peak times. Poor customer service from staff members can be addressed by providing better training and ensuring that all staff members are held accountable for their actions.

Dirty facilities can be improved by increasing cleaning standards and regularly cleaning all areas. Finally, high prices for goods in shops can be addressed by introducing more competitive pricing structures or offering discounts on certain items. By applying the previous managerial recommendations, Cairo International airport managers can build a strong brand that will draw more passengers and foster their commitment, especially passengers' affective and continuance, rather than a normative commitment to building a strong brand.

Research limitations and future directions

This research study has several limitations. First, the study is limited to the context of Cairo International Airport and may not apply to other airports. The study relies on content analysis of passengers' reviews, which may not represent all passengers' experiences and opinions. Therefore, we suggest future research study other airports with more reviews. Second, the study does not consider other factors that may influence passenger commitment, such as airport airlines' catering services at airports which can affect airport branding. Thus, future research should focus on these factors.

Third, the study does not consider how commitment types affect airport branding but do not consider how airport branding affects customer perceptions of an airport's value proposition or how it can be used to create a competitive advantage, and how airport branding affects customer behavior in terms of purchase decisions or loyalty program participation. Therefore, future research should consider all these assumptions to improve airport branding. Regardless of these limitations, our study findings decrease the gap in the literature to build airport branding by providing solutions to increase passenger affective and continuance commitment toward airports.

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QUICK ANALYSIS AND STRATEGY MIX MARKETING TO IMPROVE TOUR PACKAGE SALES IN BALI

Putu ARYASIH* 

Politeknik Pariwisata Bali, Tour and Travel Business Study Program, Bali, Indonesia, email: ayuaryasih@ppb.ac.id

Ni Ketut AGUSTINA 

Politeknik Pariwisata Bali, Tour and Travel Business Study Program, Bali, Indonesia, email: agustina.wiwiek@ppb.ac.id

Putu YUDHISTIRA 

Politeknik Pariwisata Bali, Tour and Travel Business Study Program, Bali, Indonesia, email: arie.yudhistira@ppb.ac.id

Ni Putu WIJAYANTI 

Politeknik Pariwisata Bali, Tour and Travel Business Study Program, Bali, Indonesia, email: evi@ppb.ac.id

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Abstract: This study aims to examine the right marketing mix strategy to increase tour packages on the island of Serangan, Bali which can be a benchmark in the development of tour packages in other potential tourist destinations area. Mix method (qualitative and quantitative) research, sampling of data used by random sampling. All variables (product, price, place or distribution channel, promotion) in the study were written in the IE matrix and analyzed using SWOT analysis, EFAS, and IFAS tables. Based on SWOT analysis can be explained that (1) Strengths Opportunities strategy is made by taking advantage of existing opportunities by optimizing internal strengths, maintaining the original strategy that has been implemented, and improving the conditions that have been achieved. (2) Strengths Threats strategy was made with the internal strengths of the Turtle Conservation and Education Center and overcoming existing external threats. (3) Weaknesses Opportunities strategy is implemented based on exploiting existing opportunities by minimizing internal weaknesses owned by the Turtle Conservation and Education Center on Serangan Island. (4) Weakness Threats strategy is based on business activities to minimize existing weaknesses and avoid external threats. The position of the SWOT quadrant is based on the x quadrant axis which is located at point 3.18 and the y quadrant axis is located at point 2.42, placed in Quadrant 1 so that it can be categorized as an aggressive support strategy. The growth strategy is designed to achieve growth in sales, assets, profits, or a combination of both. This can be achieved by lowering prices, developing new products, increasing product or service quality, or increasing access to a wider market. That strategy can be applied in other potential tourist destination areas.

Key words: educational, cultural tourism, efas, ifas, Bali

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INTRODUCTION

The tourism sector (Šenková et al., 2022) is expected to be able to drive the people's economy because it is considered the most prepared sector in terms of facilities, infrastructure, and facilities compared to other business sectors. There are various forms of tourism trips (Mohd Shariff, 2022) in terms of the aims and objectives of the tour, namely holiday tourism (Halim et al., 2022), introductory tours, educational tours (Herrera-Franco et al., 2022) and (Sumarmi et al., 2022), knowledge tours, religious tours (Hassan et al., 2022), special interest tours, and hunting tours. The types of tourism studied by researchers are included in knowledge tourism, namely tourism trips whose main purpose is to acquire knowledge or investigate a field of science (Phuthong et al., 2022). Bali as a tourist destination (Herman et al., 2022) places the tourism sector as a mainstay sector. Stretches of coral reefs, beaches, and underwater natural beauty are the leading sectors for marine tourism in Bali which can contribute to regional development in the future (Jatmiko et al., 2022).

The development of tourism (Ospanova et al., 2022) in Bali can be seen from the visits of foreign tourists every year which continue to increase where there is the contribution of reliable tourism actors as supporters of tourism activities (Phuthong et al., 2022) in addition to Bali's natural tourist attractions (Nusraningrum and Pratama, 2019). The increase in the number of foreign tourist visits to Bali in 2022 can be seen in Figure 1 below (Dewi and Ayuni, 2020).

Based on Table 1, tourists from Australia are still in the top position with 73,113 visits in November 2022, the number of Australian visitors has decreased from -15.02% the previous month. Tourists from India are still in second place as in the previous month with a total of 26,133 visitors. This number experienced a slight decrease of -2.47% compared to the total visits of Indian tourists in the previous month. Singapore tourists jumped to 3rd place in November 2022 with 21,573 visitors. Large growth was recorded by foreign tourists from this neighboring country from the previous month of 65.01%.

* Corresponding author

American tourists are still in 4th place with a total of 14,840 visits in November 2022. This figure is 1.01% higher compared to the previous month (Pusat and Bali, 2022).

Table 1. Visits of tourists from abroad (Pusat and Bali, 2022)

No	Country	Oct. 2022	Nov. 2022	Change (%)
1	Australia	86,029	73,113	-15.02 %
2	India	26,796	26,133	-2.47 %
3	Singapore	13,074	21,573	65.01 %
4	United States of America	14,648	14,840	1.01 %
5	Russia	9,436	14,364	52.23 %

As one of the tourist attractions in Bali, Serangan Island is an island located in the South Denpasar District, Denpasar City, Bali Province, Indonesia. The island, which is located 500 meters south of the city center, has a length of 2.9 km and a width of 1 km. and dolphin conservation. It can be seen in the table below that the level of visits by domestic tourists to Serangan Island reached 72,098 people and foreign tourists who visited Serangan Island reached 96,788 people and Serangan Island is the most popular tourist attraction for tourists from several tourist attractions in Denpasar City.

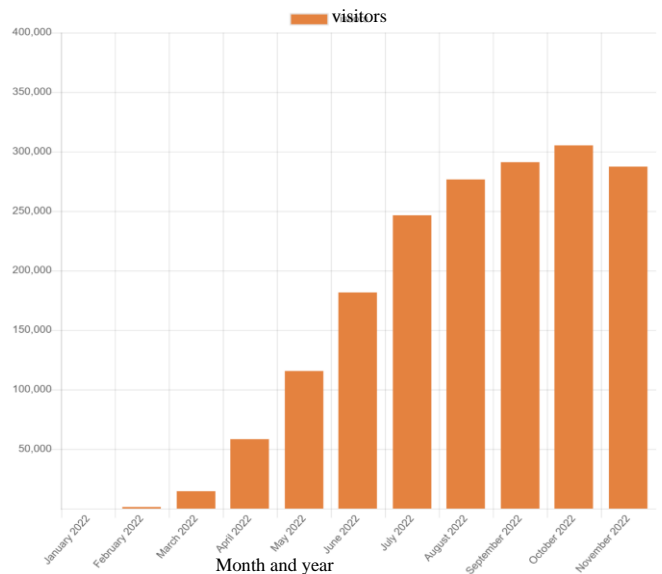


Figure 1. Bali tourists in 2022 (Pusat and Bali, 2022)

Table 2. Visit Level of Tourist Attractions in Denpasar City

No	Tourist attraction	Traveler Foreign (Person)	Domestic Travelers Person)
1	Balinese Museum	14.026	15.171
2	Museum Le Mayeur	2.470	3.233
3	The Bali Art Center	1.606	5.630
4	Attack Island	96.788	72.098
5	Blanjong inscription	153	172
6	Kumbasari Market	20.675	0
7	Badung Market	17.074	0
8	Fingerprint Painting Museum	69	292
9	Mon. The Struggle of the Balinese People	28.110	65.333
10	Mangroves	243	4.867
11	Dalem Sakenan Temple	570	1.541
12	Kertalangu Cultural Village	8.454	36.983

Based on Table 2 and the explanation above, there are potential problems that become opportunities to improve tour packages wrapped in education, namely, how to increase sales of tour packages on Serangan Island using SWOT analysis (strengths, weaknesses, opportunities, and threats) (Wang et al., 2023) based on marketing mix components, namely places or distribution channels and promotion at the Turtle Conservation and Education Center (Herrera-Franco et al., 2022) and (Stoica et al., 2022) on Serangan Island. Actually, there are many strategies that can be used for tourism promotion, there are studies that use virtual reality to promote wooden churches in Romania, the research's goals include facilitating the development of active knowledge and virtual reality while raising awareness among local populations and authorities about the function and significance of wood churches in tourism and the local economy. Potential visitors to tourist attractions that are difficult to reach will now have an online bridge to use (Caciora et al., 2021). Another study by Zarate used social communities to promote tourism in Mexico (Zárate-Altamirano et al., 2022). Meanwhile, Monedero's research uses digital social media strategies to promote tourism in southern Spain (Monedero Morales and Martín Martín, 2022). The Critical analysis and the limitation of the article is to find the right marketing mix strategy to increase tour packages during pandemic and right after pandemic especially in Serangan Island Bali. However, it is possible to implement this strategy in destination areas around the world. Finally, this study aims to examine the right marketing mix strategy to increase tour packages on the island of Serangan, Bali which can be a benchmark in the development of tour packages in other potential tourist destinations area.

MATERIALS AND METHODS

Mix method research method, qualitative data in the form of observation descriptions or descriptions of tour packages on Serangan Island, and the results of interviews. Meanwhile, quantitative data is in the form of data on the level of visits to turtle conservation and education centers. Sampling of data by probability sampling technique or random sampling. All variables in the study were written in the IE matrix, a SWOT analysis was first carried out, the results of which were summarized in the EFAS and IFAS tables (Nusraningrum and Pratama, 2019) (Sumarmi et al., 2022). The methodology of this study can be written as follows as shown in Figure 2.

Figure 2 above can be explained as follows: (1) The research began with field observations to the research location, precisely on Serangan Island. Observation includes regions and communities. (2) After observation at the research location is carried out, proceed with compiling an interview check list so that the interview process becomes the focus.

(3) Based on the interview checklist that has been prepared, the research is continued by conducting interviews with local communities. (4) After the interview is conducted, the next process is to make a SWOT questionnaire check list based on the components of Strengths, Weaknesses, Opportunities, Threats so that the data obtained becomes more valid. (5) Furthermore, the interview process was again carried out along with the distribution of questionnaires to the respondents. (6) Data obtained from interviews and questionnaire dissemination were synchronized to the IFAS and EFAS quadrants. (7) From the results of data synchronization, the quadrant position of the Turtle Conservation and Education Center in Serangan was found. (8) Based on this quadrant, the right strategy formulation is made, in this case it is a marketing mix strategy to increase tour package the Serangan Island, Bali. The sampling technique uses the slovin formula, namely:

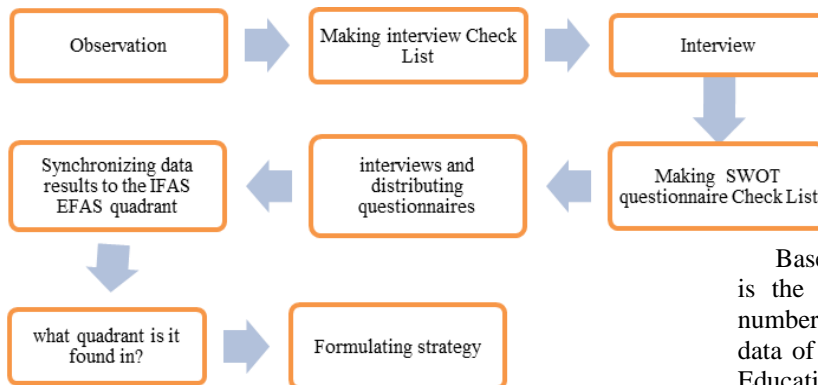


Figure 2. Flowchart of research methodology

$$n = \frac{N}{1+N(e)^2}$$

Where:

n: number of samples;
 N: population size (Average Visit Rate to TCEC over four years);
 e: error tolerance limit of about 5% - 10% (error tolerance).

Based on the slovin formula above, the following is the presentation of the data to determine the number of samples to be taken based on the average data of tourist visits to the Turtle Conservation and Education Center for four years of 35,420 as follows:

$$n = \frac{35.420}{1 + 35.420(10\%)^2}; \quad n = \frac{35.420}{453.21}; \quad n = 99.99$$

Based on the formula above, the sample taken is 99.99 and rounded up to 100 respondents. This study uses a Likert scale (Marniati and Wibawa, 2018), which is a scale used to measure attitudes, opinions, and perceptions of a person or group of people about social phenomena (Sugiono, 2000:86). The assessment is used if a very good answer (SB) is given a value of 5, a good answer (B) is given a value of 4, an adequate answer (C) is given a value of 3, a poor answer (K) is given a value of 2 and a very poor answer (SK) is given a value 1. To determine the criteria for valuation or value vulnerability which is carried out in the following way:

- Determines the highest and lowest possible scores. In this case, the highest possible score is 5 and the lowest possible score is 1.
- Determine the size of the score range based on the difference between the highest possible score and the lowest possible score. In this case the value area (R) = 5 – 1 = 4.
- Determine the size of the value interval based on the comparison of values between the value areas and the number of assessment criteria required. In this case, there are five criteria for the number of ratings, namely very good, good, enough, less, and very less. 5:4 value interval = 0.8
- Determine the range of values for each assessment criterion. In this case, the assessed range is:
 - 1.00 – 1.80 with very less category (SK); 1.81 – 2.60 with less category (K); 2.61 – 3.40 with sufficient category (C)
 - 3.41 – 4.20 with good category (B); 4.21 – 5.00 with very good category (SB)

SWOT analysis is a systematic identification of various factors to formulate a company strategy (Heshmati et al., 2022). This analysis is based on the logic that can maximize Strengths and Opportunities but can simultaneously minimize Weaknesses and Threats. Research shows that company performance can be determined by a combination of internal and external factors. Both factors must be considered in the SWOT analysis. SWOT stands for Strengths and Weaknesses internal environment and Opportunities and Threats external environment in the business world as Figure 3 (Dong et al., 2022).

Quadrant 1: This is a very favorable situation. The company has opportunities and strengths so that it can take advantage of existing opportunities. The strategy that must be applied in this condition is to support an aggressive growth policy.

Quadrant 2: despite facing various kinds of threats, this company still has internal strength. The strategy that must be implemented is to use strength to take advantage of long-term opportunities by way of a diversification strategy (product/market).

Quadrant 3: the company faces enormous market opportunities but on the other hand there are some internal constraints or weaknesses. The focus of this company's strategy is to minimize the company's internal problems so that it can seize better market opportunities.

Quadrant 4: This is a very unfavorable situation; the company is experiencing various threats and weaknesses in the internal environment. In this instruments as attachment 1 uses to taken the data, the author divides the respondent groups based on their nationality. The following is a table showing the characteristics of respondents based on nationality.

Table 3 shows that out of 100 Indonesian tourist respondents who bought the turtle educational tour package, there were 75 people, 7 people contributed tourists from Malaysia, then 5 people from Germany, and 4 people from Australia.

Characteristics of Respondents Based on Gender

In this questionnaire, the authors divide the group of respondents based on gender. The following is a table showing the characteristics of respondents based on gender. The characteristics of respondents based on gender can be seen in Table 4 which states that 51% of female respondents and 49% of male respondents.

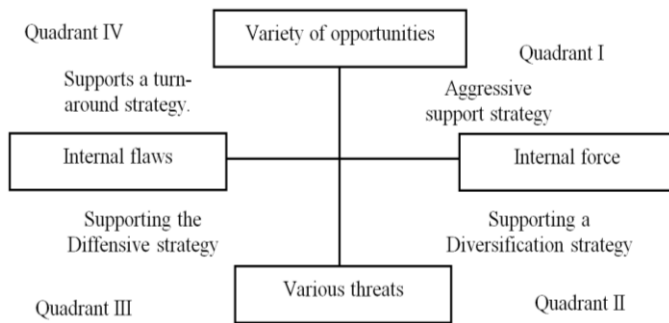


Figure 3. SWOT Analysis (Cheng et al., 2021)

Table 6. Characteristics of Respondents by Type of Work (Salau et al., 2018)

Type of work	Number of Respondents	Percentage (%)
Student	56	56
Teacher	12	12
Government employees	4	4
Private employees	11	11
manager	4	4
businessman	3	3
Other	10	10
Amount	100	100

Table 3. Characteristics of Respondents by Nationality

Nationality	Number of Respondents	Percentage (%)
Indonesia	75	75
Malaysia	7	7
German	5	5
Australia	4	4
Dutch	2	2
Japan	2	2
Other	5	5
Total	100	100

Table 4. Characteristics of Respondents Based on Gender

Gender	Number of Respondents	Percentage (%)
Woman	51	51
Man	49	49
Amount	100	100

Table 5. Characteristics of Respondents by Age (Hidayati et al., 2020)

Age (Years)	Number of Respondents	Percentage (%)
17-25	68	68
26-31	8	8
32-38	12	12
39-45	7	7
>45	5	5
Amount	100	100

Characteristics of Respondents by Age

On the characteristics of respondents based on this age, the authors divide several age criteria ranging from 17 years to 45 years and over. Can be seen in the following table are characteristics based on age.

It can be seen in Table 5 that the turtle educational tour package is dominated by teenagers, most of whom are students aged 17-25 years, reaching 68% as the main enthusiasts of purchasing the turtle educational tour package and students are the market share targeted by the Center for Conservation and Turtle Education.

Characteristics of Respondents by Type of Work

In this table, the author includes several types of work of the respondents. Can be seen in the table of characteristics of respondents based on the type of work below. In Table 6 the characteristics of respondents based on the type of work students or students became the highest enthusiasts of turtle educational tour packages by obtaining 56% of the total number of respondents and teachers or educators as other educational aspects also contributed to the purchase of this turtle educational tour package. This happens because the turtle tour package is education-based, so most of the respondents who bought the turtle educational tour package are students and education providers such as teachers.

RESULTS AND DISCUSSION

Product

Product evaluation by tourists who bought this turtle educational tour package based on a questionnaire showed an average score of 4.27. In this case, the average score is in the interval 4.21-5.00 so it is included in the Very Good (SB) category. With the highest average score in the product category, the quality of conservation services gets a score of 4.58, which means that the service provided by the Turtle Conservation and Education Center is very good in the form of very clear and detailed information about the tourism program, the hospitality provided by the conservationists to educational tour program ended. The location of the Turtle Conservation and Education Center received a Good rating (B) with an average score of 3.99 because the location of the Turtle Conservation and Education Center is strategically located on Jalan Tukad Wisata, Banjar Pojok, Serangan Village.

Price

The Turtle Conservation and Education Center uses the Penetration pricing method, which is the lowest possible pricing strategy that aims to achieve the maximum sales volume in a relatively short time. The price set by the conservation party is in accordance with the quality of services provided during the tour is in accordance with purchasing power and is affordable for all people. Price is the amount of money charged to consumers to enjoy an item or service offered. The pricing of tour packages according to the quality of the services provided gets the highest score, with an average score of 4.3 in the Very Good (SB) category. The price set by the conservation party is IDR 150,000 with a minimum of five people, which is a price that has been adjusted to the operational cost requirements of this turtle Conservation and Education Center. Also, getting a good response from tourists can be seen from the score obtained from the results of the questionnaire 4.16.

Place or distribution channel

Marketing of a product must develop a distribution network on an ongoing basis and choose good partners to approach the market. The distribution channels implemented by the Turtle Conservation and Education Center are direct channels

and indirect channels in collaboration with several tourism companies including travel bureaus, hotels, schools, and several universities. Supporting infrastructure to reach the Turtle Conservation and Education Center is included in the Poor category (K) with only a score of 2.5. The location is quite strategic but is not supported by supporting infrastructure to reach objects such as unclear directions or roads, not supported by good facilities and infrastructure such as several major roads that are damaged, an environment that looks arid, and an environment that is not clean is one of its weaknesses.

For the distribution channel, the Turtle Conservation and Education Center only cooperates with four travel agencies such as TMS (Mandarin), AsiaLink (Netherlands and Germany), Millennium (Mandarin), and Onjee (Japan). This is done to make it easier for potential tourists to get information or to obtain turtle educational tourism products. However, based on the results of respondents' assessments regarding educational tour package information through travel agents Less (K) can be seen in the table above where only an average score of 2.55 is obtained.

In addition to working with tourism parties, the Turtle Conservation and Education Center also collaborates with several educational institutions such as schools and universities to apply tourism-based education or conduct research on sea turtles. The collaboration that has been carried out has been good, as evidenced by the results of tourist assessments of cooperation with educational institutions such as schools to universities.

Promotion

The promotions that have been carried out by the Turtle Conservation and Education Center are mostly included in the Less (K) category both in the quality of message delivery in promotional media, promotions that have been carried out in several media but are still not optimal with only obtaining an average score of 2.05. Variations in the delivery of information about turtle educational tour packages in promotional media are still not optimal.

The promotional media carried out by the Turtle Conservation and Education Center are as follows:

a. Promotion through Collateral: Promotion by printing collateral such as brochures about the Turtle Conservation and Education Center, and sales kits which are usually distributed when there is a meeting with WWF.

b. Internet: One of the means of promotion used is through WWF's blog and website which includes turtle conservation on Serangan Island and through the website of the Center for Turtle Conservation and Education at www.tcecerangan.com and email info.tcec@gmail.com.

c. Site Inspections: The Turtle Conservation and Education Center conducts site inspections by visiting travel agents, hotels, and places related to education such as schools and universities in Bali.

d. Advertising: Advertising is all forms of non-personal presentation and promotion of ideas, goods, or services by an approved sponsor for a fee. The Turtle Conservation and Education Center works with several electronic media parties such as television, namely MetroTV.

Table 7. Tabulation of SWOT Analysis - a. Internal Analysis

No	Strengths	Weight	Ratings	X Rating weight
1	Quality of packaging and service of educational tour packages with creative concepts.	0.2	4	0.8
2	Strategic location and supporting facilities at the Turtle Conservation and Education Center	0.2	4	0.8
3	Prices set are affordable and in accordance with the quality of services provided	0.15	4	0.6
4	The price offered can be competitive	0.15	4	0.6
5	Establishing good cooperation with tourism and schools and universities as education parties	0.1	3	0.3
6	Indirect promotion of information on turtle educational tourism was obtained from family, friends, and relatives	0.1	3	0.3
TOTAL		0.9		3.4
No	Weaknesses	Weight	Ratings	X Rating weight
1	Information about tour packages from travel agents and the speed of response to inquiries.	0.04	3	0.12
2	Lack of supporting infrastructure and facilities to get to the Turtle Conservation and Education Center	0.02	2	0.04
3	Lack of ability of employees in foreign languages other than English	0.02	2	0.04
4	Lack of promotion in several promotional media such as through brochures, websites, magazines, and television	0.01	1	0.01
5	Lack of language variety in promotional media	0.01	1	0.01
TOTAL		0.1		0.22

b. External Analysis

No	Opportunities	Weight	Ratings	X Rating weight
1	The contribution of tourism to improving the world economy	0.15	4	0.6
2	Balinese Culture	0.2	4	0.8
3	Collaboration with other attractions on Serangan Island	0.2	4	0.8
4	Diversity of other educational tour packages on Serangan Island	0.2	3	0.6
TOTAL		0.75		2.8
No	Threats	Weight	Ratings	X Rating weight
1	The less open local community in tourism development on Serangan Island	0.06	2	0.12
2	Bali Security Stability	0.07	2	0.14
3	The threat of cleanliness, comfort and environmental sustainability in Bali	0.08	1	0.08
4	The threat of climate change in Bali	0.04	1	0.04
TOTAL		0.25		0.38

Based on Table 7, the X-axis coordinate points are obtained based on reducing the total number of scores multiplied by the weights in the Strengths column with the total scores multiplied by the weights in the Weaknesses column. While the determination of the Y-axis coordinates is obtained based on the total number of scores multiplied by the weight in the Opportunities column with the total score multiplied by the weight in the Threats column as shown below:

The coordinates of the X axis = $3.4 - 0.22 = 3.18$

The coordinates of the Y axis = $2.8 - 0.38 = 2.42$

SWOT Quadrant

Based on the X quadrant axis which is located at point 3.18 and the Y quadrant axis, which is located at point 2.42, the Turtle Conservation and Education Center is in quadrant I position. The following is the SWOT quadrant position of the Turtle Conservation and Education Center which can be seen in Figure 4 as follows. Based on Figure 4, the Turtle Conservation and Education Center is in quadrant I which is a very favorable situation. The Turtle Conservation and Education Center has internal opportunities and strengths so that they can take advantage of existing opportunities. The strategies that must be applied in this condition are: Supporting Aggressive Policies (Growth Oriented Strategy).

The growth strategy is designed to achieve growth in sales, assets, profits, or a combination of both. This can be achieved by lowering prices, developing new products, increasing product or service quality, or increasing access to a wider market. The effort that can be done is to minimize costs to increase profits. This method is the most important strategy if the condition of the Turtle Conservation and Education Center is in rapid growth and there is a tendency for competitors to engage in price wars in an effort to increase market share.

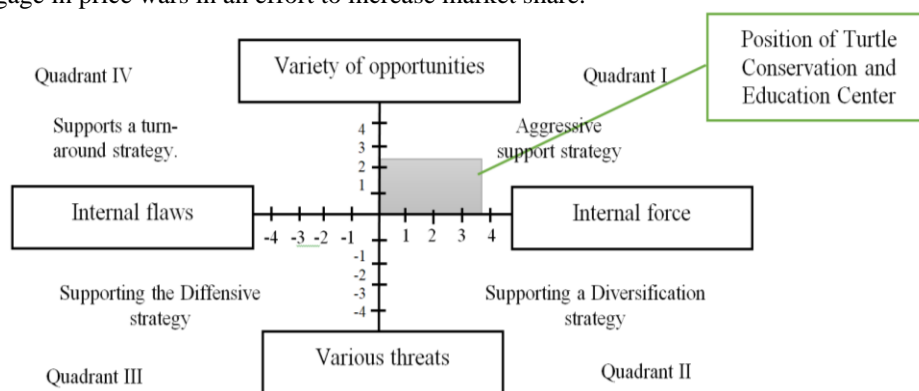


Figure 4. SWOT Quadrant

SWOT Matrix Qualitative Approach

After knowing the factors that become strengths, weaknesses, opportunities, and threats at the Turtle Conservation and Education Center on Serangan Island, then it will be analyzed using a SWOT Matrix whose data is obtained from IFAS Tables and EFAS can be seen in Table 8 below. There are four strategic options that can be carried out by the Turtle Conservation and Education Center based on the elements of the marketing mix of educational tourism products by taking into account strengths, weaknesses, opportunities, and threats. (threats) that exist.

SO Strategy (Strengths Opportunities)

This strategy is made by taking advantage of existing opportunities by optimizing internal strengths, maintaining the original strategy that has been implemented, and improving the conditions that have been achieved.

a. Improving product quality according to market developments. By improving the quality of turtle educational tour packages at the Turtle Conservation and Education Center in accordance with market developments and the intended market share, namely the student market. Where this educational tour package about turtles, can provide a lot of information about the turtle cycle which is one of the living things that has experienced extinction.

b. Maintain cooperation with other tourist attractions on Serangan Island as part of promotional activities.

The Turtle Conservation and Education Center collaborates with several parties from other tourist attractions on Serangan Island, with good cooperation with Tourism management parties to carry out ongoing promotional activities to maintain and expand existing markets.

c. Equip and maintain supporting facilities at the Turtle Conservation and Education Center.

The Turtle Conservation and Education Center has a strategic location and is supported by quite complete facilities such as quite a lot of toilets, there is a large parking lot, there is a souvenir shop that sells various types of goods with the turtle mascot, there are enough food and drink shops complete. With that, the Turtle Conservation and Education Center will be able to maintain its market.

d. Give promotional awards to tourists who participate in running a promotional business.

As one of the promotional activities, the Turtle Conservation and Education Center provides promotional awards by giving discounts to tourists who buy educational tour packages in large quantities or by providing commissions such as price discounts given to intermediaries in the form of a certain percentage of sales volume.

e. Increase cooperation with education providers such as schools to universities both at home and abroad.

The Turtle Conservation and Education Center has collaborated with several schools and universities throughout

Indonesia as one of its promotional activities to increase sales of educational tour packages. This good cooperation should be improved and expanded by collaborating with schools and universities abroad.

Table 8. SWOT Matrix

IFAS EFAS	STRENGTHS (S)	WEAKNESS (W)
	1. Quality of packaging and service of educational tour packages with creative concepts. 2. Strategic location and supporting facilities at the Turtle Conservation and Education Center 3. Prices set are affordable and in accordance with the quality of services provided. 4. Prices offered can be competitive and special pricing for large quantities. 5. Establishing good cooperation with tourism and schools and universities as education parties 6. Indirect promotion of information on turtle educational tourism was obtained from family, friends, and relatives.	1. Lack of supporting infrastructure and facilities to get to the Turtle Conservation and Education Center 2. Information about tour packages from travel agents and the speed of response to inquiries. 3. Lack of ability of employees in foreign languages other than English 4. Lack of promotion in several promotional media such as through brochures, websites, magazines, and television, and the quality of delivering messages is not good. 5. Lack of language variety in promotional media
OPPORTUNITIES (O)	SO STRATEGIES	WO STRATEGIES
1. The contribution of tourism in improving the world economy. 2. Balinese Culture 3. Collaboration with other attractions on Serangan Island 4. diversity of other educational tour packages on Serangan Island	1. Improving product quality according to market developments. 2. Maintain cooperation with other tourist attractions on Serangan Island as part of promotional activities. 3. Equip and maintain supporting facilities at the Turtle Conservation and Education Center 4. Give promotional awards to tourists who participate in running a promotional business. 5. Increasing cooperation with education providers such as schools to universities both domestically and abroad.	1. Completing and repairing existing infrastructure towards the Turtle Conservation and Education Center 2. Improving the ability of employees in foreign languages other than English. 3. Expanding and maintaining cooperation with other tourism management parties such as travel agents and hotels both domestic and foreign from potential countries. 4. Increase promotion and add a variety of languages in promotional media, both print, and electronic media
THREATS (T)	ST STRATEGIES	WT STRATEGIES
1. Less open local community in tourism development on Serangan Island 2. Bali security stability. 3. The threat of cleanliness, comfort, and environmental sustainability in Bali 4. The threat of climate change in Bali	1. Improving the characteristics and quality of turtle educational tourism products and developing product innovations 1. Establish cooperation and involve local communities to contribute to tourism activities on Serangan Island 2. Increase cooperation with tourism managers, Denpasar government agencies, and the entire community to maintain security stability, cleanliness, and sustainability to create comfort for tourists visiting both Bali and Serangan Island. 3. Collaborate with all Tourism Stakeholders 4. Collaborating with traveling communities throughout Indonesia	1. Improving the quality of human resources by providing training to employees and recruiting new, professional employees 2. Monitor the development of competitors. 3. Provide outreach and service training regarding the development of Bali Tourism to local communities

ST Strategy (Strengths Threats)

This strategy was made with the internal strengths of the Turtle Conservation and Education Center and overcoming existing external threats.

a. Improving the characteristics and quality of turtle educational tourism products and developing product innovations

The hallmark of this tourism product is an education-based turtle tourism product by combining Serangan Island tourism to promote Serangan Island in general. This innovation of turtle educational tourism products can be done by collaborating with several other tourist attractions on Serangan Island and then packaged properly and attractively so that it can attract tourists to buy this tour package.

b. Establish cooperation and involve local communities to contribute to tourism activities on Serangan Island

The development of Bali tourism in general is strongly supported by cooperation with the local community which is very open to the presence of tourists both from within the country and abroad. The development of tourism on Serangan Island can also be done by contributing to the local community's contribution to the development of tourism on Serangan Island by accepting the presence of tourists well and being able to provide information about existing tourist attractions on Serangan Island, thereby indirectly increasing the economy of the people of Serangan Island.

c. Increasing good cooperation with tourism, Denpasar government agencies, and the whole community to maintain security stability, cleanliness, and sustainability in order to create comfort for tourists visiting both Bali and Serangan Island.

Security is a very sensitive issue in the world of tourism, so it is necessary to have good relations with the surrounding community and tourism management parties to maintain environmental security through contributions in the form of security funding. In addition to security which is an important element in tourism development, cleanliness and environmental sustainability must also be created so that the comfort of visiting tourists can be maintained.

d. Collaborate with all tourism stakeholders.

Uncertain climate change and the natural disasters that accompany it will cause environmental damage that can affect the tourism sector. Weather and climate factors such as sunny weather, lots of sunlight, wind speed, cool air, dry, hot and so on greatly affect the implementation of tourism, both land and sea are threats that exist which is a joint problem between the government and the community so that a solution is needed. cooperation with all existing stakeholders to improve tourism supporting infrastructure development and overcoming the threat of natural disasters.

e. Collaborating with traveling communities throughout Indonesia

By collaborating with the traveling community or nature lovers, it is hoped that can increase the sales of this tour package because each nature lover community will exchange experiences and information with each other so promotions will be carried out indirectly.

WO Strategy (Weaknesses Opportunities)

This strategy is implemented based on exploiting existing opportunities by minimizing internal weaknesses owned by the Turtle Conservation and Education Center on Serangan Island.

a. Completing and repairing existing infrastructure towards the Turtle Conservation and Education Center. With the increase in tourist arrivals to Bali every year and Balinese culture as a tourist attraction in itself which is the reason for both domestic and foreign tourists not only visiting Serangan Island once, especially the Turtle Conservation and Education Center needs to improve its deficiencies by complementing and improving existing infrastructure to lead to good conservation of main roads, clear directions, maintenance of cleanliness of swamps and surrounding waterways.

b. Improving the ability of employees in foreign languages other than English. Improving the ability of employees to speak foreign languages other than English by providing training not only on language but also on services while maintaining the uniqueness of Balinese culture. This training can be carried out in stages over a certain period, such as during the low season.

c. Expanding and maintaining good cooperation with other tourism management parties such as travel agents and hotels both at home and abroad which are potential countries. In increasing sales of turtle educational tour packages, it is necessary to increase cooperation with travel agents as tourist distributors, both domestic travel agents and travel agents in other potential countries. Cooperation with hotels in Bali also needs to be done because several hotels have tourist attractions for releasing turtles at each hotel to attract tourists.

d. Mendel Increase promotion and language variety in promotional media, both print, and electronic media. In order to introduce tourism products, can be carried out actively and gradually with the aim of giving trust and confidence in these tourism products. Promotional activities are carried out regularly even in a small creative scope so that potential tourists will not feel bored. Promotional activities can be carried out through promotional media, both printed and electronic, with variations in language so that it will make it easier for potential tourists to understand this turtle educational tourism product.

WT Strategy (Weakness Threats)

This strategy is based on business activities to minimize existing weaknesses and avoid external threats.

a. Improving the quality of human resources by providing training to employees and recruiting potential new employees.

Good service in the form of language services, services providing clear information, hospitality, and openness to receive tourist arrivals will make tourists feel satisfied. Tourists who are satisfied with tourism services, indirectly they will carry out promotional activities indirectly to relatives, relatives, and families to visit the Turtle Conservation and Education Center.

b. Observe the development of competitors. With increasing competition, the Turtle Conservation and Education Center needs to provide training to its employees to improve their competence, observing the developments of competitors.

c. Provide outreach and service training regarding tourism development to local communities. Training on services to tourists is very important because the good impression that tourists receive of these services will have a positive impact on the image of Serangan Island and the tourist attractions in it. By openly accepting tourists who come to Serangan Island as a way of promotion to give a good impression and tourists want to come back to Serangan Island.

CONCLUSION

Based on the discussion above, it can be concluded that based on the marketing strategy, the Strengths and Opportunities factor, the Turtle Conservation and Education Center has a strategic location and is supported by quite complete facilities, affordable prices and good service quality will be able to survive in competition with tourist attractions others on Serangan Island. In the Strengths Threats strategy, the local people of Serangan Island must participate and contribute to the field of promotion for the development of tourism. Apart from that, security is a very sensitive issue in the world of tourism, so there need to be good relations with the surrounding community and tourism management parties to maintain environmental security through contribution in the form of security funding. The Weakness Opportunities strategy needs to correct deficiencies that are owned by means of Complementing and improving existing infrastructure towards conservation. Improving the ability of employees in foreign languages other than English by providing training. While Weakness Threats, it is necessary to provide training to employees to increase competence, observe the development of competitors, uncertain climate change, and the natural disasters that accompany it will cause environmental damage that can affect the tourism sector.

The position of the SWOT quadrant at the Turtle Conservation and Education Center is based on the x quadrant axis which is located at point 3.18 and the y quadrant axis is located at point 2.42. The SWOT quadrant position of the Turtle Conservation and Education Center is in quadrant I which means a very favorable situation. The Turtle Conservation and Education Center has internal opportunities and strengths so that they can take advantage of existing opportunities. The

growth strategy is designed to achieve growth in sales, assets, profits, or a combination of both. This can be achieved by lowering prices, developing new products, increasing product or service quality, or increasing access to a wider market.

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INDUSTRIAL INVESTING AS AN INSTRUMENT OF SUSTAINABLE DEVELOPMENT IN ALGERIA (CASE IN BOUIRA PROVINCE - EASTERN ALGERIA)

Djamal BELARBI * 

University of Science and Technology Houari Boumediene (USTHB), Faculty of Earth Sciences,
Department of Geography and Land Use Planning, Algiers, Algeria, e-mail: belarbidjamal02@gmail.com

Abdelmadjid BOUDER 

University of Science and Technology Houari Boumediene (USTHB), Faculty of Earth Sciences,
Department of Geography and Land Use Planning, Algiers, Algeria, e-mail: abouder@yahoo.fr

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Abstract: Algeria has developed an interesting manufacturing sector since its independence with the aim to develop the national economy. In this paper, we'll highlight the industrial investments that Bouira's municipal government (Eastern Algeria) made between 2003 and 2020. To achieve this goal, we used a series of LANDSAT 7ETM+/LANDSAT 8OLI satellite images acquired respectively in 2006, 2014, and 2020. The processing applied to images evaluates the normalized vegetation (NDVI), which provides an estimation of the used area for industrial investment. All processed images were combined in a GIS (Geographic Information System), to digitize subsequently industrial areas. This research shows that over 242.69 ha of Oued El-Berdi's zone was used for industrial projects.

Key words: Industrial investment, Landsat 7ETM+, Landsat 8OLI, GIS, Urban industrial mapping, NDVI

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INTRODUCTION

Since its independence, Algeria is one of the countries that have paid great attention to the industrial sector, as it is an essential factor in driving economic growth and improving production, as well as keeping pace with developing countries (Doyle and Al-Bazzaz, 2022; Khaidher et al., 2019). After its reforms, the State's desire to promote investment in the industrial sphere was clearly demonstrated by the enactment of various laws, in order to facilitate real estate, grant concessions and alleviate fiscal expenses (Alsamara et al., 2022; Bouznit et al., 2022). However, European and African reports highlight Algeria's vulnerability in investment field. According to the Ekovan Swiss agency report; Morocco is the top destination for capital invested in North Africa, with more than half of all capital invested in the region over the past five years.

Investment funds injected more than \$ 7.1 billion into North Africa between 2010 and 2015, followed by the Kingdom, Egypt (\$ 653 million), Tunisia (\$ 26.180 million), Algeria (\$ 80 million), Sudan (\$ 1.70 million) and Libya, which attracted only \$ 1.11 million (Shah, 2016). Many countries also take advantage of industrial areas to develop other sectors, such as tourism (Insani et al., 2023; Van der Merwe and Rogerson, 2018). It is regarded as an industrial heritage that can bring tourists from different areas into the fatherland, or from abroad.

Economists attribute the reasons for the reluctance of foreigners to invest in Algeria (Werenfels, 2002) to bureaucratic obstacles; the instability of economic legislation and the lack of clarity of the Algerian market.

Concerns arising from the imposition of 51/49 investment regulation in the 2009 Supplementary Finance Act and the limited role of the private sector in Algeria (Kwasi and Cilliers, 2020).

Therefore, the Algerian authorities have decided to include new measures in the draft finance code for 2016 (Mouloud and Lalali, 2022), by which they seek to facilitate the real estate acquisition by economic clients, especially those intended for the investment projects realization. Private clients may create, develop and operate business or industrial zones throughout the national territory, unless agricultural land;

✓ Land in urban or reconstruction areas that has not been started three years after the date of the building permit is subject to a fourfold increase in the land fee;

✓ Extensive reorganization of ANIREF¹ to facilitate continued access to assets;

✓ Development of a national program of 50 industrial parks.

The volume of investments varies by region, the following figure shows in detail the distribution of investments by the National Agency of Investment Development (NAID).

The Figure 1, we note that the investments reported at the NAID vary from one province to another during the year 2020. The province of Algiers ranks first in attracting investment with 15.8% of total national investment and 45.73% of

* Corresponding author

¹ The National Agency of Intermediation and Land Regulation was created by the executive decree N° 07-119 of April 23, 2007, modified and completed by the executive decree N° 12-126 of March 19, 2012.

total investments in the central northern territory. The investment volume is concentrated in the first crowned of the north-central region, accounting for 24% of the total national investment and 69.16% of the total investments in the north central region. Algeria now knows a renaissance in the field of industrial investment. For example, in Skikda State, transformative methods are being devised for oil. This is what the researchers Doyle and Al-Bazzaz (2022) studied in order to determine the importance of this manufacturing industry to the province of Skikda and its community.

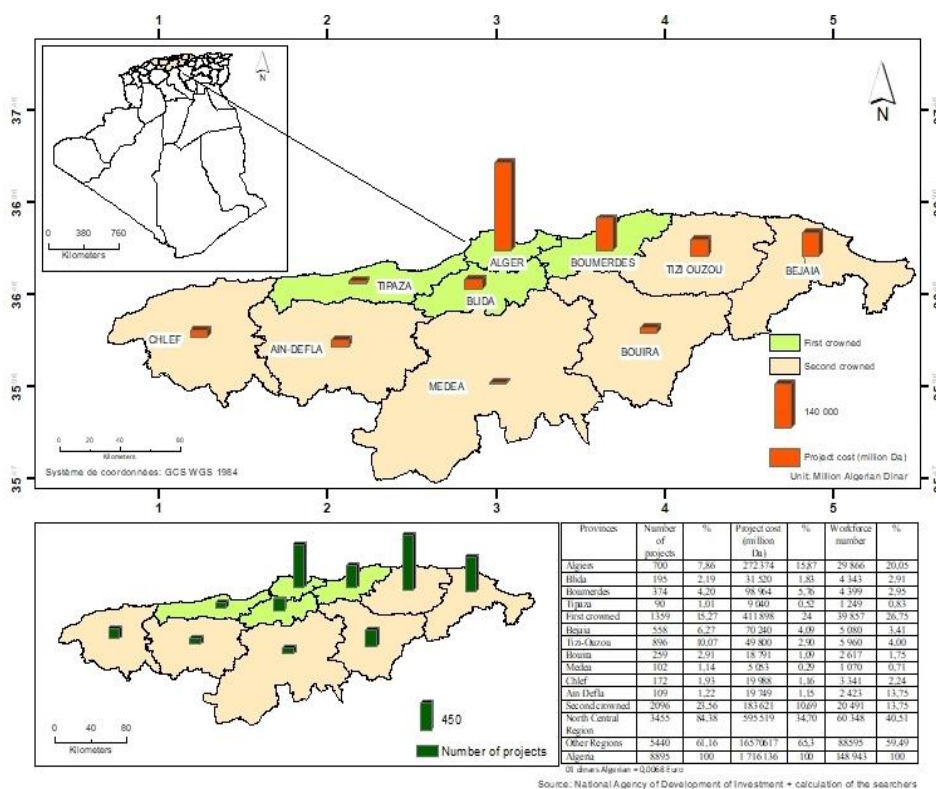


Figure 1. Breakdown of investments by region in Algeria in 2020 (Source: National Agency of Development Investment, 2020)

Bouira province got 1.09 % of total domestic investment and 3.15% of total North Central investment. Among the 10 provinces in the north-central area, it has the seventh-highest volume of investment. The increasing demand for industrial real estate in Bouira State, which is situated in a strategic location, a village from Algiers, which is only 100 km away, is what led to this venture. In addition to its moderate climate, the province has outstanding industrial qualifications, including water supply, the raw material for some industries like the building materials industry, and three dams: the "Lekhal" dam in Ain Bassam, the "Codiante Aserdoun" dam, and the "Tilsdit" dam with hams.

Bouira province has benefited from significant financial investments in the creation of the industrial zone and the locations of its activities, with a view to providing the optimum atmosphere for the promotion of the industrial sector.

Industry contributes to the creation of jobs, the provision of manufactured and semi-manufactured materials, and the generation of financial incomes for the municipality in particular and the State's treasury in general based on the taxes it pays. It also plays a significant role in achieving sustainable development. The SNAT (National Urban Development Scheme) is one of the programs that strive to achieve sustainable development, through (UNESCO, 2020):

- Assist in the development of a Contribute to the emergence of a diversified and competitive, diversified economy that uses the potential of every region and substitutes innovation and productivity growth for public expenditure.
- Strengthen the SNAT's guiding principles to ensure the region security Economical Food Energy Water.
- The leadership position played by Algeria at the regional level in preserving and valuing our nation's natural and cultural capital is very important.
- Create competitive development areas in territories by developing their resources and potential - Convert all budget-consuming industries, excluding hydrocarbons, into sources of riches and surplus value.
- SNAT's support to the growth nation's key industries, including. agriculture, tourism, industry, business, higher education, and the knowledge economy.
- A balanced distribution of the population and activities, as well as attractiveness of the national territory.

The industrial sector is one of the tasks of the plan's activities, It emphasized the need of expanding the industrial sector in order to reach the desired objectives we have previously mentioned. Therefore, promoting these settlement factors invites a regional strategy that is multi-sectoral and linked and aimed to gradually create a positive brand image of the province (Wallner, 1999). It can be declined under multiple forms: The expense and accessibility of productive land.

- Exploitation of the advantageous geographical locations in relation to the markets, for supplies and outlets of productions of the companies: these grant an importance to the proximity of their customers and their suppliers, in order to improve their productivity by the lowering the costs of transport, storage, and other related costs.

- Favorable positions in relation to transport and communication infrastructures (roads, rail, etc.) as well as an increase in the efficiency of those systems (fluidity, speed, quality and cost of services, etc.).

- Local business climate (Pedapalli et al., 2022) (responsiveness, speed and performance of the administration, climate of relations with the private sector, image perceived by investors, dynamism of the local business community, security, etc.)

- Human resources: Availability and quality of local resources (qualified personnel, available manpower); the presence of higher education structures and training institutions that are attentive to the requirements and satisfy the expectations of companies (Deac et al., 2023).

- The availability and expense of industrial solid waste management systems (collection, transport, landfills, waste disposal sites, etc.) or waste and effluent treatment infrastructures (wastewater, gaseous emissions, etc.) are additional factors of companies sites (treatment costs, solid waste, wastewater and gaseous emissions, etc.). In our study, we will outline the initiatives taken by the Algerian government and Bouira province's local authorities to promote the industrial sector. We will also carefully examine and demonstrate the detrimental effects of industrial stability on this rural area.

This study aims to evaluate industrial investment in the province of Bouira, as an example of the Algerian government's incentive to industrial investment. We are also clarifying the impact of industrial stability in the Bouira region on the ground.

MATERIALS AND METHODS

This Paper aims to assess industrial investment in Algeria, particularly in the Bouira province, and present the most important investments in the various State regions in order to understand the position that industry occupies in the area as well as the extent of industrial investment. To achieve this goal, field surveys data as well as statistics from numerous local directories have been used in this study. We have also followed the following methodology:

At the beginning of the study, we introduced Bouira's mandate and took a look at the history of industry in the province since independence (1962). Later, we tried to give a look at the current industrial sector in the state by introducing the areas of activity and industrial areas located in the province. We also presented the most important projects related to the restoration of the sectors of activity and the efforts undertaken by the provincial authorities to promote the industrial sector. We also heard about the number and activity of small and medium-sized businesses operating in the province of Bouira until 2022. In the technical aspect of the study, we used the standardized vegetation analysis index (NDVI) to study the impact of choosing the location of the industrial zone Sidi Khalid (municipality of Oued El Berdi). As well as expansion of the area and reduction of agricultural area. A series of LANDSAT 07 ETM+/Landsat 08 OLI images taken in 2006, 2014 and 2020, these images were preprocessed and processed. A standardized vegetation analysis (NDVI) resulting from images processing was integrated in a GIS in ArcGIS 10.3 software. The purpose of using a GIS is intended to show how economic stability can exist in a predominantly rural area.

The use of a GIS is intended to show how. The extent of the area's vegetation loss is thus explained, particularly in light of the industrial zone's expansion. By using the infrared band of the electromagnetic spectrum, where vegetation reflects the most energy that can be observed and recorded by a satellite sensor (Berger et al., 2020; Joiner et al., 2013; Martins et al., 2023), the NDVI is used to display the chlorophyll activity of the vegetation. According to the NDVI an area with defensible and living vegetation has a high value, while one without vegetation has a low value. However, the methodological approach is based on the calculation of the index under the following formula (Huang et al., 2021):

$$N_{DVI} = \frac{N_{IR} NIR - R_{ed} Red}{N_{IR} NIR + R_{ed} Red}$$

Where N_{DVI} is normalized difference vegetation index. R_{ed} and N_{IR} are spectral radiance (or reflectance) measurements recorded with sensors in red (visible) and NIR regions, respectively.

The situation of the study area

The province of Bouira is located in the north-central Algeria, 120 km from the city of Algiers. As a result of the administrative division instituted by Order N°74/69 of 02 July 1974, relating to the redesign of the territorial organization of the provinces (Direction, 2020), the region has an estimated area of 4454 km² (Lamri et al., 2020), bounded by: the province of Boumerdes and Tizi-Ouzou in the North; the province of Bejaia and Bordj Bou Arreridj in the East; Blida and Medea in West; the province of M'sila in South (Figure 2). Among the factors assisting Bouira's province in industrial resettlement are:

✓ Its geographical location, which makes it a crossroads for many provinces (seven provinces), as well as its proximity to the capital.

✓ Completion of the East-West Motorway.

✓ The natural resources available, as well as the economic substantial estate existing in all municipalities of the province, industrial zone, activity zones, extension of tourism zones, agricultural land, land pockets at the level of land use plans.

The province approved all of these indicators, as well as the development initiatives and programs outlined in the various plans. In addition to the policy and strategy adopted by the local authorities through their investment support and support of project promoters, have helped to attract a considerable number of investors from neighboring provinces.

RESULTS AND DISCUSSION

1. Distribution of industrial units in the Bouira province for the year 2021

The industrial sector in Bouira went through several stages, until the end of the 1974 administrative division. The state had only 04 industrial units in Lakhdaria and Bouira circles (Bouder and Tacherift, 2007):

✓ SNIC green coating unit employs 314 workers;

✓ Ben Haroun's mineral water unit employs 114 workers;

- ✓ The mill SN.SEMPAC mill employs 646 workers;
- ✓ The SONITEX unit for the furniture industry employs 150 workers.

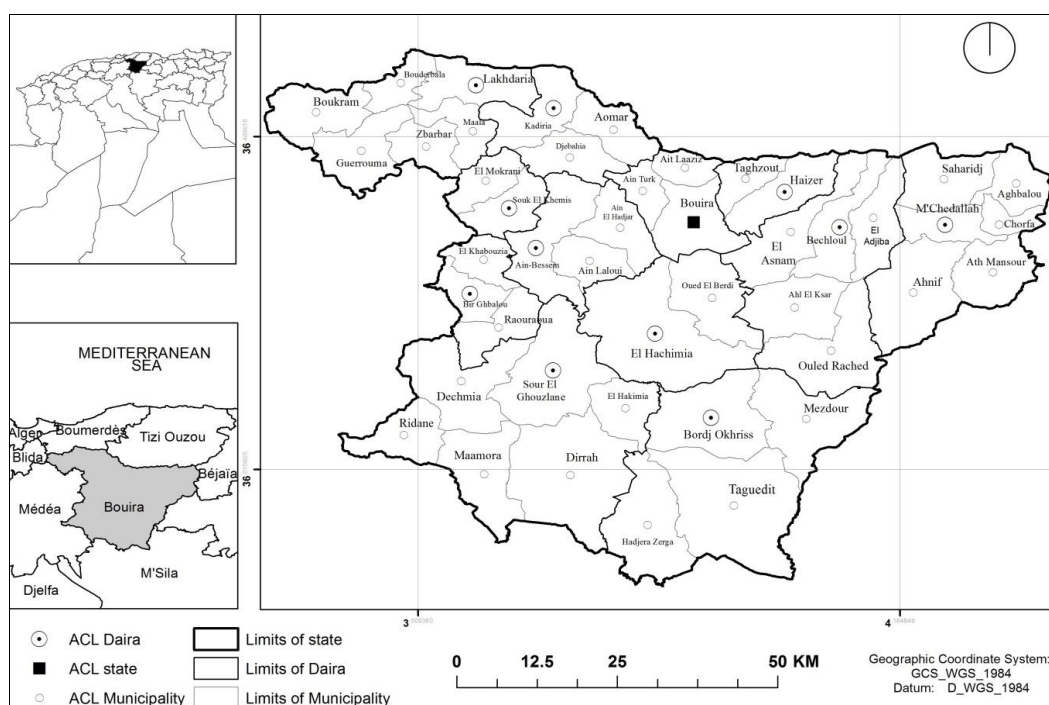


Figure 2. Location of the province of Bouira and administrative distribution

In 2021, the number of industrial units increased in Bouira province and industrial activities diversified due to the multiplicity of units belonging to various branches of industrial activity. The province has 10 national industrial units all belonging to the government. The following table illustrates this:

Table 1. Distribution of national industrial units in Bouira province 2020 (Data Source:(Direction, 2021)

Type of activity	Municipality	Number of workers	Production capacity (tons)	Production 2020 (tons)
Detergent industry (ENAD)	Sour El Ghouzlane	748	86 000	14 929
cement industry (ERCC)	Sour El Ghouzlane	353	1 000 000	780 000
Paint industry	Lakhdaria	358	51760	30654
Detergent industry	Lakhdaria	101	22 000	2900
Brick industry	Aomar	70	77 280	40255
Textile	Bouira	130	100 000 units	95 000 units
Gravel production	El Hachimia	113	75 000	49 900
Cereal processing	Ain Bessem	97	500 000	29 659
Industrial gas production	Oued El Berdi (Sidi Khaled)	57	816 000 M3	84 939 units

Table 1 shows that the volume of national public investment in agricultural and agro-industrial activity in the province does not exceed two units (grain processing) when compared to other activities, indicating that the province has a first-degree agricultural character. Central and local managers should give a great importance to the investor's orientation towards agricultural activity through industrial investments that contribute to the development of this activity.

According to experts at the National Center for Studies and Analyses on Population and Development (CENEAP), the development of the agricultural sector has become one of Algeria's most important bets economically, politically, and socially because it raises the issue of food security in the country in the medium and long term, especially after the large and rapid decline in oil revenues since 2014, which ensured Algeria's food needs and decrease the problem of drought.

The province of Bouira has 13 activity zones (Table 2; Figure 3). It is a small area equipped and adapted to the establishment of small and medium industries. It is a land area smaller than that of the activity zones and contains several production or service activities (Horváth and Szabó, 2019). In order to be useful and provide occupation positions, the activity zones provided 2112 workplaces. Since 2011, the province of Bouira has received large sums to establish and restructure the state municipalities business zones.

In 2014, the total amount was 1022739000 Da in order to finance the industrial sector and develop the areas that surrounding the territory so that it becomes attractive location for investors. According to Bouira's, Director of Industry in the development and promotion of investment, 06 mini-activity zones totaling 16.69 hectares were created across 05 municipalities (02 Bir Ghablou, 01 Djebahia, 01 Tagdit, 01 Bordj Akhris). Construction work has also started on a 2.35-hectare of land in Djebahia and Bir Ghablou, where 26 items were developed. The retail licenses for the two areas were also approved as mini-activities in Bir Ghablou and the municipality of Tagdit on an area of 7.36 hectares.

Table 2. Status of Activity Areas by Municipality as of 12/31/2020

Activity areas	Total area (M2)	Total number of lots	Number of lots awarded
Bouira D1	39 081,00	46	40
Bouira D2	118 190,00	34	34
Taghzout	53 850,00	26	23
SEG	233 352,00	153	129
Dirah	95 430,00	86	50
Lakhdaria	74 500,00	46	45
Aomar	15 580,00	18	18
El Esnam	19 097,00	13	13
Bechloul	102 456,83	30	25
M'chdallah	20 605,00	13	13
Ain Bessem	88 846,00	92	92
El Hachimia	175 141,40	69	58
Bir Ghablou	500 600,00	322	100
Zone des Clinique	7 418,00	6	6
Chorfa	284 000,00	/	/
Total	1 828 147,23	954	646

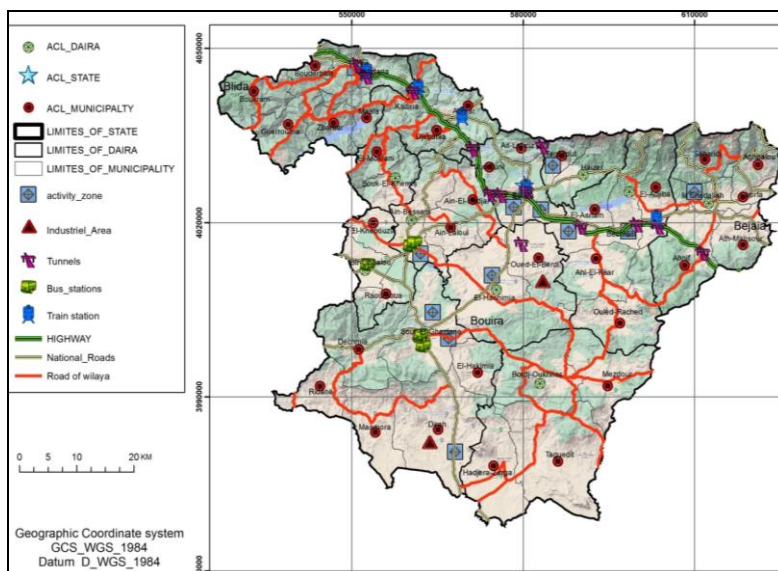


Figure 3. Distribution of activity areas in Bouira province 2021

Table 3. Financing projects for the rehabilitation of activity areas (Source: Direction of Industry and Mines of Bouira, 2022)

Year	Title of operation	Amount (da)	Percentage of progress of works
2011-10-03	Preparing and developing the activities area of Oued Haus Bouira	632208.75	%60
	Preparing and developing the Taghzout activity area	632208.75	%90
	Creation and development of Omar's activities area	632208.75	%60
2012-04-18	Creation and development of Lakhdaria activities area	842945	%85
2012-12-31	Follow-up and preparation of the activity area, Sour Al-Ghozlane	547914.25	%100
	Follow-up and preparation of the activity area in Bechloul	1095828.5	%100
2014-04-15	Studying and following up the activities area of Deira, Al Hashimiya, Ain Bassam, Al Asnam and Mechdallah	4214725	frozen process
28-12-2022	The rehailing of the activities area Ain Bessam- M'chdallah-Dirah- El Asnam- El Hachimia	500000000	frozen process

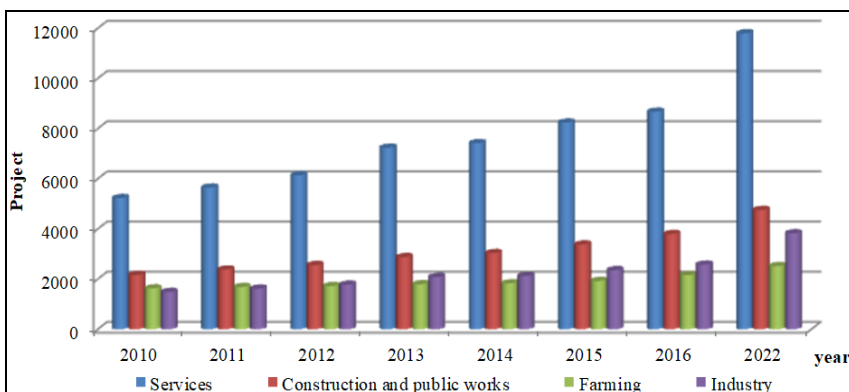


Figure 4. Rice small and medium enterprises in the province of Bouira from 2010 to 2022 (Source: Direction of Industry and Mines of Bouira, 2022)

Table 4. Distribution of investments by sectors of economic activity declared at the Bouira in 2020 (Source: National Agency of Development Investment 2021)

Sector	Number of projects		Cost of projects	
	Number	%	Amount (million DA)	%
Industry	110	60.61	2085	74.73
Agriculture	4	12.12	107	3.84
Construction and public works	3	9.09	87	3.12
Services	6	18.18	511	18.32
Total	33	100	2790	100

As for the number of small and medium enterprises located in the activity areas in the Bouira province, we will highlight them through the following Figure 4. The Figure 4 shows that Bouira province has registered an increase in SMEs across the areas. It has increased from 10534 in 2010 to 22917 in 2022. The number of SMEs in 2022 engaged in services is 11803 (approximately 50%), while the construction and public works sector is 20%. The number of projects in the field of agro-industry is 2524. In terms of the number of companies operating in the industrial sector, we have increased from 1492 in 2010 to 3831 in 2022. It also describes the rapid increase in the number of small and medium-sized businesses caused by the enactment of legislation encouraging their creation. The most important of which are:

- ✦ The establishment of the National Agency for Support of Youth Employment by Executive Decree 296-96 of 8 September 1996 (Bounouala and Rihane, 2019);
- ✦ The National Investment Development Agency ANDI by Presidential Order 01-03 of 20 August 2001 (Kebir, 2001);
- ✦ The Establishment of the National Investment Council for the Promotion of Small and Medium Enterprises in 25 February 2003 (Bouazza et al., 2015);
- ✦ Financial support from Export Support Fund (FPE), National Agricultural Development Fund (FNRDA), Stabilization Fund for SMEs (CGCIPME) (Hamza and Nassima, 2022).

Furthermore, the field investigation revealed a shortage of equipment in the industrial zone with a water utilization rate of 70%. We discover a 70% connectivity rate for sewage and 70% of roads are in good condition. Electricity connectivity is only 30%, while gas is not linked (Communal Popular Assembly, 2014). These statistics are inspired by the of the municipality’s technical interest, so local and national interests have attempted to remedy the situation by connecting the area to the Tilesdit Dam so that the area is supplied with water (Lamri et al., 2022b).

3. Declared Single Window Investment Volume in Bouira

The investments declared in the investment window of the National Agency for Investment Development (NAID) by sector for 2021 amount to more than 2700 million Da. The volume of these investments by industry is detailed in Table 4.

According to Table 4, the business in Bouira ranked first in terms of investment volume when compared to investments in other sectors. Thus, the total volume of investments reached 2085 million Algerian dinars, representing a 74.73% growth rate.

This follows the installations adopted by the National Investment Agency and its ability to dispose of industrial land. The second is the service sector at a cost of 511 million Algerian dinars, at a rate of 18.32% which is required among the majority of young people to invest. While the construction and other public works sector received 87 million dinars, representing 3.12%, agriculture received a low level of investment not exceeding 4%.

4. Breakdown of Industrial Investments Reported to the Single Investment Window (GUD) by Industrial Industries For 2020

Industrial investment in the Bouira province varies according to the branches of industrial activity, with 20 industrial investment initiatives spread across 06 branches of industrial activity (Table 5). The agricultural food industry is the first with 09 projects. The table below provides a detailed breakdown of the number of initiatives projects and the size of their investments. The table below provides a detailed breakdown of the number of initiatives and the size of their investments.

Table 5. Breakdown of industrial investment reported to the Single Investment Window (GUD) by industrial activity for 2020 (Source: National Agency for Development of Investment 2021)

Branches of industrial activity	Number of projects		Project costs	
	Nombre	%	Amount (million Da)	%
Steel, Metal, Mechanical and Electrical Industry (ISMME)	03	15.00	300	14.39
Building materials, ceramics and glass	01	5.00	640	30.70
Chemical and Plastics Industry	06	30.00	446	21.39
Food agriculture industry	09	45.00	679	32.57
Leather and textile industry	00	0.00	00	0.00
Wood, paper and cork industry	01	5.00	20	0.96
Total	20	100	2 085	100

Table 5 shows that the food industry branch comes in first place among the branches of industrial activity, in terms of volume of investment that reaches 679 million Algerian dinars or a rate of 32.57% of total industrial investments for the year 2020 declared to the Single Window Investment (GUD). The agricultural nature of the province is the primary motivator for investors in this branch, which is followed by the branch of building materials, ceramic and glass have 640 million Algerian dinars or a rate of 30.70%.The cause of the spread of this type of investment to the large number of housing projects registered in the first five-year plan (2005/2009) with 15,600 dwellings, and the second five-

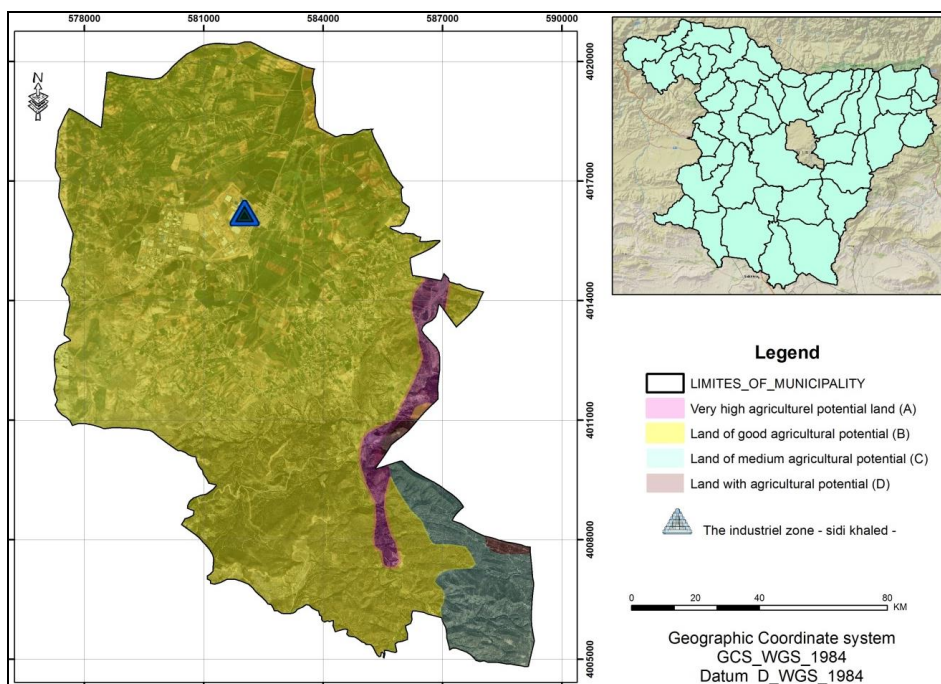


Figure 5. The Extension of The Industrial zone of Oued El Berdi (Source: PDAU Oued El Berdi, 2014)

- year plan (2010/2014) with 34,150 dwellings, which require the supply of all the materials necessary for the realization of this type of housing (ceramic, glass), followed by the branch of the plastic chemical industry with 446 million Algerian dinars or a rate of 21,39%, followed by the metal, mechanical and electrical steel industry with 300 million

Algerian dinars, a rate of 14.39%. The volume of investment in the other branches: wood, paper, cork, leather and textile manufacturing, the volume of investment is small and does not exceed 1%.

5. Appearances for Industrial Investment in the Province (industrial zone Oued El Berdi)

Owing to the increasing demand for investment in Bouira province by investors from outside, 102 investment files were submitted in 2012. This is due to site's privacy, as well as its proximity to the city (about 120 km) (Khedidji et al., 2017).

The saturation reached by the adjacent industrial zones and state, such as Algeria's capital, Burj Bouarrij, Bejaya and Setif. By decision N013 of the 51st Session of the National Investment Council, dated 19/04/2011, the local authorities of Bouira province decided to create the Sidi Khalid industrial zone (Figure 5), Oued El Berdi in an estimated area of 193 hectares (Lamri et al., 2022b). Figure 5 shows us that the industrial zone is located on good quality agricultural land, endangering the farming area and reducing the area used for agriculture, thereby reducing the area's productivity, in addition to being close to the industrial zone with the municipal urban caucus (Lamri et al., 2022a). The Industrial Zone received 990750000 Dza in funding support under the Guarantee and Solidarity Fund for Local Communities in 2019. With respect of laying the floors and connecting them to various networks (gas, electricity, water) to help investors' completion their investment projects.

The employment rate in December 2022 was 75%. Although the Oued El Berdi municipality possesses an industrial area (Samir and Nardjesse, 2019), which is planned to be expanded. According to the Bouira Industrial Directorate, it has received from an estimated financial amount of 250000000 Da for the rehabilitation of the expanded industrial zone, and the percentage of its work has reached 92% (Figure 6).

These parcels have the same natural, geological and climate characteristics as the Sidi Khaled industrial zone, they are also distinguished by their location on fertile agricultural land. The province in general and the Oued El Berdi municipality in particular (which is one of the municipalities with significant agricultural production), have important agricultural qualifications (previously mentioned), (Figure 6). However, the decision makers desired to transform the municipality into a distinguished industrial municipality, converting an extra 190 ha into industrial property. In the space images used for this study, a clear transformation can be seen in the study area since 2006.

Figure 7 shows the extent of the transformation that occurred in the Oued El Berdi region. The industrial area increased from 26.7 ha in 2006 to 55.4 ha in 2014 and reached 106.7 ha in 2020. That implies there will be less farmland. There is also the expansion of the Oued El Berdi zone, which brings it closer to the industrial park, increasing the population's exposure to pollution caused by these industrial activities. Figure 8 shows the decline of agricultural land from 300.8 ha in 2006 to 10.04 ha

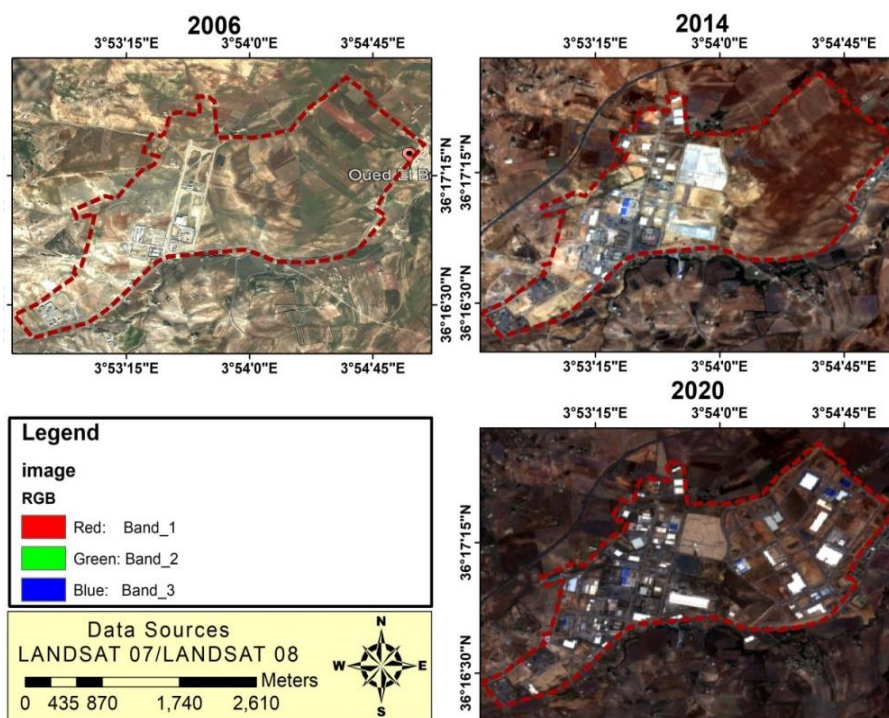


Figure 6. Project of the extension of the Oued El Berdi industrial zone (Source: Landsat 07/ Landsat 08)

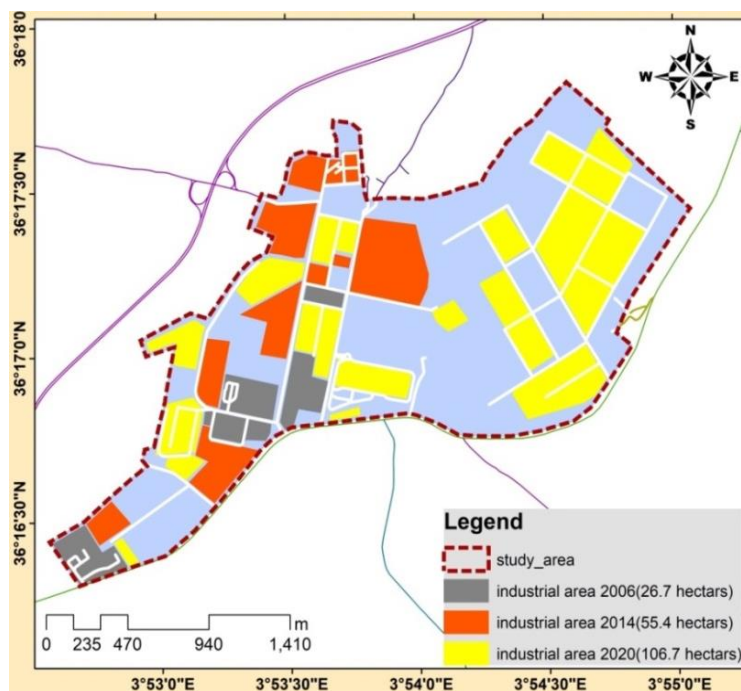


Figure 7. The transformation of Oued El Berdi from an agricultural land into an industrial barn

in 2014 and thento 65.31 ha 2020 in (decrease of 235.49 ha). This area can be interpreted as a parcel used in agriculture prior to 2006, and it is a higher-quality area, as is the case for the entire municipality of Oued El Berdi which has seen reduction in agricultural land from 7308 ha in 2006 to 7014ha in 2020 (DSA Bouira, 2021) (a decrease of 294 ha).

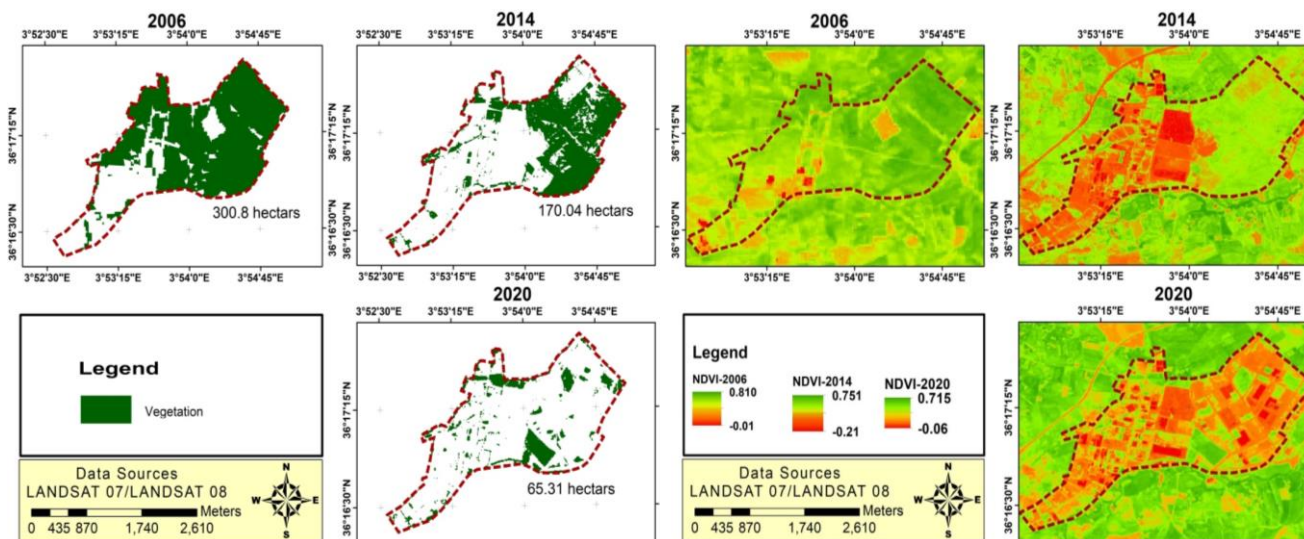


Figure 8. The changes of the industrial zone of Oued El Berdi (2006-2020) Figure 9. Resulting NDVI maps (Source: Landsat 07/ Landsat 08)

When the NDVI of the area is calculated, it is observed that the area contains dense and active vegetation in 2006 due to agricultural exploitation, then it decreases more and more in 2014 since the wheel color is dispersed in half of this image and in 2020 it is the entire area that takes the red color and the NDVI reaches 0.06 (Figure 9).

CONCLUSION

The province of Bouira contains 13 Activity areas and an industrial zone, it is considered one of the provinces of the second ring of the central northern region of the city of Algiers, the majority of which suffer from problems and obstacles to the upgrading and development of its investments, resulting in management and organizational difficulties, however, these areas have contributed on the polarization of many industrial investments, in accordance with the single counter of investment that will inevitably contribute to the strengthening of the agricultural sector to the mandate through the rehabilitation of available agricultural land, and the exploitation of various agricultural products in manufacturing and food industries. Industrial investments in the province control the private sector to the public sector, and most of the subjects of business and private sector are not related to other industrial activities located in the province.

What can be deduced that the province of Bouira has promising prospects in the field of industrial investments thanks to the availability of the property of the extension of the industrial zone of Sidi Khaled and offers three new industrial zones on the one hand and provides all the factors that contribute to industrial investment in this province on the other.

According to our research, the Bouira province is losing more and more agricultural land due to industrial development, which has an impact on the agricultural production and air pollution. However, the local authorities expect a reasonably high return on this industrial investment.

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CARTOGRAPHY FOR SUSTAINABLE TOURISM OF CULTURAL TOURISM ATTRACTIONS AROUND SAWASWAREESRIMARAM TEMPLE, DUSIT DISTRICT, BANGKOK

Katawut WAIYASUSRI* 

Suan Sunandha Rajabhat University, Faculty of Humanities and Social Sciences,
Geography and Geo-Informatics Program, Dusit, Bangkok, Thailand, e-mail: katawut.wa@ssru.ac.th

Nayot KULPANICH 

Suan Sunandha Rajabhat University, Faculty of Humanities and Social Sciences,
Geography and Geo-Informatics Program, Bangkok, Thailand, e-mail: nayot.ku@ssru.ac.th

Morakot WORACHAIRUNGREUNG 

Suan Sunandha Rajabhat University, Faculty of Humanities and Social Sciences,
Geography and Geo-Informatics Program, Bangkok, Thailand, e-mail: morakot.wo@ssru.ac.th

Pornperm SAE-NGOW 

Suan Sunandha Rajabhat University, Faculty of Humanities and Social Sciences,
Geography and Geo-Informatics Program, Bangkok, Thailand, e-mail: pornperm.sa@ssru.ac.th

Pattarapong NGANSAKUL 

Suan Sunandha Rajabhat University, Faculty of Humanities and Social Sciences,
Geography and Geo-Informatics Program, Bangkok, Thailand, e-mail: pattarapong.ng@ssru.ac.th

Dolreucha SUWANMAJO 

AAPICO ITS Company Limited, Hitech Industrial Estate, 99 Moo 1, Ayutthaya, Thailand, e-mail: dolreucha.s@aapico.com

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Abstract: This research was conducted to develop tourist attractions, especially cultural tourism attractions in the community area around Sawaswareesrimaram Temple, Dusit district, Bangkok. The objective is to develop spatial potential by applying geographic information systems for mapping local communities in location determination, planning, and spatial development. The methodology was obtained from field surveys by recording the coordinates of cultural tourist attractions with Global Positioning System (GPS) and using geographic information systems for mapping. It also adopts the principle of analyzing the density of attractions with Kernel Density. The results reveal that there were 4 types of cultural attractions in Dusit District: Institution, Palace and Museum, Religious places, and Restaurant – Street food. The distribution pattern of most cultural attractions was in the south-western area of the study area, with the density of cultural attractions greater than 1 km². Cultural attractions in the form of Restaurant and Street food were found to have a very high density in the Sri Yan area, showing a level greater than 1 km² along Sam Sen road and Nakhon Chai Si road. As for Thewet district, there was a density level of 0.2-0.6 km², which were all distributions of street food, dense at the intersection of roads. In summary, the mapping can provide local people with a tool for planning cultural sites, to enhance their livelihoods, love and cherish their homeland, and increase their income, leading to future tourism developments.

Key words: Cartography, Cultural tourism attraction, Sawaswareesrimaram Temple, Dusit, Bangkok

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INTRODUCTION

Cultural tourism is a form of tourism that has been trending in global tourism in recent years and is being seen as a key sector in economic development (Santamaria and Filis, 2019; Ketter, 2021). Due to the modern-day tourists, especially the Millennial generation, also known as Generation Y or Gen Y, are traveling to find answers for their life's destinations. And travel has opened their eyes and gained new experiences in life, so they try to find new challenges in tourism (Ketter, 2019). Therefore, cultural tourism is an important choice for tourists nowadays. As a result, most developing countries that are dependent on tourism as a source of income have developed this form of tourism (Niñerola et al., 2019). It uses low cost and is valuable in that society which can be seen in the form of way of life, architecture, art, tradition, ancient sites, antiques, etc. (Chiao et al., 2018; Carbone et al., 2020; Halim et al., 2022). For this reason, accessibility to cultural attractions should be emphasized as a tool or product, such as a tourist map, that guides tourists to destinations, and is an effective tool and plays an important role in attracting tourists as well (Mülazimoğlu and Başaraner, 2019).

* Corresponding author

Thailand is one of the countries that has greatly expanded in tourism (Gong et al., 2018; Koodsela et al., 2019). Thailand's tourism industry is important and plays a key role in the economy that generates income for Thailand as a top priority. However, with the past COVID-2019 epidemic situation, it has caused damage to the Thai economy (Wetchayont and Waiyasuri, 2021), and one of them is in tourism where the epidemic has limited and reduced the role of people traveling both domestically and internationally (Duro et al., 2021; Papajorgji et al., 2021; Wetchayont, 2021). As a result, Thailand has been directly affected and considered a crisis in tourism, that is, the number of foreign tourists arriving in the country has decreased by more than 90%. Tourism businesses such as hotels, resorts, trade and services, and food businesses lost their income and closed (Wetchayont et al., 2021). After that, the public and private sectors helped to solve the problem until it was able to control the COVID-2019 epidemic situation, allowing tourism businesses to come back quickly to support tourism. With Thai tourism potential that has a variety of tourism, such as natural tourist attractions, cultural tourist attractions, and friendly services, caused foreigners and Thai people to travel in Thailand (Kerdpitak, 2022; Leelawat et al., 2022). The important thing is the Thai cultural model that is considered a valuable tourism source of Thailand, allowing Thailand to develop tourist attractions continuously according to the world's popular trend, whether temples; tradition; well-being; product; museum; archaeological site; antiquities; etc (Techakana, 2022). It is a Thai inheritance that is passed down from ancestors who have protected, preserved and inherited, causing the children to be inherited and able to develop the potential to become a business cost to the economy to this day.

However, some Thai cultural tourist attractions have been left without care, especially in the area around Sawaswareesrimaram Temple or Wat Khae Samsen, is an old community that established during the reign of King Nangklao (Rama 3), by Phraya Sawat Waree (Magnate Chim) in 1832. The area is located on the edge of the Samsen Canal, which is an important canal for traveling to the Saen Saep canal in the early Rattanakosin period. The area around Sawaswareesrimaram Temple; in the administrative district of Dusit, Bangkok; there are many potential cultural attractions. But at present, some places lack care, and being used in the wrong type of space, causing bad scenery. In addition, most people in the community have low incomes and bad living, making the system difficult to access. For this reason, the research has been tried to help solve the problem by developing a map of cultural tourist attractions around Sawaswareesrimaram Temple, so that people in the community and foreigners can use it for tourists. Importantly, Tourist Map is an important tool for people in the community to develop their potential by developing into a local guide to help tourists and give information for the tourist attractions in their own community. The people in the community will be aware and concern, love the homeland and cultural heritage that exists in the community, is considered to have a total of people in the community to develop tourism.

Cultural Tourism mapping may be defined as the process of collecting, recording, analyzing and synthesizing information to describe cultural resources, the interconnectedness of individual places and patterns of communities, providing an overview of cultural characteristics and livelihoods of communities (Weng et al., 2020). The mapping is also a spatial interpretation of the cultural linkages of each era. It conveys spatial data with GIS systems, photographs, and descriptions of the uniqueness of the place through the perspective of the local community (Yan and Lee, 2015).

For this reason, mapping is very necessary for tourism, as can be seen from related researches as Duxbury et al. (2015) recognized the importance of cultural mapping as it can empower communities, promote local cultural policies, promote intellectual property at the local level, fostering community involvement, and leading to academic models and dissemination of new mapping research with GIS. Martínez-Hernández et al. (2021) developed a digital map of the dynamics of commercial transformation in Madrid, Spain, using geographic tools including Google Street View, ESRI ArcGIS Desktop and ESRI ArcGIS Online Story Maps application. Dmitriyev et al. (2021) developed a zoning map for the development of the tourism industry in the North Kazakhstan region of the Republic of Kazakhstan. Cartography has been brought to organize tourism zones divided into 5 important zones: natural, natural-technical, architectural, historical-revolutionary, and archaeological. Even Agustí (2021) analyzed data from the Instagram application to create a map to analyze the differences in the behavior of tourists in Barcelona by analyzing the density of photographs with kernel density analysis. At present, spatial data analysis principles are used in some places where there are a number of diverse tourist attractions and a high number of tourists. This results in a huge amount of information known as big data.

Therefore, it is necessary to apply global positioning systems (GPS) data to collect data today. Schmücker and Reif (2022) collected data for three holiday destinations in Germany, passive mobile data and passive global positioning systems (GPS) data are compared with reference data from the destinations for twelve weeks in the summer of 2019. Liu et al. (2022) conducted research on destination planning, marketing, and resource management. This study uses open GPS-trajectory data to analyze the microscopic spatio-temporal patterns of tourists' movement behaviors in Mount Huashan in China. And GPS has also been used to collect tourism data in the form of cycling tourism, such as research by Mou, et al. (2022) that studied the behavior of Chinese tourists riding bicycles in the Tibetan Autonomous Region, showing important information to drive the place to be popular in the future and also developing the tourism industry.

However, GIS and remote sensing techniques are still important for analyzing suitable areas and for land use planning management, such as the research of Ayhan et al. (2020). The technique was used to manage land use planning in the Yenice region, in northwestern Turkey, to assess the area's potential and suitability for tourism activities to develop the area to accommodate tourists. Li et al. (2023) applied GIS and remote sensing techniques to Suzhou, China, especially Kernel density analysis showing spatial distribution patterns of sensory experiences of the city.

The result is the level of intensity of tourism activity patterns in various activities. This makes it possible to manage tourism support plans for Suzhou in various zones in accordance with that type of activity efficiently. Wang et al. (2023) used data from observations in the Zhangjiajie area to generate and analyze land-use changes using geo-informatics to see the surrounding effects of building growth. It can be traced that over the past 20 years, forest and agricultural areas

have clearly become tourism construction land. In addition, the geo-informatics technique has also been applied in behavioral research. As Jamhawi et al. (2023)'s research on Tourist Movement Patterns in Madaba, Jordan, reveals tourist behavior patterns in urban cultural attractions, in order to allocate the appropriate route so that tourists can easily access the attractions. Neil et al. (2023) performed a spatial analysis of cultural ecosystem services using data from social media and geo-informatics to examine tourist behavior on the west coast of Ireland. This makes it possible to manage the coastal areas and rural areas of such cities in accordance with the cultural ecosystem. It can be seen that various research focus on collecting geo-informatics data in preparing spatial data for tourism development in important places.

This research was conducted to develop tourist attractions, especially cultural tourist attractions in the area around the Sawaswareesrimaram Temple Community, Dusit, Bangkok. The objective is to develop spatial potential by applying geographic information systems for mapping for local communities in determining location, planning, spatial development, especially tourism in the urban areas surrounding Sawaswareesrimaram Temple. In order to raise the level of local communities, there are tools for planning, especially the cultural attraction map. Using for escorting visiting tourists, it can also be a useful navigation tool for local guides and tourists. The map will be able to enhance the local potential and support the upcoming tourism development in the future.

STUDY AREA

This research was conducted in the area of Dusit, Bangkok with an area of approximately 10.665 km². The area is located between latitudes 13°45' N to 13°48' N, longitudes 100°29'30" E to 100°32'30" E (Figure 1). Dusit is located on the left bank of the Chao Phraya River. North is adjacent to Bang Sue, bounded by the Bang Sue Canal. The east side is adjacent to Phayathai and Ratchathewi. There is a northern railway line as a demarcation line. The south is adjacent to Pathumwan and Pom Prap Sattru Phai, with Khlong Phadung Krung Kasem as the boundary line. And the west is adjacent to the Chao Phraya River.

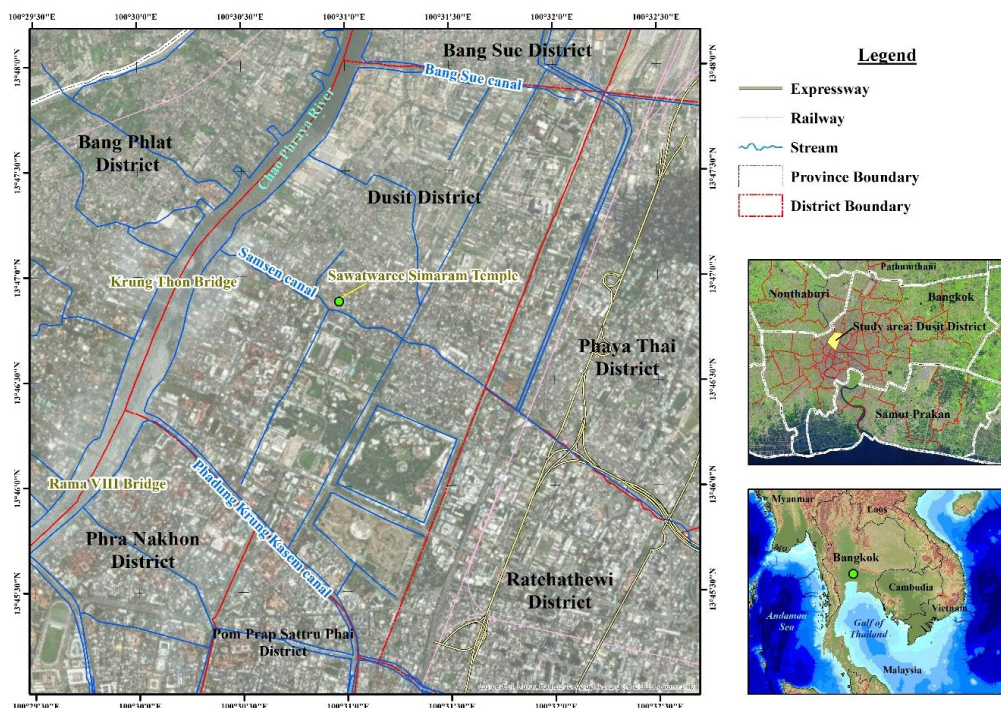


Figure 1. Location of Dusit District, Bangkok, Thailand (Source: collected and processed by authors)

The topography is fluvial landforms, making it an important agricultural area in the past. But nowadays, the land has been urbanized to the point where there are no farmland left. Dusit is now a district full of commercial, residential, military districts, together with being the administrative center of Thailand. Since there are important government offices such as the location of the parliament, royal palaces, various ministries, Dusit has the status of being the administrative center of Thailand. As a result, the area is filled with important historical and cultural sites. Dusit District is sub-divided into 5 sub-districts called "Khwaeng", consisting of Dusit, Wachiraphyban, Suan Chit Lada, Si Yaek Maha Nak, and Thanon Nakhon Chai Si.

MATERIALS AND METHODS

This research has collected information on cultural attractions in the Dusit area, whether it is the tourism infrastructure information of Dusit area. into a digital database in GIS format. The base data is based on Topographic Map scale 1:50000 from the Royal Thai Survey Department, and data from field surveys from measuring and recording the coordinates of cultural attractions with the Global Positioning System (GPS) (Mou et al., 2022; Schmücker and Reif, 2022). Information collected in the field study: community locations, commercial districts, restaurants, religious landmarks, palaces and museums, and government offices. The cartographic method or the purpose of design (choice of the coordinate system and map projection), generalization (reduction of the content according to the selected scale), and visualization (depiction of point, linear and area objects). Spatial and statistical analysis related to mapping uses ArcMap 10.2 software to collect and analyze numerical data, including data editing, validation, and visualization of digital map data.

Data analysis of the location distribution of cultural attractions in Dusit can be analyzed with the Kernel Density (Equation 1). The concept can be analyzed in GIS, which is part of the mathematical functions in ArcMap 10.2. The results will inform the densities of the tourist sites, and guide cultural tourism planning. The Kernel Density (Silverman, 1986; Nistor and Nicula, 2021) is calculated from the following equation:

$$\int_h f(x) = \frac{1}{n} \sum_{i=1}^n \binom{n}{k} K_h(x - x_i) \quad \text{where } f \text{ is density } f; K \text{ is the kernel -a non-negative function; } h > 0 \text{ is a smoothing}$$

parameter called the bandwidth; x_1, x_2, \dots, x_n is univariate independent and identically distributed sample. The research process consists of the following steps, as shown in Figure 2.

RESULTS AND DISCUSSION

According to field surveys from measuring and recording the coordinates of cultural attractions with GPS from December 15, 2022 to January 13, 2023, the locations and details of cultural attractions of Dusit were collected and recorded, as in Table 1. After that, the location data was imported into the Geographic Information System for mapping and analyzing the data distribution pattern with the Kernel Density principle.

The results of the study of the location of cultural attractions in urban areas surrounding Sawaswareesrimaram Temple, Dusit District, found that there were 4 forms of cultural tourist attractions in Dusit: Institution, Palace and Museum, Religious places, and Restaurant – Street food.

The distribution pattern of

most cultural attractions was mainly in the south-western area of the study area, which was in the Wachira Phayaban Sub-district and Dusit Sub-district. It consists of the Palace and Museum, and Religious places (Figure 3). By analyzing the density of cultural attractions per study area with the Kernel Density, the following results were obtained: The density level of cultural attractions more than 1 km² appeared in the southwest and south of the study area in the areas of Wachira Phayaban Sub-district and Dusit Sub-district. The northern of the study area has a density level of only 0.2-0.6 km², which is the area of Thanon Nakhon Chai Si Sub-district. The density map of cultural attractions from the Kernel Density analysis is shown in Figure 4. This research mapped out the distribution of cultural attractions, categorized as follows. There are only 2 institutional style cultural attractions in Dusit District: The National Library and Sappaya-Sapasathan (The Parliament Complex).

The National Library was founded in 1905. When The King Rama V returned to Bangkok from a visit to Europe, he had the idea that Siam does not yet have a library for the city. It was established for the collection, storage, preservation and administration of all national intellectual property. It contains a collection of Thai manuscripts, stone inscriptions, palm leaves, Thai literature and publications, as well as audio-visual objects. And, today it still stores digital resources for the benefit of the general public. Sappaya-Sapasathan or The Parliament Complex is the new parliament of Thailand which is under construction. Upon completion, the National Assembly will be the largest parliament building in the world replacing the Romanian Parliament, with an indoor area of 365,000 m². This building has outstanding architectural features according to the Trailokya, in addition to showing the spiritual identity of Thailand. It also has a meaning for the person who comes to the council to feel the concept of karma. The highlight of this place is also the glass wall surrounding the golden pagoda

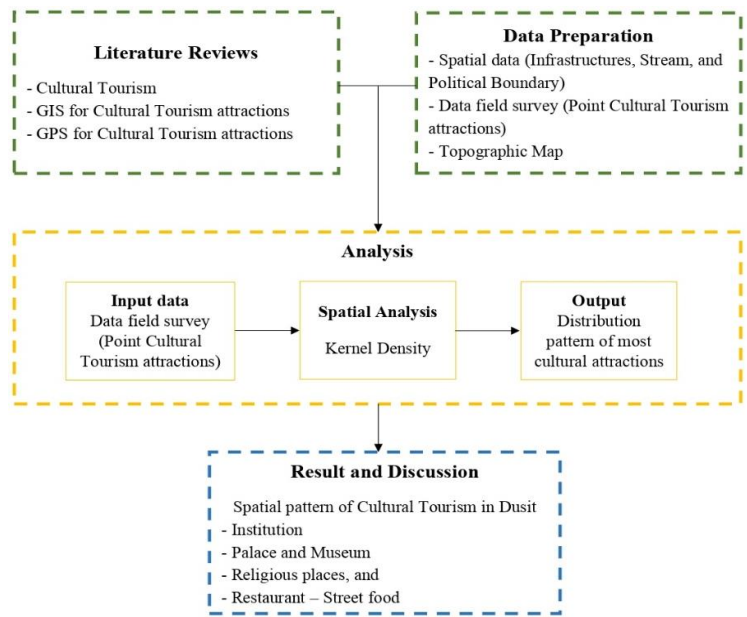


Figure 2. Flowchart of methodology

Table 1 Coordinates of cultural attractions in Dusit District, surveyed between 15.12. 2022 to 13.01.2023

No.	Northing	Easting	Location	Category
1	13.7952	100.5189	Sappaya-Sapasathan (The Parliament Complex)	Institution
2	13.7715	100.5050	The National Library	Institution
3	13.7691	100.5119	Equestrian Statue Plaza	Palace and Museum
4	13.7705	100.5128	Dusit Palace Plaza	Palace and Museum
5	13.7679	100.5106	Parutsakawan Palace	Palace and Museum
6	13.7655	100.5090	Chankasem Palace	Palace and Museum
7	13.7630	100.5135	Prince of Chumphon Palace	Palace and Museum
8	13.7751	100.5080	Sai Suddha Nobhadol Building	Palace and Museum
9	13.7809	100.5087	Vajiranusorn Building	Palace and Museum
10	13.7632	100.5176	King Rama IX Memorial Park	Palace and Museum
11	13.7725	100.5015	Golden Teak Museum	Palace and Museum
12	13.7655	100.5113	Anti Corruption Museum	Palace and Museum
13	13.7925	100.5134	Singha Museum	Palace and Museum
14	13.7990	100.5249	Prajadhipok Residence Museum	Palace and Museum
15	13.7963	100.5179	Parliamentary Museum	Palace and Museum
16	13.7772	100.5116	Thai Newspaper Museum	Palace and Museum
17	13.7670	100.5134	Phra Anuson Museum	Palace and Museum
18	13.7759	100.5043	Museum of Maha Rachanuson Rama IV	Palace and Museum
19	13.7932	100.5288	Department of Military Communications Museum	Palace and Museum
20	13.7921	100.5307	Department of Army Transportation Museum	Palace and Museum
21	13.7939	100.5297	The Royal Thai Army Ordnance Corps Museum	Palace and Museum
22	13.7777	100.5055	St. Francis Xavier Church	Religious places
23	13.7770	100.5035	Immaculate Conception Church	Religious places
24	13.7761	100.5029	Rachathiwat Temple	Religious places
25	13.7724	100.5019	Devaraj Kunchon Temple	Religious places
26	13.7837	100.5216	Noi Noppakun Temple	Religious places
27	13.7803	100.5051	Rajphatikaram Temple	Religious places
28	13.7919	100.5135	Chan Samoson Temple	Religious places
29	13.7810	100.5155	Sawatwaree Simaram Temple	Religious places
30	13.7664	100.5145	Benchamabophit Dusitwanaram Temple	Religious places
31	13.7797	100.5040	Chao Mae Thapthim Shrine	Religious places

and the Thai National Museum, which in the future will be a new tourist attraction. Cultural attractions in the form of Palaces and Museums consist of 7 Palaces, 11 Museums and 1 Park. Dusit has been the central administrative district of Thailand since 1782 since the establishment of the Rattanakosin period. As a result, there are quite a lot of palaces scattered in this area, where the palace is the residence of the King, the Viceroy, the royal family since the early Rattanakosin period, some of which have become a museum for learning history. The important palaces that are cultural tourist attractions are as follows: Equestrian Statue Plaza, Dusit Palace Plaza, Parutsakawan Palace, Chankasem Palace, Prince of Chumphon Palace, Sai Suddha Nobhadol Building, and Vajiranusorn Building. The 11 museums are mostly located in the western part of the study area in Wachira Phayaban Sub-district and Thanon Nakhon Chai Si Sub-district.

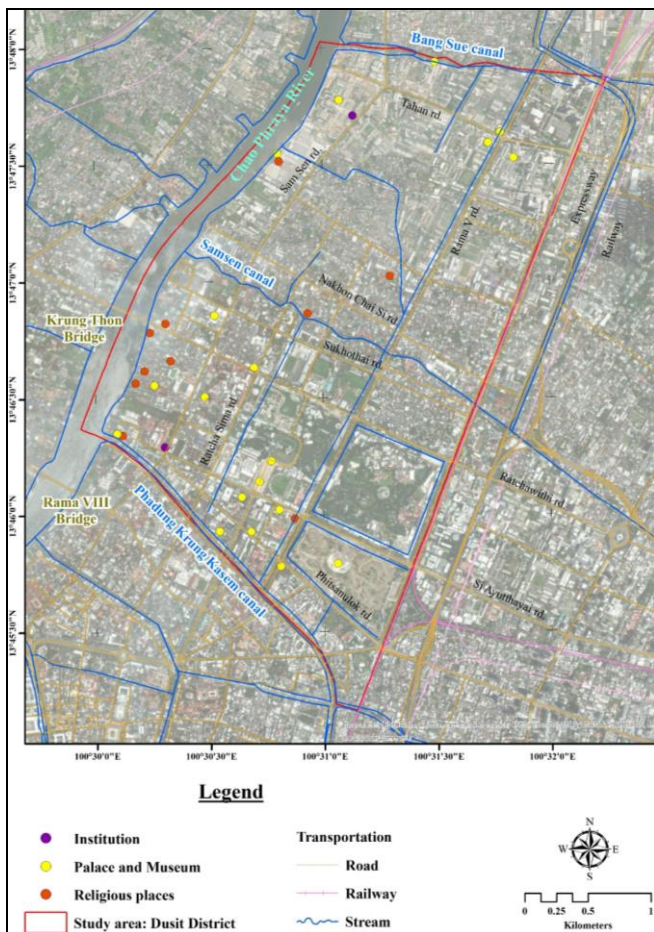


Figure 3. Map of Institution, Palace and Museum, and religious places in Dusit District, Thailand (Source: collected and processed by authors)

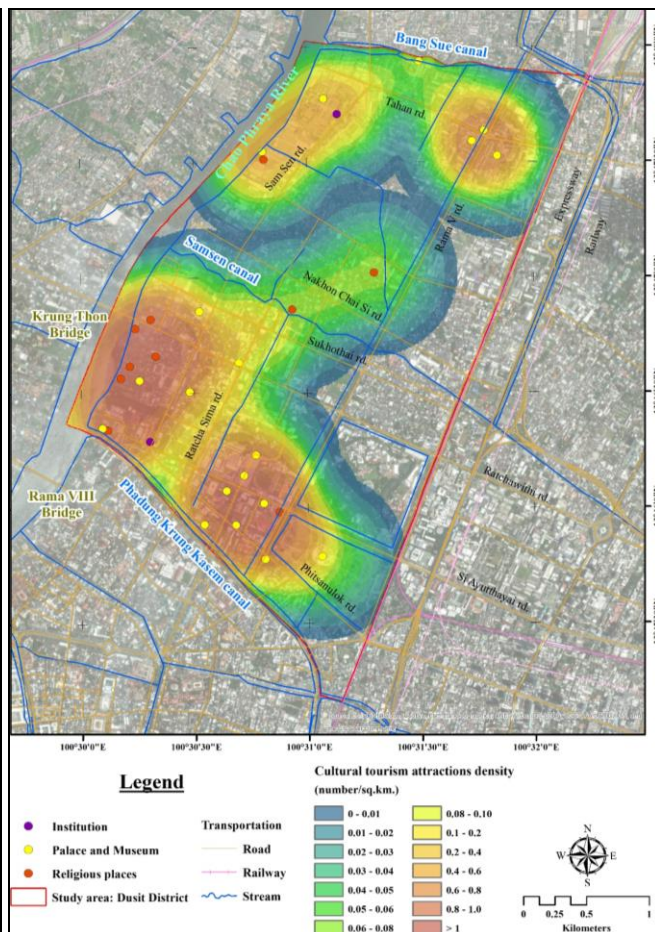


Figure 4. Cultural Attractions Density Map in Dusit District, Thailand (Source: collected and processed by authors)

Most of the cultural tourist attractions in the form of religious places are located along the Chao Phraya River and major canals, with a total of 10 locations. Two Christian churches: St. Francis Xavier Church and Immaculate Conception Church. Located on the west side of Dusit District, next to the Chao Phraya River, St. Francis Xavier Church is a temple of the Vietnamese people who came to live in Siam since the reign of King Rama IV. There is a statue of Jesus healing the blind at the front of the temple. It is a statue that King Rama V brought from Italy on his first visit to Europe in 1897. The Immaculate Conception Church is a Roman Catholic church. It consists of the original building, which is a brick and cement building, with Thai-style gable roof. It is currently renovated into a museum. The Conception Church is unique in its architecture than other churches, with Thai-Dutch style. There are 8 tourist attractions related to Buddhism. Most of them are old temples in the early Rattanakosin period as follows: Benchamabophit Dusitwanaram Temple. It is an important royal temple, the temple of King Rama V, and he entered the temple as a monk. The outstanding architecture of this temple is that it is made of pure white marble. Sawatwaree Simaram Temple is located along Khlong Sam Saen in the middle of Dusit District, built in 1832. The surrounding area is an ancient community in the early Rattanakosin period. Such temples still retain the identity of the architecture of the early Rattanakosin period as well. Rachathiwat Temple is located along the Chao Phraya River next to Tha Wasukri. It is the first temple where the Dhammayuttika Nikaya was established. This temple is very unique, whether it is a sermon hall built entirely of golden teak, Fresco painting about Vessantara Jataka, and there is also an important palace such as Phaya Thai Palace and the palace of King Rama IV. Devaraj Kunchon Temple is a temple located on the banks of the Chao Phraya River and the Phadung Krung Kasem canal.

The temple has beautiful frescoes and is in a well-preserved condition, decorated mainly in marine blue. Inside the temple is also home to the Golden Teak Museum. Noi Noppakun Temple is a temple with a beautiful church. Inside is enshrined the principal Buddha image in the Subduing Mara posture and murals depicting the life of the Lord Buddha. Rajphatikaram Temple is a temple located along the Krung Thon Bridge on the banks of the Chao Phraya River. It is a

temple with an ubosot that combines Thai and Vietnamese art. And, there are very outstanding and exquisite frescoes. The wall painting is about Phra Mahachanok, which was the previous incarnation of the Lord Buddha, also a painting depicting contemporary morality and the cosmic landscape in the Buddhist perspective behind the main Buddha image. Chan Samoson Temple houses several sacred Buddha images within the temple. And the last place, Chao Mae Thapthim Shrine, is a shrine that has existed since the Ayutthaya period. It is the settlement of the Hainan Chinese who emigrated from the war to live in Thai territory. This is a sacred place where merchants, businessmen come to pray for successful trade and business.

In addition to the cultural attractions in Dusit that take the form of Institution, Palace and Museum, and Religious places, there is also another form that is currently very popular, which is a cultural attraction in the form of Restaurant and Street food. Especially the charm of street food, which is considered a highlight of Thailand and is the destination of foreign tourists who want to experience the atmosphere and try the taste of Thai street food. With the highlight of the Thai street food that is easily accessible wherever you go in Bangkok, you can see a variety of styles, delicious taste, and you can eat at the shop or take away conveniently. Thailand has a variety of raw materials sources for cooking, together with the eating culture of different nations in local, ethnic groups, and foreigners to be Thai Street food, and traders also develop new cooking techniques. In this research, a field survey was conducted with GPS to collect restaurant and street food locations in Dusit District. The results of the study revealed that there are 49 restaurants and street food in Dusit District, divided into 10 restaurants, 12 cafés, and 27 street food (Figure 5). It can be seen that most of the distribution of such locations appears along the main roads, namely Sam Sen road, Nakhon Chai Si road, and Sukhothai road. In particular, Sam Sen road appears concentrated on the south side of the study area, and the other is at the intersection of Sam Sen road and Nakhon Chai Si road, which is an important community and commercial area, Thewet and Sri Yan. Thewet is an old community area since the Ayutthaya period. Later in the reign of King Rama IV of Rattanakosin, Phadung Krung Kasem Canal was dug parallel to the old moat canal (Klong Rob Krung). The purpose of digging the canal was to expand the territory of the city. As Khlong Phadung Krung Kasem passes through Thewet area, causing more people to settle, and nowadays it becomes an important Restaurant and Street food area. Sri Yan is a commercial district located at Sri Yan intersection, at the intersection of Samsen Road and Nakhon Chai Si Road, in the area of Dusit

District. Before World War 2, it was an area where Thai and Chinese settlers came to live in the community and built a trading point to exchange products. Until today it is an area with many shops, restaurants, lining both sides of the road and within the Sri Yan market. The Kernel Density study of the restaurant and street food locations yields the following results: Sri Yan district has a very high density level with more than 1 km² along Sam Sen road and Nakhon Chai Si road. Thewet district, the density level is only 0.2-0.6 km², but it appears at the intersection of Sam Sen road and Ratchawithi road where the density level is similar to that of Sri Yan. Because the area is home to Suan Sunandha Rajabhat University, Dusit University, Navamindradhiraj University, and Vajira Hospital, where students, staffs, and patients use the facility, this causes street food to have a high level of density. Another area to the east of Nakhon Chai Si road is also experiencing high levels of street food (Figure 6). The details of Restaurant and Street food are shown in Table 2.

Table 2. Coordinates of cultural attractions in the form of restaurants and street food in Dusit District, surveyed between December 15, 2022 to January 13, 2023

No.	Northing	Easting	Location	Category
1	13.7892	100.5160	Krua Kun Ya Dusit	Restaurant
2	13.7833	100.5151	Jungle Curry Si Yan	Restaurant
3	13.7762	100.5208	Cut Raw & Grilled	Restaurant
4	13.7820	100.5053	Chon Thai Restaurant	Restaurant
5	13.7743	100.5070	Krua Apsorn	Restaurant
6	13.7767	100.5162	Krua O Wee	Restaurant
7	13.7838	100.5150	Home Restaurant	Restaurant
8	13.7895	100.5105	Rim Chon Restaurant	Restaurant
9	13.7613	100.5158	Suan Son Restaurant	Restaurant
10	13.7788	100.5079	Kab Kao Kab Pla	Restaurant
11	13.7772	100.5111	Home Bakery	Café
12	13.7867	100.5111	Sriyan Tearoom	Café
13	13.7843	100.5134	Panettone	Café
14	13.7841	100.5139	Crazy Snacks Si Yan	Café
15	13.7793	100.5098	Thamadum Thammada	Café
16	13.7734	100.5199	Kumo café	Café
17	13.7613	100.5156	Under the same roof	Café
18	13.7586	100.5150	Double Pitcher	Café
19	13.7900	100.5149	Broorown café	Café
20	13.7861	100.5102	RareBKK	Café
21	13.7612	100.5157	Amornpiman	Café
22	13.7892	100.5184	Midnight Moon	Café
23	13.7561	100.5180	Fu Fresh Chili Fish Noodles	Street food
24	13.7595	100.5144	Hainanese Kanom Jeen Je Wa-Je Yong	Street food
25	13.7792	100.5221	Beef Kaolao Ratchawat	Street food
26	13.7798	100.5144	Beef Noodle Dusit Borikan	Street food
27	13.7852	100.5130	Meatball Si Yan	Street food
28	13.7757	100.5250	Waree Pork Satay Dusit	Street food
29	13.7783	100.5065	Fried pork Mettha	Street food
30	13.7843	100.5140	Yum Naem Kao Tod Pee Or Si Yan	Street food
31	13.7778	100.5257	Rice gruel Ratchawat	Street food
32	13.7841	100.5117	Rad Nha Nai Hor	Street food
33	13.7748	100.5230	Mee Krob Wilaikul	Street food
34	13.7801	100.5128	Krisna Fish Noodle	Street food
35	13.7843	100.5139	Pad Thai Suporn	Street food
36	13.7792	100.5231	Chicken Noodle Ratchawat	Street food
37	13.7866	100.5130	Chinese chives dessert Phra Market	Street food
38	13.7791	100.5230	Rice porridge Siladol	Street food
39	13.7864	100.5126	Pork Larb Si Yan	Street food
40	13.7863	100.5126	Rice gruel Je Muk	Street food
41	13.7891	100.5152	Tom Yam Noodle Lord Kun	Street food
42	13.7877	100.5135	Southern Thai Curry Je Maam Grade A	Street food
43	13.7698	100.5042	Suki Thewes	Street food
44	13.7851	100.5125	Crepes Thewes	Street food
45	13.7895	100.5149	Oun Noddle	Street food
46	13.7894	100.5150	Rice Fish gruel Bang Krabue	Street food
47	13.7769	100.5076	Aunt Nid Noodle	Street food
48	13.7749	100.5056	Rad Nha Wat Racha	Street food
49	13.7763	100.5076	Aunt Somjid Noddle	Street food



Figure 5. Map of Restaurant and Street food in Dusit District, Thailand (Source: collected and processed by authors)

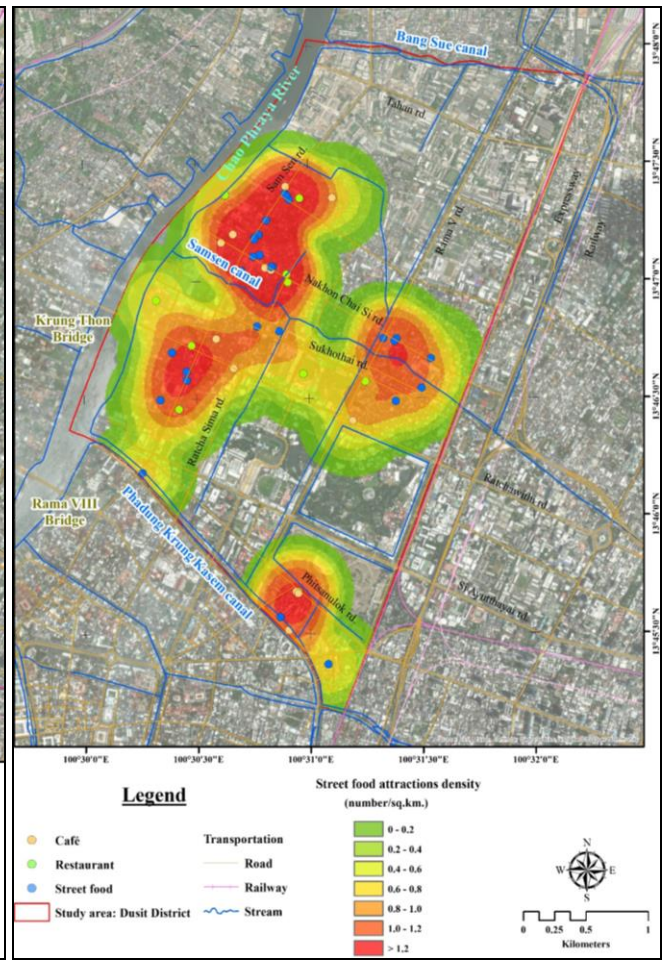


Figure 6. Restaurant and Street food Density Map in Dusit District, Thailand (Source: collected and processed by authors)

CONCLUSION

The cultural attractions of Dusit District were collected and analyzed spatial data with GIS, by simulating the density of tourist attractions with the Kernel Density. It can be seen that most of the density of such places are in the west along the coastline of the Chao Phraya River. Kernel Density analysis shows the efficiency of the research results very well.

The reason for the distribution of the cultural attractions of Dusit District is in such areas, because in the early Rattanakosin period there was an expansion of government offices and residences of the royal family from Phra Nakhon District which was on the south side of study area to Dusit area.

And at present, it has been transformed into a museum for studying history of the Thai nation. Most restaurants and street food attractions are located at the intersection of important roads such as Sam Sen road and Ratchawithi road, Sam Sen road and Nakhon Chai Si road, and Phitsanulok road. In conclusion, this research has created a map for local communities in Dusit area, especially tourism in the urban areas surrounding Sawaswareesrimaram Temple to raise the community for use in spatial development planning. Local communities have tools for planning cultural attractions to enhance livelihoods, love and cherish their homeland, and increase income for people in local communities, leading to the development of tourism that is going to happen in the future.

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THE GREAT SUMATRAN FAULT DEPRESSION AT WEST LAMPUNG DISTRICT, SUMATRA, INDONESIA AS GEOMORPHOSITE FOR GEOHAZARD TOURISM

Prahara IQBAL* 

Research Center for Geological Resources, Geodiversity Research Group, National
Research and Innovation Agency (BRIN), Bandung, Indonesia, e-mail: praharaiqbal123@gmail.com

Dimas Aryo WIBOWO 

Research Center for Geological Resources, Geodiversity Research Group, National
Research and Innovation Agency (BRIN), Bandung, Indonesia, e-mail: dimasaryowibowo25@gmail.com

Puguh Dwi RAHARJO 

Research Center for Geological Resources, Geodiversity Research Group, National
Research and Innovation Agency (BRIN), Bandung, Indonesia, e-mail: puguh.draharjo@gmail.com

Hilda LESTIANA 

Research Center for Geological Resources, Geodiversity Research Group, National
Research and Innovation Agency (BRIN), Bandung, Indonesia, e-mail: hilda.lestiana@gmail.com

Eko PUSWANTO 

Research Center for Geological Resources, Geodiversity Research Group, National
Research and Innovation Agency (BRIN), Bandung, Indonesia, e-mail: epuswanto@gmail.com

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Abstract: Two approaches can be taken to understand geotourism, namely the geological approach and the geographical approach. This approach will lead to the creation of new geotourism products, initiatives, and experiences, one of which is geohazard tourism involving faults and earthquakes. To identify geomorphosites, the researchers examined rocks, outcrops, and geomorphology. Then various thematic maps are created using mapping software and other drawing applications to simplify textual material and aid synthesis. A synthesis of all that is then carried out to reconstruct the geological and geomorphological history of the study area. Furthermore, the West Lampung geomorphosite candidate was compared to the worldwide fault and earthquake geomorphosite theme. The Great Sumatran Fault depression landscape can be found in Balak Pekon, Batubrak Regency, and Pekon Padang Dalam, Balik Bukit District, West Lampung Regency. This depression is caused by both endogenous and exogenous factors. The endogenous activity takes the form of sediment from volcanism and fault movement, whereas exogenous activity takes the form of river water erosion. The valley's sediments are ignimbrite tuffs/sandy tuffs that form a cliff morphology with a height of + 75 meters and a trend of Southeast-Northwest. In the case of geotourism, initiatives have grown over time around two complementary approaches (geological and geographic) and the result is a geomorphosite in the geohazard area. One of the areas is the Sumatran Great Fault depression geomorphosite, this area was formed due to the movement of the Sumatran fault which caused the 1908, 1933, and 1994 earthquakes. Situations like these can be used as opportunities to enhance learning about the relationships between people, land use, natural processes, and large-scale events by providing real-life examples, this can be packaged into the form of geohazard tourism.

Key words: Geotourism, geomorphosite, geohazard, geological, geographic, Great Sumatran Fault depression

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INTRODUCTION

Geotourism is a form of tourism that is growing rapidly around the world. This tourism is creative tourism that utilizes the specific natural conditions of an area through geosciences. This type of tourism has experienced growth in recent decades as a result of the creation and expansion of UNESCO's global network of geoparks (Dryjańska, 2014; Tessema et al., 2019; Kyriakaki and Kleinaki, 2022). Two approaches can be taken to understand geotourism, namely the geological approach and the geographical approach. The approach includes elements of geology (geodiversity), biology (biodiversity) (natural), and culture (cultural diversity). This approach will lead to the creation of new geotourism products, initiatives, and experiences (Dowling and Newsome, 2018) one of them is disaster tourism and/or geohazard tourism related to faults and earthquakes (Rucińska and Lechowicz, 2014; Muslim et al., 2022). In general, natural disasters have destroyed many livelihoods and caused casualties, as well as leaving evidence of destruction. However, on the other hand, according to researchers, natural disasters are a good opportunity to study natural processes

* Corresponding author

and the role of the human factor in nature (Korstanje and George, 2015; Martini and Buda, 2020; Ilies et al., 2020; Sunkar et al., 2022). Migoñ and Pijet-Migoñ (2019) argue that disasters leave some evidence of positive effects to be studied, and understood, and can help the recovery of affected areas, and they have investigated the relationship between hazards, disasters, geoheritage, and geotourism further. This relationship is referred to as geohazard tourism in this paper.

To understand geohazard tourism in an area, it is necessary to assess which hazard dominance is possible to be appointed as a tourism destination. One of the elements of the assessment is to determine a specific geomorphosite through a quantitative index. The geomorphosite assessment process is carried out after literature study, field verification, making thematic maps, and analysis of geological-geographical parameters.

In determining the specific geomorphosite of an area, data synthesis is carried out (Reynard and Panizza, 2005; Panizza and Piacente, 2008; González Amuchastegui et al., 2013; Santos et al., 2019; Jafar et al., 2022; Ilie and Grecu, 2023; Sánchez-Almodóvar et al., 2023). As an example of a case in the study area, the specific geomorphosite is fault geofoms (Evelpidou et al., 2021; Puswanto et al., 2022; Dóniz-Páez and Becerra-Ramírez, 2023).

The fault geofoms in the study area have a direct impact on the rest of the natural and cultural heritage. Furthermore, the diversity of geofoms in fault zones will be very appealing to visitors, particularly those interested in geohazard tourism, and can be used to help conserve natural diversity. The purpose of this study is to identify and select representative, well-maintained, and easily accessible fault geofoms in the West Lampung Region using a geological and geographic approach. This will help to promote West Lampung's natural and cultural heritage, while also varying tourism in the area. It will also help West Lampung's economic development by promoting geohazard tourism.

MATERIALS AND METHODS

West Lampung Regency is located on Sumatra Island's western coast (yellow box in Figure 1). This location has an altitude of 300 to 1100 meters above sea level, mountainous topography, a temperature of +24.5° Celsius, and a humidity level of +85% (Iqbal et al., 2022). According to the climatic classification, this region has a tropical wet climate (Huat et al., 2013). The Great Sumatran Fault (GSF) of the Suoh-Komering Segment runs through the study area. This fault has a northwest-southeast trend (Figure 1) (Aribowo, 2018; Natawidjaja, 2018; Rafie et al., 2023). According to historical records (Hurukawa et al., 2014; Soehaimi et al., 2015), the fault has been a source of major earthquakes and natural disasters in Sumatra (Figure 5). Until now, the GSF take a part in creating the geomorphology of the study area.

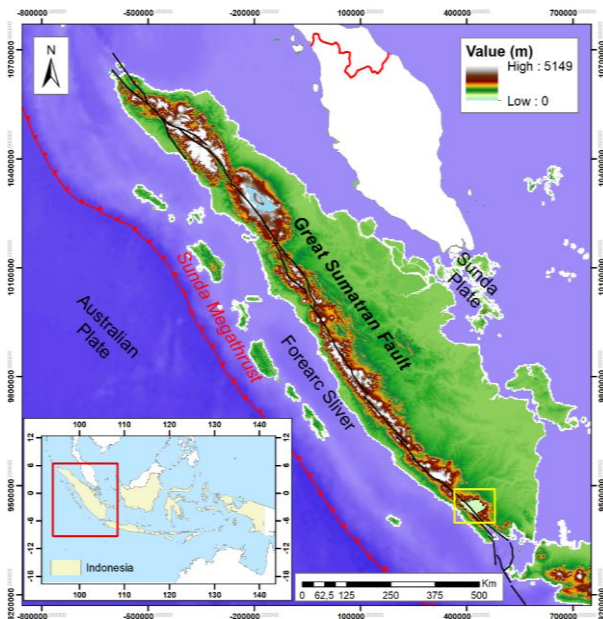


Figure 1. The Great Sumatran fault; yellow box: study area

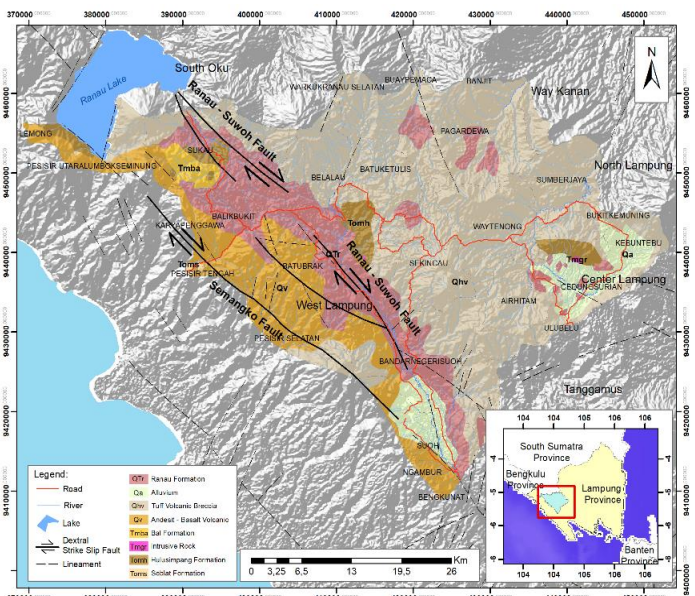


Figure 2. Geological setting of West Lampung, Sumatra, Indonesia (Source: Muslim et al., 2022)

The West Lampung region and its surroundings are geologically composed of Neogene to Quaternary volcanic rocks and soil deposited in the mountains. The constituent rocks of the study area are volcanic rock types of ignimbrite tuff/sand tuff and crystalline glass tuff from Ranau Volcano, as well as volcanic residual soils that are brownish gray to brownish red which are the result of weathering of volcanic rocks (Koswara and Santoso, 1995; Soehaimi et al., 2015; Iqbal, 2013; Iqbal et al., 2020a; Iqbal et al., 2020b; Iqbal et al., 2021) (Figure 2).

This study includes several activities such as a literature review and regional studies of geology, geography, and geomorphosite, field studies, data analysis, and synthesis (Figure 3). The literature review includes a study of international papers on the development of geotourism, especially geohazards tourism in various parts of the world. Field studies were carried out in the West Lampung region to observe and characterize through topographical, geomorphological, and geological mapping at various scales, followed by photography and rock/soil sampling. To identify geomorphosites, the researchers examined rocks, outcrops, and geomorphology. Then various thematic maps are created using mapping software and other drawing applications to simplify textual material and aid synthesis. A synthesis of all

that is then carried out to reconstruct the geological and geomorphological history of the study area. Furthermore, the West Lampung geomorphosite candidate was compared to the worldwide fault and earthquake geomorphosite theme.

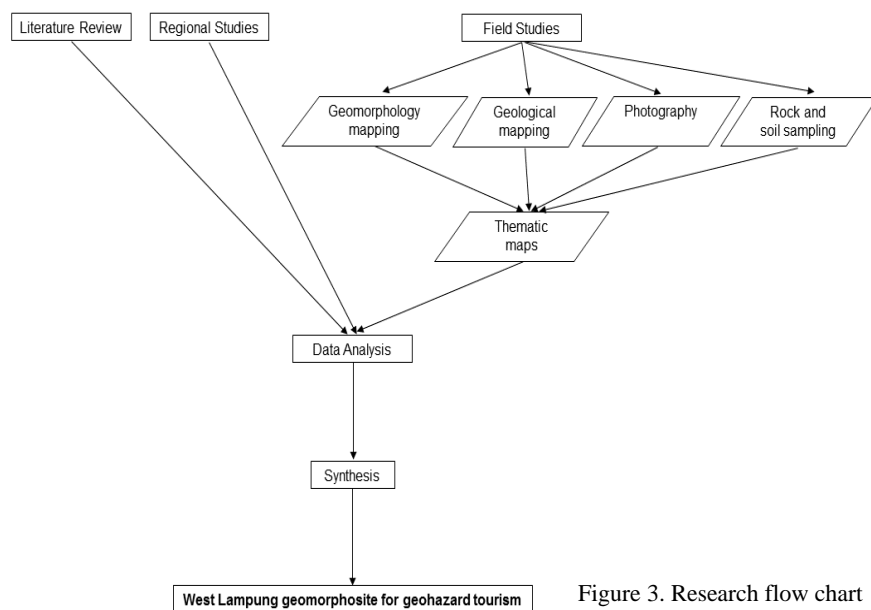


Figure 3. Research flow chart

The morphogenetic approach is used for geomorphosite assessment, with six parameters: morphology, lithology, hydrology, tectonics, land use, and cultural landscape.

This method is a modification of the geomorphosite assessment category developed by researchers worldwide (Pellitero et al., 2011; Meelli et al., 2017; Dóniz-Páez et al., 2020; Santos et al., 2020; Datta and Sarkar, 2022).

Because the previous geomorphosite assessment category was conducted in a different landscape and not in a tropical climate, adjustments were required.

RESULTS

The Landscape of the Great Sumatran Fault depression is in Pekon Balak, Batubrak District,

(Figure 4); and in Pekon Padang Dalam, Balik Bukit District (Figure 5) West Lampung Regency. This depression is caused by both endogenous and exogenous factors. The endogenous activity takes the form of sediment from volcanism and fault movement, whereas exogenous activity takes the form of river water erosion. The valley's sediments are ignimbrite tuffs/sandy tuffs that form a cliff morphology with a height of ± 75 meters and a trend of Southeast-Northwest. The cliff has a slope of up to 90°. The land use that develops around the area is paddy farming.

Table 1. Study area main geomorphosite (Source: <https://drive.google.com>; <https://docs.google.com>)

No	Location	Geomorphosite Parameter					
		Morphology	Lithology	Hydrology	Tectonic	Land Use	Cultural Landscape
1	Pekon Balak, Batubrak District	Incised valley	sandy tuff/ignimbrite tuff	Semangka river	Fault depression	Paddy field	walai to store the harvest
2	Pekon Padangdalam, Balikbukit District	Incised valley	sandy tuff/ignimbrite tuff	Way Robok river	Fault depression	Paddy field	walai to store the harvest

DISCUSSION

The island of Sumatra, with an area of approximately 474,000 km², is the largest island in the Indonesian and the world's fifth largest island. The island stretches for about 1650 kilometers from northwest to southeast across the equator and can be 100-400 kilometers wide (see Figure 1). Sumatra Island is located in the western archipelago of Indonesia. The island is bounded by the Bay of Bengal in the north, then in the south by the Sunda Strait, while in the east the island is bounded by the Malacca Strait, and in the west by the Indian Ocean (Barber and Crow, 2003; Barber et al., 2005).

Sumatra, an Indonesian island, is situated in a seismically active region of the world. Aside from the subduction zone off the island's west coast, Sumatra has a large strike-slip fault, the Great Sumatran Fault (GSF), also known as the Semangko Fault (see Figure 1), that runs the entire length of the island. The majority of the strike-slip motion associated with the convergence of the Indo-Australian and Eurasian plates is accommodated by this fault zone (Bellier et al., 1997; Natawidjaja and Triyoso, 2007; Sahara et al., 2018; Amir et al., 2021). As previously stated, the Sumatran Fault shaped the study area's surface. Tectonic-volcanic evolution has resulted in distinct and one-of-a-kind geological features.

Some of the geological features formed are volcanoes and fault valleys/fault depressions. According to Bellier et al. (1999) and Bellier and Se'brier (1994), The Ranau volcano caldera is one of the major calderas in southern Sumatra, located along the Sumatra Fault. The shape and size are due to the geometric development of the Sumatra Fault segmentation. they hypothesized that the Ranau volcano erupted amidst the inactive Sumatran fault.

The Ranau caldera produces the Ranau tuff, one of the most common sandy tuffs in Sumatra, which is commonly found in the study area (Figure 4). Furthermore, the Great Sumatran Fault correlates with a prominent NW trending active shear fault that crosses Lake Ranau and shifts the current geomorphic structure horizontally, allowing us to see the distribution of sandy tuff/ignimbrite tuff forming incised valleys at several locations throughout the study area (Figure 4 and 5).

According to its history, the Great Sumatran Fault frequently shifts and becomes a source of large earthquakes (Natawidjaja and Triyoso, 2007) (Figure 6). Over the last 130 years, there have been several 25 earthquakes with magnitudes greater than 6 Mw (1893-2022) (Hurukawa et al., 2014). Buildings were damaged and people were killed in various parts of Sumatra, including the study area (earthquakes of 1908, 1933, and 1994) (Soehaimi et al., 2015).

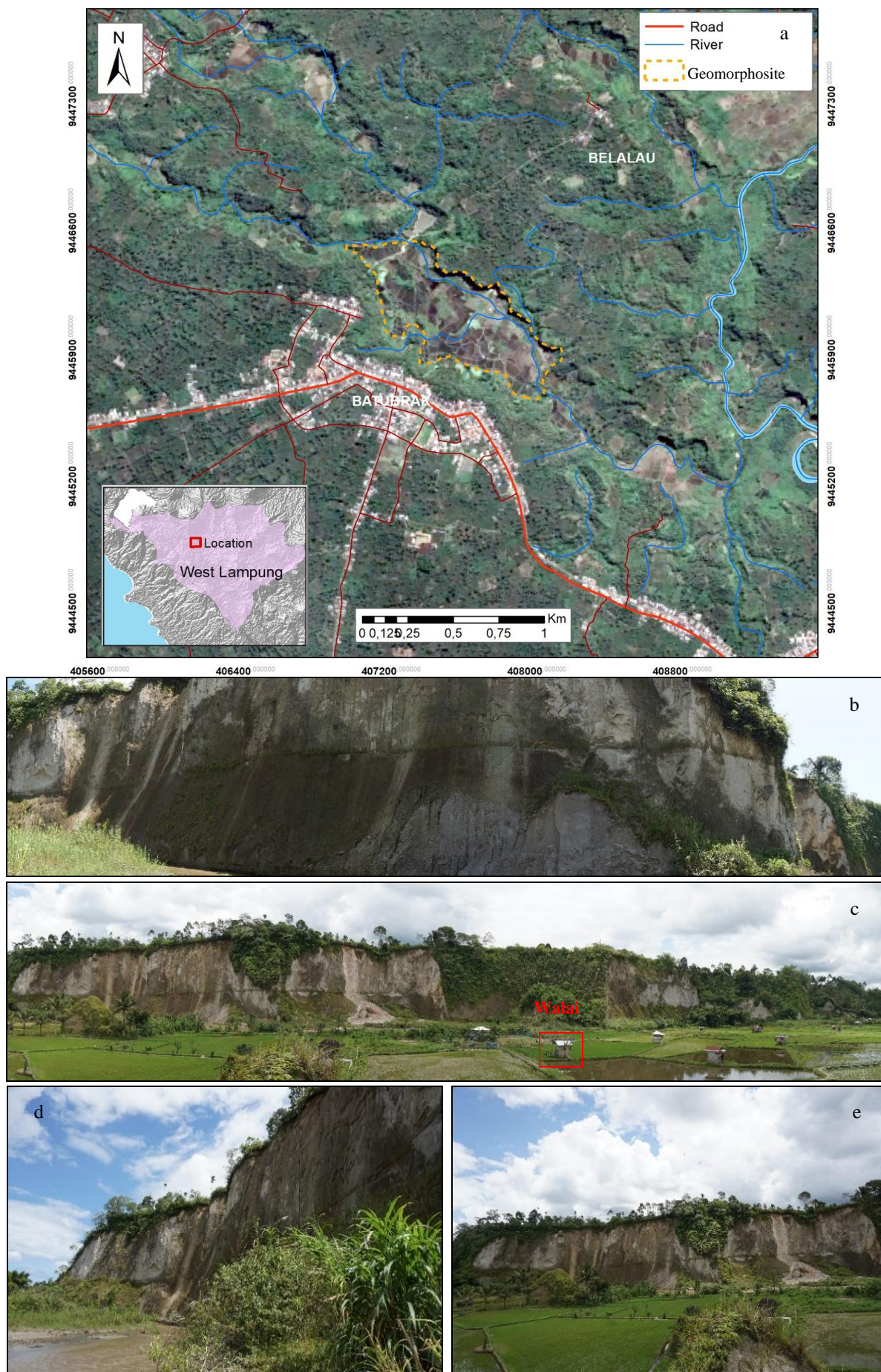


Figure 4. The Great Sumatran Fault depression at Pekon Balak, Batubrak District (a-e). a. geomorphosite location; b. cliff morphology; c. The Great Sumatran Fault depression panorama and ‘walai’; d. exogenous activity by Semangka river water erosion; e. paddy farming around fault depression

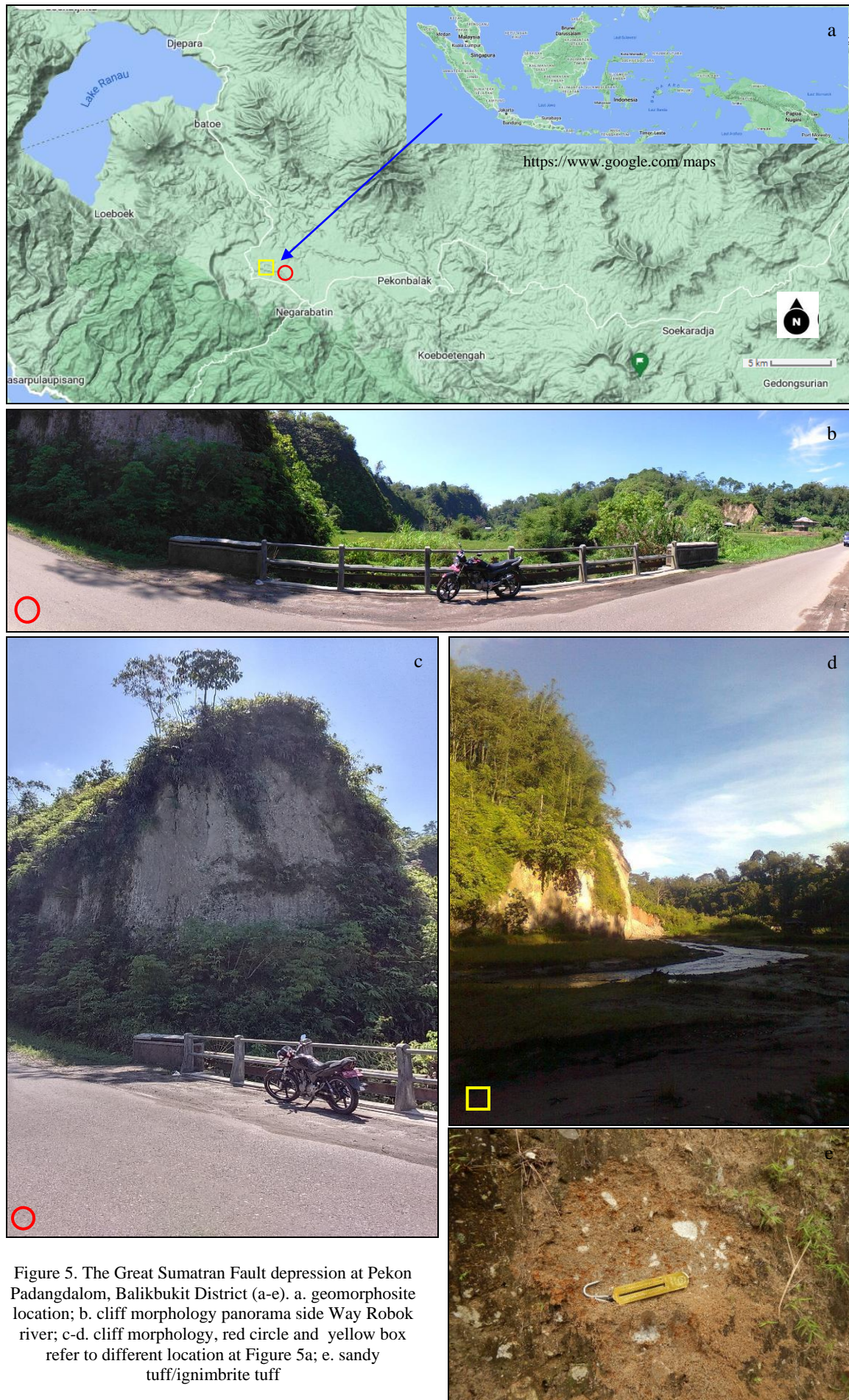


Figure 5. The Great Sumatran Fault depression at Pekon Padangdalom, Balikkbukit District (a-e). a. geomorphosite location; b. cliff morphology panorama side Way Robok river; c-d. cliff morphology, red circle and yellow box refer to different location at Figure 5a; e. sandy tuff/ignimbrite tuff

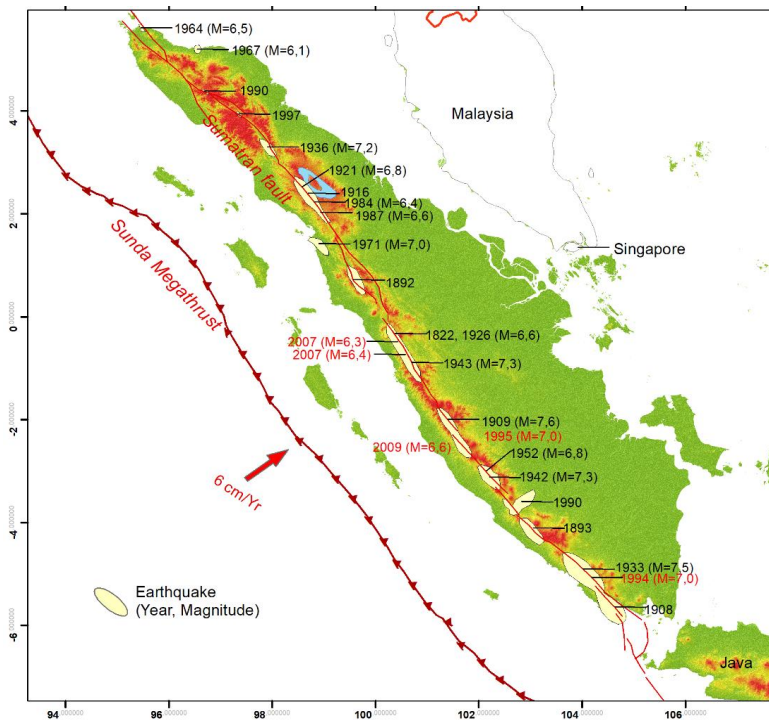


Figure 6. The Great Sumatran Fault earthquake history (Source: Natawidjaja and Triyoso, 2007)

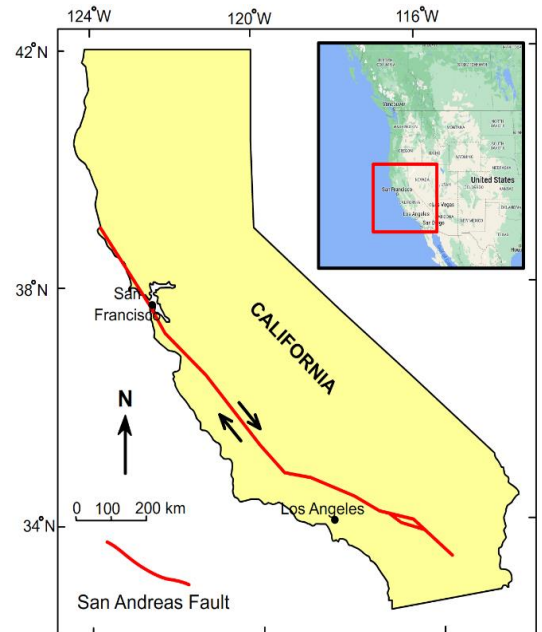


Figure 7. San Andreas fault (Source: Lynch, 2009)

The following are some of the major earthquakes with epicenters on the Great Sumatran Fault (<https://earthquake.usgs.gov/earthquakes/> last visited on 01.02.2023): Padang Panjang earthquakes of 1926, measuring 6.6 and 6.4, killed at least 411 people. The 1933 Liwa earthquake, an Mw 7.5 event in southern Sumatra, more than 76 people were killed, and two towns were destroyed. On June 8 and 9, 1943, the Alahan Panjang earthquakes, with moment magnitudes of 7.3 and 7.5, occurred within 7 hours of each other southeast of Lake Singkarak.

The 7.0 Mw Liwa earthquake in 1994 killed 207 people near Sumatra's southern tip. The 1995 Kerinci earthquake, with a moment magnitude of 7, killed at least 84 people and injured 1,868 others. Sumatra earthquakes in March 2007, two hours apart with moment magnitudes of 6.4 and 6.3 northeast of Lake Singkarak. The 2022 Sumatra earthquake, measuring 6.2 on the Richter scale, damaged dozens of infrastructure and killed six people while injuring 32 others.

It was felt in Malaysia and Singapore. The incident along the Great Sumatran Fault is not the first of its kind in the world. The San Andreas Fault in California, as well as the Chelongpu Fault in Taiwan and the Nojima Fault in Japan, have all caused large destructive earthquakes. The takeaway from all of this is that the area was turned into a conservation area to remind and raise awareness. The San Andreas Fault is a transform fault that connects the Pacific and North American plates (Lynch, 2009). From Cape Mendocino to the Mexican border, it divides California in half. The Pacific Plate includes San Diego, Los Angeles, and Big Sur, while the North American Plate includes San Francisco, Sacramento, and the Sierra Nevada (Wallace, 1990; Gizzi, 2015; Scharer and Streig, 2019) (Figure 7).

In the past, the San Andreas Fault has been the site of some significant earthquakes (<https://earthquake.usgs.gov/earthquakes/>, accessed on 01.02.2023): The moment magnitude of the 1857 Fort Tejon earthquake was 7.9, and two people were killed. At least 3,000 people were killed in the 1906 San Francisco earthquake, the large number of victims was also due to fires after the earthquake; the magnitude was estimated to be 7.8. The 1957 San Francisco earthquake had a magnitude of 5.7 and was located in the ocean west of San Francisco and Daly City on the San Andreas fault. The 1989 Loma Prieta earthquake killed 63 people and caused moderate damage in certain vulnerable areas of the San Francisco Bay Area; the moment magnitude was approximately 6.9. On September 28, 2004, a magnitude 6.0 earthquake struck the Parkfield area, and it was felt throughout the state, including the San Francisco Bay Area.

Can easily reveal the existence of the San Andreas fault. From the air, the linear arrangement of lakes, bays, and valleys around the fault is striking. Faults can be identified in the field by carefully inspecting the landscape. The San Andreas fault is often a stunning natural landscape, especially in places like Wallace Creek, Tomales Bay, and the area near Devil's Punchbowl, but the fault's symbolism as the edge where two great tectonic plates meet adds a mystical element to each visit. It's like climbing a chasm through which new worlds will emerge (DiPietro, 2013; 2018). According to various sources, those features are unique and serve specific geotourism functions. Along with the reviews, they created a tour package called A Guide to Earthquake Tourism Along the San Andreas Fault (Hemmerlein, 2015).

On September 21, 1999, at 1:47 a.m., Taiwan experienced one of the worst natural disasters in its history: a 7.3-magnitude earthquake that devastated the island's center. The movement of the Chelungpu fault was responsible for the occurrence (Mori et al., 2003; Chen et al., 2004) (Figure 8). The Chelungpu Fault ripped through Wufeng District, Taiwan, destroying nearly all of the school buildings (http://www.nmns.edu.tw/nmns_eng/04exhibit/permanent/Chelungpu.htm accessed on 02.02.2023). The incident was then documented and preserved in a museum. The 921 earthquake museum in

Taiwan's Wufeng District preserved the damage caused by the Chi-Chi earthquake, such as collapsed infrastructures (school, buildings), fault rupture, and river terrace. Following the route of the visit, one can see how the fault passed through and how the land was deformed. The storyline of the Chi-Chi earthquake connected the five separate exhibition halls altogether (Keeling, 2011; Li et al., 2019). The exhibition halls were built around the geological changes, the wrecked landscape, and the impaired structures. Thus museums serve as valuable teaching resources for the natural sciences.

The Nojima Fault in Japan is another example of a geotourism fault zone (Nishiwaki et al., 2018) (Figure 9). They turned the fault zone into a museum (Nojima Fault Preservation Museum). The museum houses memorials and evidence of fault movement during The Great Hanshin Earthquake, also known as the Kobe earthquake (<https://www.nojima-danso.co.jp/>, accessed on February 2, 2023). This occurrence occurred on January 17, 1995, in the southern part of Hyogo Prefecture, Japan, including the Hanshin region. It had a moment magnitude of 6.9 and a maximum intensity of 7 on the JMA Seismic Intensity Scale (XI-XII on the Modified Mercalli Intensity Scale).

The epicenter of the earthquake was 17 kilometers beneath the surface of Awaji Island, 20 kilometers from the center of Kobe. This earthquake killed approximately 6,434 people, approximately 4,600 of whom were from Kobe. Kobe, with a population of 1.5 million, was the closest major city to the epicenter and experienced the strongest tremors (Mizoguchi et al., 2008; Lockner et al., 2009; Nishiwaki et al., 2018). The Great Hanshin-Awaji Earthquake occurred more than 25 years ago, and memories of the disaster are gradually fading. If you forget, the disaster will happen again. We would like you to avoid that as a disaster victim, as a disaster-stricken area. I don't want you to squander your irreplaceable life or make an irreplaceable sacrifice for future generations (<https://www.nojima-danso.co.jp/>, accessed February 2, 2023). That concludes the Museum manager's message. They remind us that life must continue.

In their paper, Muslim et al (2022) stated that the study area has a geodiversity value of 347.02. This value combines scientific value (103.27), education (68.75), tourism (80), and degradation risk (95). This implies that the study area has a high added and selling value as a geotourism site, specifically geohazard tourism.

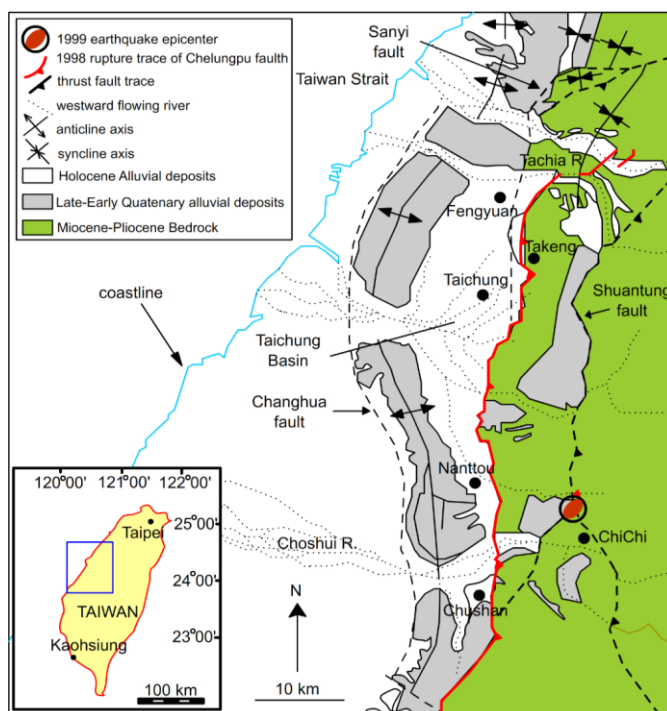


Figure 8. The Chelungpu fault, Taiwan (Source: Mori et al., 2003; Chen et al., 2004)

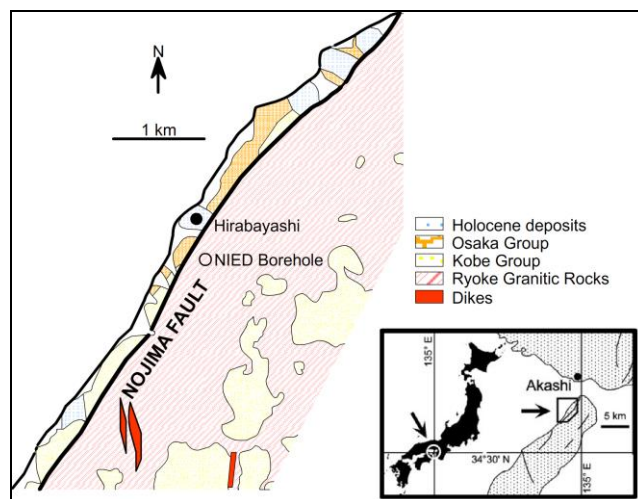


Figure 9. Nojima fault in Japan (Source: Nishiwaki et al., 2018)

Reflecting on the above review, the Great Sumatra Fault depression geomorphosite deserves to be a site in geotourism. The functions carried out by the site can be in the form of tourism functions, environmental, and disaster education functions, as well as spiritual functions (increasing gratitude and strengthening faith). Piacente (2005); Panizza and Piacente (2008); Kubalíková and

Kirchner (2016); Reynard and Coratza (2016); Ilies et al. (2017); Barbalata and Comanescu (2021); AbdelMaksoud et al. (2022) in their paper stated that Lesser-known regional geomorphosites (for example, study areas) can be used as a source of geotourism activities that can help local communities by supporting economic development. This is possible due to the educational and environmental conservation value of the location.

Through geotourism the Great Sumatra Fault depression geomorphosite, people and visitors will be better able to live side by side in harmony with nature. The site will increase the awareness of local people and visitors that the earth has a history, moves and breathes, and has order. This will increase the resilience of the community and visitors to disasters. On the other hand, the public and visitors will be presented with exotic natural scenery. They can rest and calm their souls for a moment from the bustle and routine.

Of course, all of the above will work and be implemented properly if the Regional Government and the local community cooperate well. Fulfillment of local creative economy and information centers, geo-interpreters/tour guides, halfway houses, publications, and documentation is absolute. Given the field conditions, the first thing to consider for construction and development is the road from the West Lampung road to the two sites. The first site is 500 meters long in

Pekon Balak, and the second site is + 1 km long in Pekon Padangdalom. Information centers are another type of infrastructure that must be built. This infrastructure can be built and developed in hotels located throughout West Lampung, as well as in the Regional Government Complex, which includes a hawker center and a restaurant, and in Rest Areas located along the West Lampung road, such as the Jami' Aminatul Mosque rest area. West Lampung, Jannah, Sumberjaya. One more infrastructure that must be built is a ground interpreter. Interpreters should be trained so that they are proficient in popular geoscientific languages. This interpreter functions as the front guard in explaining West Lampung geotourism.

CONCLUSION

In the case of geotourism, initiatives have grown over time around two complementary approaches (geological and geographic). One result is a geomorphosite in the geohazard area. One of the areas is the Sumatran Great Fault depression geomorphosite. The area was formed due to the movement of the Sumatran fault which caused the 1908, 1933, and 1994 earthquakes. It is recognized that natural disasters have long-term consequences, and it is understood that rescue and rebuilding operations are undertaken to return life to normal as quickly as possible. In this context, recovery efforts are carried out with two objectives: rehabilitation and reconstruction.

Reconstruction was carried out to meet the need for shelter and water. While rehabilitation is carried out to overcome psychological trauma. However, in the case of a major disaster, which involves substantial changes in the shape of the land over a large area, such as: a volcanic eruption, large landslide, or surface rupture, then this effort may not be feasible. Situations like these can be used as opportunities to enhance learning about the relationships between people, land use, natural processes, and large-scale events by providing real-life examples.

This can be packaged into the form of geohazard tourism. Of course, it is dependent on the willingness of the local community and stakeholders to seize opportunities that will benefit the area in the future.

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TOURIST PERCEPTION OF THE „NIGHT OF THE MUSEUMS” EVENT. CASE STUDY IN ORADEA MUNICIPALITY, ROMANIA

Grigore Vasile HERMAN 

Department of Geography, Tourism and Territorial Planning - CSAT, Faculty of Geography,
Tourism and Sport, University of Oradea, Oradea, Romania, e-mail: gherman@uoradea.ro

Tudor CACIORA 

Department of Geography, Tourism and Territorial Planning - CSAT, Faculty of Geography,
Tourism and Sport, University of Oradea, 410087 Oradea, Romania e-mail: tudor.caciora@yahoo.com

Vasile GRAMA 

Department of Geography, Tourism and Territorial Planning - CSAT, Faculty of Geography,
Tourism and Sport, University of Oradea, 410087 Oradea, Romania, e-mail: vasile.grama2014@gmail.com

Stefan BAIAS 

Department of Geography, Tourism and Territorial Planning - CSAT, Faculty of Geography,
Tourism and Sport, University of Oradea, 410087 Oradea, Romania, e-mail: sbaias@uoradea.ro

Martha Omara Robert BEATÓN 

Facultad de Turismo, Universidad de La Habana, La Habana, Cuba, e-mail: omara.robert73@gmail.com

Isobel GREEN 

Department of Hospitality and Tourism, Faculty of Commerce, Human Sciences
and Education, Namibia University of Science and Technology, Windhoek, Namibia, e-mail: igreen@nust.na

Thowayeb H. HASSAN* 

Department of Social Studies, College of Arts, Al Ahsa, King Faisal University, Saudi Arabia; Faculty of Tourism
and Hotel Management, Tourism Studies Department, Helwan University, Cairo, Egypt, e-mail: thassan@kfu.edu.sa

Gheorghe Codrut BULZ 

Department of Physical Education, Sport and Kinetotherapy, Tourism and Territorial Planning, Faculty
of Geography, Tourism and Sport, University of Oradea, Oradea, Romania, e-mail: bulz.codrut@gmail.com

Hanitra Sylvia ANDRIAMAMPINANINA 

Faculté des Lettres et des Sciences humaines, Université de Toliara, Republique de Madagascar, e-mail: hanitramampianina@yahoo.fr

Maria GOZNER 

Department of Geography, Tourism and Territorial Planning - CSAT, Faculty of Geography,
Tourism and Sport, University of Oradea, Oradea, Romania, e-mail: mariagozner@yahoo.com

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Abstract: Cultural events have a significant influence on the local economy. Cultural festivals can attract tourists, extend the tourist season and add vitality to a city. However, there is relatively little research on how festivals influence a destination's tourist experience or outcomes, such as satisfaction. The main objective of this study is to evaluate the tourist perception of the participants on the Night of the Museums event held in Oradea municipality, Bihor County, Romania, assuming that a good tourist perception among the population can represent an element of identity for a destination, thus contributing to the increase of its capacity to attract tourists. The results emphasize the positive effects at the socio-cultural level. The festival provides multiple possibilities to spend free time in a pleasant way, it sustains the development of cultural life, and it improves the educational and the cultural level of community.

Key words: cultural event, cultural tourism, museum, tourist perception

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* Corresponding author

INTRODUCTION

The night of the museums is a particularly complex event that was initiated for the first time in 1997, in Berlin under the name “Lange Nacht der Museen” – Long Night of the Museums Bjeljac et al., 2011). A reissue of this event took place two years later in Paris, under the name “Le Printemps des Musées” - The Spring of the Museums (International Council of Museums, 2014). Ever since, the “Night of the Museums” event has expanded in space so that it is currently a European event that takes place every year on May 14. Numerous institutions contribute to its organization: museums, churches, town halls, cultural associations, etc.

This event involves free access of the population and is addressed especially to young families with children.

The success of such event from one edition to another can be explained in view of the population’s need for cultural activities, leisure (Stephen, 2001; Easson and Leask, 2020) and the significance, respectively the functions and the roles performed by the museum institution in society (Ilies et al., 2014, 2021, 2022; Deffener et al., 2009). Thus, museums are: time capsules with an instructive-educational role; bridges between generations; silent witnesses of times gone by; informative sources regarding past, present and future; sources of inspiration and comfort; useful tools in cultivating and strengthening feelings of attachment to the values of humanity, belonging to a social group; instruments of manipulation and mass control, with a role in strengthening nationalist feelings; factors generating tourist motivation; forms of diversification of the tourist offer with a role in extending the duration of stay in a destination; forms of conservation and superior capitalization of the material and intangible cultural heritage etc. (Hamnett and Shoval, 2003; Gulyás, 2009; Westervelt, 2010; Herman, 2020a; Gozner et al., 2017, 2021; Berdenov et al., 2021; Ilieș et al., 2020, 2021).

In Romania the tradition of organizing the Night of the Museums event dates to 2005 (Dumbrăveanu et al., 2014). In 2022, the 18th edition of the Night of the Museums in Romania was held in 210 locations, from 87 localities, respectively 40 counties (Herman et al., 2023). Bihor county has been organizing this event since 2005. In 2022, the Night of the Museums was organized in 19 locations in 2 localities, Salonta and Oradea (<https://noapteamuzeelor.org/>). Among these, Oradea municipality stood out by organizing the event in 18 locations, which was attended by numerous state and cultural institutions as well as 24,730 participants (Herman et al., 2023).

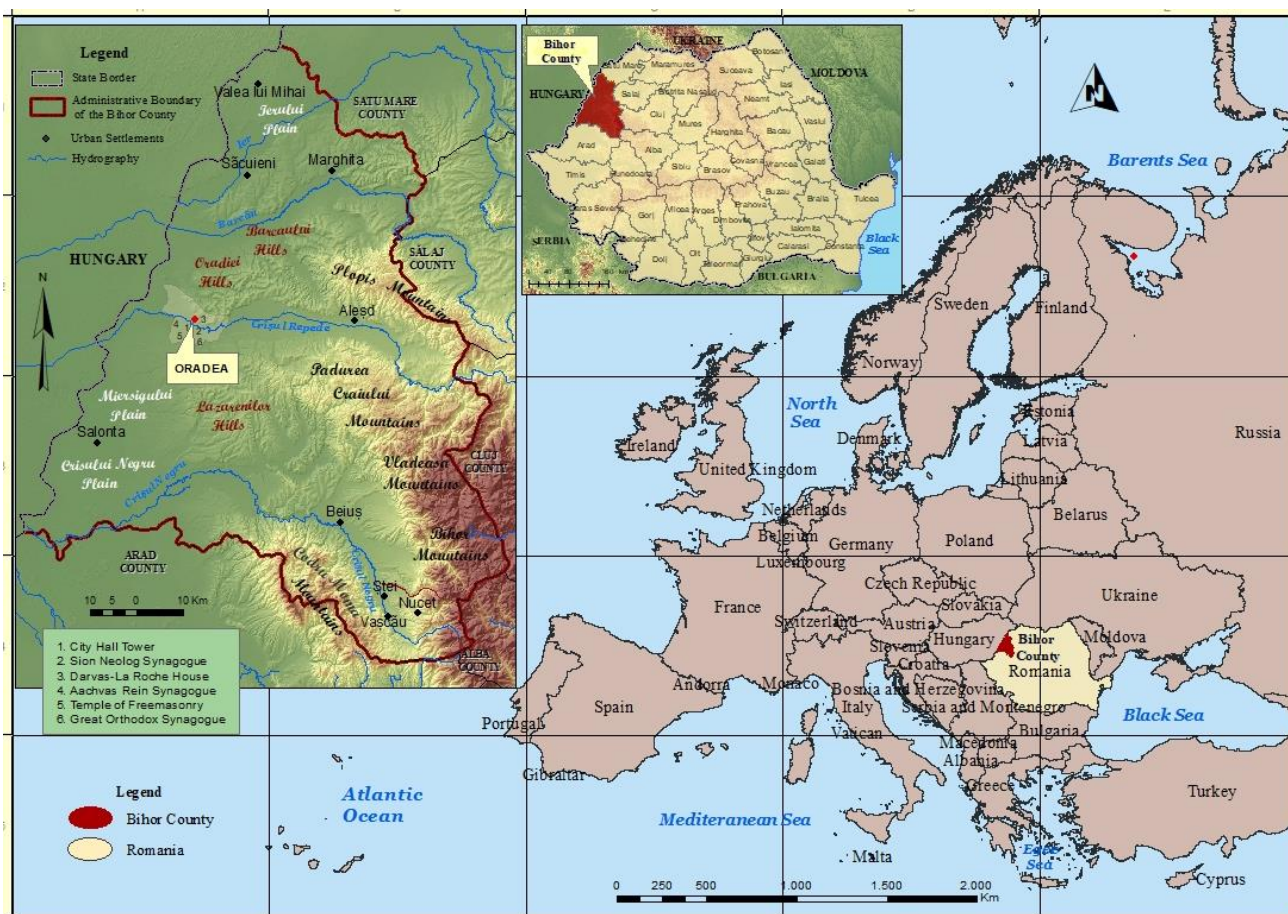


Figure 1. Lands and areas Oradea - Bihor and the location on the territory of Romania and Europe

In this context, the purpose of this study is to evaluate the tourist perception of the participants on the Night of the Museums event held in Oradea municipality, Bihor County, Romania. Oradea is the converging pole of one of the most emerging tourist destinations in Romania, located on its northwestern border, in the proximity of the Romanian-Hungarian cross-border area, at the contact between the Pannonian Plain and the Carpathian Mountains, in the Crișul Repede river basin, right tributary of the Tisa River (Herman et al., 2020b).

The working hypothesis from which the present study started was that a good tourist perception among the population participating in the Night of the Museums event can represent an element of identity for a destination, thus contributing to the increase of its capacity to attract tourists.

The research questions that prevailed were: What is the perception of the participating population regarding the Night of the Museums event? Are there any swings in the perception of the event induced by the socio-demographic characteristics? Are there correlations between the event and tourism? Please note that the results and responses are within the limits of the information obtained by means of the survey method.

RESEARCH METHODOLOGY

In order to obtain the data necessary to carry out this study, the method of sociological survey based on a questionnaire was used (Bryman, 2012; Chelcea, 2007; Herman et al., 2023). This questionnaire was applied on May 14, 2022, in six locations (City Hall Tower, Sion Neolog Synagogue, Darvas-La Roche House, Aachvas Rein Synagogue, Temple of Freemasonry, Great Orthodox Synagogue) in Oradea, Bihor County, Romania (Figure 1).

The methodology used involved consulting 129 people through the questionnaire method on “Perception of the participating population regarding the Night of the Museums”.

In terms of structure, the questionnaire consisted of five items with reference to: degree of awareness, motivation for participation, perception regarding the role, importance and usefulness (from a cultural, economic, tourist and social perspective) of the Night of the Museums event.

Also, within the questionnaire, socio-demographic data relevant to tourism were included, namely the respondents’ nationality, gender, age, level of completed studies and residence.

The analysis of the responding participants highlighted the ratio of Romanians (69.8%), followed by Hungarians (29.5%) and other ethnicities (0.7%). Female was the predominant gender of the respondents (54.2%). The distribution of respondents by age groups showed us people predominance between 21-30 years old (50.4%), followed by the age groups ranging 17-20 years old (17.8%), 31-40 years old (17.8%), 41-50 years (9.3%), 51-60 years (3.9%) and over 61 years (0.8%). Regarding the level of completed studies, the ratio of people with higher education was noted (54.3%, 47.3 with university degree, 7% with postgraduate degree), while 45.7% benefit from secondary education (44.2% high school, 1.6% middle school) (Table 1). The analysis of the respondents in terms of residence revealed that they resided in 10 counties, respectively 39 localities in Romania.

Table 1. The socio-demographic profile of the respondents

Characteristics	Variables	Number of Respondents (N = 129)	% of Respondents
Gender	Female	70.0	54.3
	Male	59.0	45.7
Education	High school	59.0	45.7
	University degree	61.0	47.3
	Postgraduate degree	9.0	7.0
Age	17–20 years	23.0	17.8
	21–30 years	65.0	50.4
	31–40 years	23.0	17.8
	41–50 years	12.0	9.3
	51–60 years	5.0	3.9
	>61 years	1.0	0.8
Ethnicity	Romanian	90.0	69.8
	Hungarian	39.0	30.2
Residence	Rural	42.0	32.6
	Urban	87.0	67.4

RESULTS AND DISCUSSIONS

Tourist perception of the event “Night of the Museums”

In terms of methodology, in the quantification of the tourist perception regarding the Night of the Museums event in Oradea, Bihor County, Romania, the maximum results were used, compared to the value of the entire consulted specimen (129 people), expressed in percentage (%), regarding the degree of awareness, the motivation for participation, the perception of the role/importance and usefulness of the Night of the Museums event. Based on these percentage values, a value scale was drawn up regarding the perception of the Night of the Museums event, ranging between 0% and 25% (very weak); 26% and 50% (weak); 51% and 75% (good); 76% and 100% (very good) (Table 2, Herman et al., 2021a, 2022a).

Tourist perception is a process of awareness and understanding the tourist reality by the participants in the tourist act as a result of the experiences and feelings they had due to tourism activity in various destinations (Petrosillo et al., 2007; Linc et al., 2017, 2019; He et al., 2020; Stasac et al., 2020; Erul and Woosnam, 2021; Filimon et al., 2021; Kim et al., 2023).

Considering that the Night of the Museums event can be a tourist motivational factor, having a role in diversifying the way of spending time and in extending the duration of the tourist act, the awareness of the tourist perception represents an important strategic tourist objective in establishing the organizational strategy of the subsequent editions, from the years to come. The results obtained showed a good perception (75.6%, good), which originated from the degree of awareness

(53.88%, good), the motivation for people’s participation (40.8%, weak), the importance (96.1%, very good) and usefulness of the event “the Night of the Museums” (94.4%, very good) (Table 2).

The degree of awareness has been the object of numerous scientific concerns, among which the ones carried out by Herman et coll., from the year 2021, 2022b concerning the awareness of two tourist destinations in Bihor County (the mountain destination Pădurea Craiului Mountains and the spa destination Băile Felix-Băile 1 Mai) and one in Alba County (Arieșeni tourist destination). In this study, the degree of awareness of the Night of the Museums event among the participants was good (53.88%). Poor awareness of the event from the past experiences of participating at previous editions has contributed to this fact (44.19%, weak). The share of respondents who participated for the first time in this event was 55.81%. However, 63.57% of them have stated that they know the role and importance of the event they took part in (Table 2). Making use of awareness is an essential component in shaping the perception on the Night of the Museums event which derives from the experience gained from the previous participations of the interviewees and from collecting information and knowledge, in this way, about its economic, social and cultural significance. Capturing the degree of awareness is a prerequisite both in tourism (Deac et al., 2019; Herman et al., 2020b) and in establishing and evaluating the perception of the Night of the Museums event. Therefore, the main aspects targeted were the awareness of the event (by the people interviewed from the experience of taking part in previous editions) and its importance.

Table 2. Quantifying the perception of participants at the Night of the Museums event

N o.	Criteria used in perception assessment		Perception value				Perception value
			Very weak	Weak	Good	Very good	
			0% - 25%	26% - 50%	51% - 75%	76% - 100%	
1	The degree of awareness	1. The experience of participating in other editions of the event	-	44.19	-	-	Weak
2		5. Role and importance of the event	-	-	63.57	-	Good
107.8 / 2 = 53.88			-	44.19	63.57	-	Good
3	2. Motivation for participation	Curiosities	-	-	51.16	-	Good
4		Free of charge	-	31.78	-	-	Weak
5		Need for cultural activities	-	34.11	-	-	Weak
6		Spending free time in the most pleasant way	-	45.74	-	-	Weak
163.2 / 4 = 40.8			-	116.63	51.16	-	Weak
7	6. Role and importance of the Night of the Museums event	Instructive-educational	-	-	-	94.57	Very good
8		Promoting museums	-	-	-	99.22	Very good
9		It contributes to improving the image of the tourist destination	-	-	-	98.45	Very good
10		It contributes to increasing economic efficiency	-	-	-	91.47	Very good
11		It contributes to increasing social efficiency	-	-	-	96.90	Very good
480.6 / 5 = 96.1			-	-	-	480.6	Very good
12	4. Usefulness of the Night of the Museums event	Cultural	-	-	-	97.67	Very good
13		Economic	-	-	-	86.82	Very good
14		Tourist	-	-	-	97.67	Very good
15		Social	-	-	-	95.35	Very good
377.5 / 4 = 94.4			-	-	-	377.5	Very good
Total - 1133.6 / 15 = 75.6			-	160.8	114.7	858.1	Good

Motivation is a complex mechanism structured from people’s needs and desires with a direct impact on their behavior and actions (Stupariu, 2017; Stupariu and Morar, 2018; Tătar et al., 2018; Lee, and Kim, 2023: 34; Telbisz et al., 2023; Gaetjens et al., 2023). Studying the reasons (curiosity, free of charge, the need for cultural activities, spending free time in the most pleasant way) that led to the participation of the population in the Night of the Museums event was necessary from the perspective of substantiating the perception of this event at the participants’ level. The motivation of people to participate in the Night of the Museums event was weak (40.8%) (Table 2). This emerged from the percentage values obtained in terms of motive: curiosity (51.16%), free of charge (31.78%), the need for cultural activities (34.11%); spending free time in the most pleasant way (45.74%) (Table 2). We can observe that the reasons analyzed are those specific to the tourist activity, except for free of charge. Thus, the result is that for the population participating in the Night of the Museums event, the 2022 edition, tourist activity and tourism are not a priority. This is justified by the membership of the participants in Oradea Destination, which is one of the most emerging tourist destinations in Romania.

In order to identify and quantify the responders’ perception on the role and significance of the event “Night of the Museums” from a tourist perspective, which took place in Oradea Municipality, Bihor County, Romania, five tourist functions achieved by this event were analyzed: instructive-educational (94.57%); promotion (99.22%); improving the image of the tourist destination (98.45%); increase of economic efficiency (91.47%); increase of social efficiency (96.90%). The results obtained highlighted a very good perception (96.1%) regarding the role and significance of the Night of the Museums event in terms of the previously mentioned tourist functions (Table 2). The perception of the usefulness of the event “Night of the Museums” among the participants was very good (94.4%, very good), given the usefulness of the event from a cultural perspective (97.67%, very good); economic approach (86.82%, very good); tourist (97.67%, very good) and social (95.35%, very good) approach (Table 2). We mention that all these fields are also specific to tourism.

Tourist perception according to the main socio-demographic characteristics

In establishing the tourist perception, the following socio-demographic characteristics were used: gender, level of education, age of the interviewed persons, residence and ethnicity (Nunkoo and Gursoy, 2012; Huh and Vogt, 2008; Kuvan and Akan, 2005; Almeida-García et al., 2016; Aksöz and Çay, 2022; Gross et al., 2023; Vasiljević et al., 2023). It should be noted that the share of the tourist perception was calculated according to the number of people interviewed for each socio-demographic characteristic. The value of the tourist perception was given by the ratio between the sum of the characteristics The degree of awareness, The motivation for participation, The role and importance of the Night of the Museums event, The usefulness of the Night of the Museums event. Gender is an important feature that induces some changes in the structure of the population generally and in terms of tourist perception. The consultation of the target group (70 female, 59 male) resulted in a difference in perception of 2.11% between the two typological categories, so female have a better perception (72.04%, good) compared to male (70.29%, good) (Table 3).

The level of education is an excellent filter in relation to people’s predisposition to participate in cultural events and how they are perceived on an individual level. From the analysis of the perception of the interviewed persons according to the level of education, it emerged the existence of a good perception in persons with university degree (74.18%, good), followed by those with secondary education (69.79%, good) and postgraduate degree (61.25%, good) (Table 3).

The age of people was another variable taken into consideration while drafting the perception analysis, with results highlighting the following hierarchical order: >61 years (81.25%, very good), 51–60 years (76.25%, very good), 21–30 years (74.56%, good), 31–40 years (69.68%, good), 41–50 years (67.31%, good), and 17–20 years (66.47%, good) (Table 3).

As for the tourist perception of the Night of the Museums event according to the residence, a better perception was found in the urban environment (71.5%, good) compared to the rural one (70.81%, good). Ethnicity underlined the existence of significant differences between Hungarians (74.84%, good) and Romanians (69.73%, good) (Table 3).

Table 3. Tourist perception according to the main socio-demographic characteristics

Characteristics	Variables	Number of Respondents	The degree of awareness	Motivation for participation	Role and importance of the Night of the Museums event	Usefulness of the Night of the Museums event	Perception
Gender	Female	70	56.43	41.07	96	94.64	72.04
	Male	59	50.58	40.25	96.27	94.07	70.29
Education	High school	59	45.76	38.98	98.64	95.76	69.79
	University degree	61	60.66	43.44	96.72	95.9	74.18
	Postgraduate degree	9	61.11	33.33	75.56	75	61.25
Age	17–20 years	23	39.13	33.7	97.39	95.65	66.47
	21–30 years	65	56.15	46.15	99.38	96.54	74.56
	31–40 years	23	54.35	35.87	93.91	94.57	69.68
	41–50 years	12	54.17	39.58	78.33	97.17	67.31
	51–60 years	5	80	30	100	95	76.25
	>61 years	1	100	25	100	100	81.25
Residence	Rural	42	47.62	43.45	98.1	94.05	70.81
	Urban	87	56.9	39.37	95.17	94.54	71.5
Ethnicity	Romanians	90	50	40.56	95.56	92.78	69.73
	Hungarians	39	62.82	41.03	97.44	98.08	74.84
			58.38	38.12	94.56	94.25	71.33

Relation between the Night of the Museums and tourism

A relevant indicator in highlighting the relation between the Night of the Museums event and tourism is the analysis of the place of residence of the participants consulted during this event. Thus, it can be noted that 54.4% of them had their residence in Oradea, the remaining 49.6% residing outside the host city of Oradea.

However, this percentage presents a certain subjectivity because it incorporates a large ratio (65.6%) of the event participants who lived in Bihor County and who did not spend the night in the city, returning home at the end of the day. The participants ratio from outside Oradea who lived in other counties, participating in the event as tourists was 34.4%, respectively 17.05% (22 people from nine counties in Romania) of the total number of participants consulted on knowing the perception of the Night of the Museums event (Figure 2).

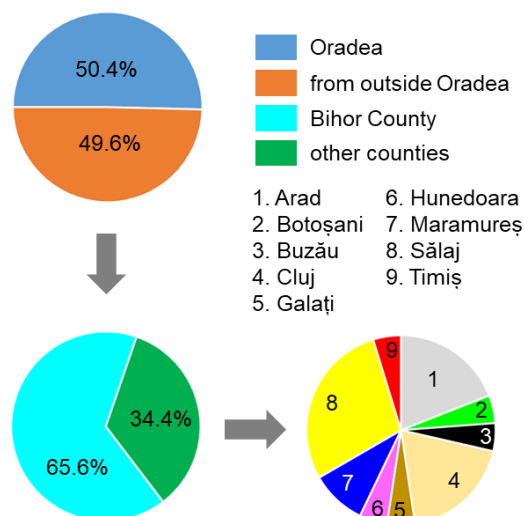


Figure 2. Analysis of the participants to the Night of the Museums event according to the place of residence

CONCLUSIONS

The Night of the Museums, due to the scale of the organizing institutions, the number of locations where it takes place and the number of mobilized participants, is one of the most important and representative cultural events related to Oradea tourist destination. Held annually on May 14, it benefits from excellent weather conditions facilitating the movement of the population from one objective to another. The perception of the event among the participating population was good (75.6%), based on the degree of awareness, the motivation for people to participate, the importance and usefulness of the Night of the Museums event (Table 2). The analysis of perception depending on the main socio-demographic categories revealed some perception swings according to gender, level of education, age of people, residence and ethnicity. The biggest differences in perception were recorded for the age indicator, ranging between 81.25%, very good (>61 years) and 66.47%, good (17–20 years) (Table 3). Regarding the relation between the Night of the Museums event in Oradea municipality and tourism using as a defining indicator the residence of the interviewed persons, it resulted that 17.05% of the participants were tourists from nine counties in Romania (Figure 2).

Therefore, we can say that the Night of the Museums event held in Oradea municipality, against the background of a good perception among the participating population, including tourists, represents a significant motivational tourist factor with an important role in promoting, consolidating and diversifying the local tourist offer.

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PROSPECTS FOR DEVELOPING WINTER TOURISM IN THE KARKARALY MOUNTAINS, KAZAKHSTAN

Yerlan KEUKENOV 

L.N. Gumilyov Eurasian National University, Faculty of Natural Sciences, Nur-Sultan, Republic of Kazakhstan, e-mail: komorymoroni@mail.ru

Kulchikhan DZHANALEEVA 

L.N. Gumilyov Eurasian National University, Faculty of Natural Sciences, Nur-Sultan, Republic of Kazakhstan, e-mail: dzhanaleyeva_km@enu.kz

Abilgazi KURBANIYAZOV 

International University of Tourism and Hospitality, Turkestan, Republic of Kazakhstan
Khoja Akhmet Yassawi International Kazakh-Turkish University, Turkestan, Republic of Kazakhstan, e-mail: abilgazi@mail.ru

Nurzhanat SHAKIROVA 

Abai Kazakh National Pedagogical University, Almaty, Republic of Kazakhstan, e-mail: shakir.nur83@gmail.com

Kulzira ORAZYMBETOVA 

Al-Farabi Kazakh National University, Faculty of Geography, Almaty, Republic of Kazakhstan, e-mail: orazymbetova62@mail.ru

Zharas BERDENOV 

L.N. Gumilyov Eurasian National University, Faculty of Natural Sciences, Nur-Sultan, Republic of Kazakhstan, e-mail: berdenov-z@mail.ru

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Abstract: The paper considers the prospects for developing winter tourism in the Karkaraly mountains on the basis of the identification of the tourist destination potential, the search for management approaches and social and economic measures to stimulate it. The relevance of the paper is to reduce the seasonality factor through the winter tourism development in the geosystems of the Karkaraly mountains. The purpose of the article is to identify the tourism potential and promising areas for the winter tourism development. The research results can be used to implement standard recommendations for effective planning in the recreation and tourism industry, including winter tourism at the regional level and the analysis of its contribution to economic development in the short-, medium- and long term. Research methods include field, descriptive and cartographic methods. Conclusions are made about the prospects for the winter tourism in the territory of the Karkaraly mountains. Based on the stock materials, the winter route was identified, as a result of which a map of the three-day route was developed.

Key words: winter tourism, environment, infrastructure, landscape, geosystem, biodiversity, eco-route

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INTRODUCTION

The tourism industry is a significant factor in the economic growth of a number of countries and a strategy for increasing the wellbeing of residents by creating jobs, increasing income and reducing poverty. The development of the domestic tourism market in Kazakhstan's regions is based on both achievement and avoidance motivation.

Winter tourism is associated with seasonal sports, recreation, and activities that depend substantially on the sufficient snow cover. Many researchers have studied this type of tourism (Abegg, 2007; Breiling, 1999; Song, 2022; Tang, 2022). Winter tourism is "a specific tourism destination, which allows a tourist to engage in various sports, recreation and entertainment in the snow" (Hosseini, 2014). The development and growth of demand for it is associated with such factors as: increasing the level of professional skill, increasing demand for quality and strengthening the specialization of tourists, improving transport infrastructure. Domestic tourism in Central Kazakhstan has a distinct seasonal nature. Most of the tourist season falls in the warm season, which lasts from May to September-October. The off-season is characterized by a decline in demand and offer of tourist services, and quantitative and qualitative indicators of tourist activity are rather low in winter. Due to weather conditions, with the beginning of the winter season, some traditional tourism destinations in the region become unavailable, and the offer of ecological, rural and event tourism services decreases.

However, in the winter season tourist resources associated with winter sports, recreation and entertainment, certain types of extreme tourism become popular. Winter tours can include various forms of recreation, including ski slopes and slopes for training, snow tubing, skiing, skating, snowmobile and sleigh rides, horse and bike rides, winter fishing and hunting, New Year and Christmas celebrations, bathing in thermal springs. However, for national parks, the development of tourism, including winter tourism, is one of the key activities. Yet, the development of tourism in national parks requires infrastructure development (Gladilin, 2006). In general, the winter landscape of the Karkaraly State National Nature Park

* Corresponding author

(KSNRP), designed to preserve the biological and landscape diversity and to use unique natural complexes and objects of the State Natural Reserve Fund (SNRF) with special environmental, scientific, historical, cultural and recreational value, has ideal conditions for the successful development of ecotourism (Keukenov, 2022; Dmitriyev et al., 2022; Ozgeldinova et al., 2017; Iliys, 2017) for nature protection, environmental education, scientific, tourist, and recreational purposes.

Among the scientists who have researched tourism in the Republic of Kazakhstan, it is worth mentioning the works of B. Aktymbaeva, who conducted a step-by-step review of Kazakhstan's experience in tourism during the years of independence (Aktymbayeva et al., 2020). The article includes results of studying of the patterns of the profile distribution of the morphological, physico-chemical properties of soils and their transformation under the influence of the mining industry and urban loads. Beketova conducted ecological studies of recreational areas of Western Kazakhstan. The article includes results of studying of the patterns of the profile distribution of the morphological, physico-chemical properties of soils and their transformation under the influence of the mining industry and urban loads (Beketova et al., 2019). A special contribution was also made by Zh. Aliyeva, who evaluated the throughput capacity of the recreational zone of Ile-Alatau National Park, located in the south-eastern part of the country (Aliyeva et al., 2020; Berdenov, 2016). P. Allayarov analyzed the problems and prospects of sustainable tourism in Kazakhstan (Allayarov, 2018.). Akhmedenov conducted a comprehensive assessment of the potential and conditions for developing recreational tourism that uses therapeutic mud from saline lakes in Western Kazakhstan (Akhmedenov et al., 2021). As for the latest research, Zh. Mustafayev in his article studied tourism in Southern Kazakhstan and climate change trends. The article presents the scientific results of a study for assessing climate change trends in natural areas of the Turkestan region of the Republic of Kazakhstan based on the use of long-term climate data (1940-2020) of sixteen meteorological stations located in the region (Mustafayev, 2023). And K. Battakova considered the prospects for the development of tourism in the territory of Central Kazakhstan. This study examines the scientific and theoretical foundations of the concept of medical tourism, and current trends in its development in the Republic of Kazakhstan and within the territory of Central Kazakhstan, which is of great importance in improving the professional health of the population since Central Kazakhstan is the largest industrial center (Battakova, 2023).

MATERIALS AND METHODS

Literature data, materials of historical geobotanical studies of geosystems of the Karkaraly mountains (Gorchakovskiy, 1987), stock and published materials of republican and regional departments and institutions (Institute of Geography of the Republic of Kazakhstan, Republican State Enterprise "Management Department of Natural Resources and Regulation of Nature Use", etc.); data of the chronicle of nature for 2019-2020 were used.

Research methods include descriptive, cartographic and field methods (Figure 1.)

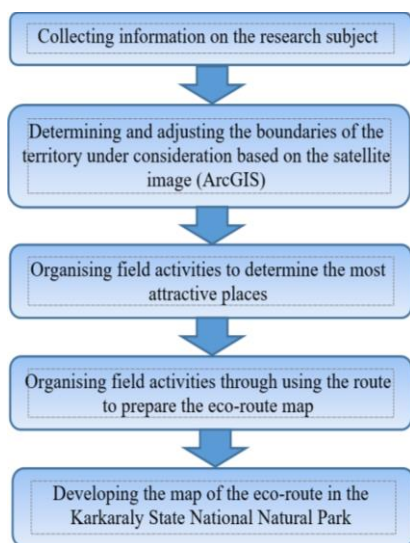


Figure 1. Research methods

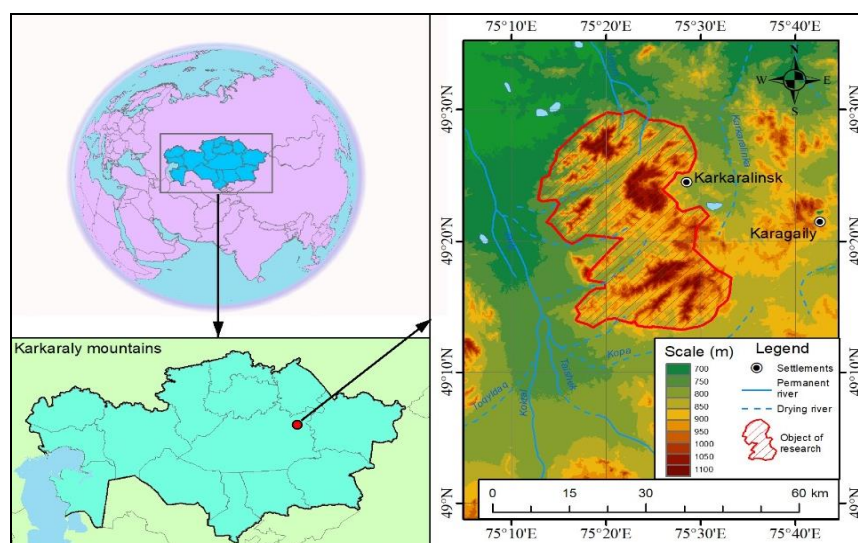


Figure 2. Location of the study area (compiled by the author in the ArcGIS program)

The geosystems of Karkaraly lowlands are located in Central Kazakhstan, in the south-eastern part of Karaganda region. The territory occupies the most elevated part of the Kazakh Upland – Sary-Arka. They represent a shallow low-lying terrain with isolated massifs of lowlands, extending from north and north-west to south-east for 30-35 km, with a width of 20-25 km. The mountains are one of the highest in Central Kazakhstan and consist of separate ridge mountains (Zhirensakal, Akterek, Myrzashoky, Karkaraly, Buguly, Koktyube, Shankoz). The highest peak is Komsomolsky with an altitude of 1,403 m above sea level, which is part of the southern ridge of Zhirensakal. Akterek, 1,230 meters above sea level, and Myrzashoky, 1,170 meters above sea level, are located to the south-east of this ridge. The Karkaraly ridge with a height up to 1115 m above sea level (which gave its name to the entire mountain and forest massif), Buguly ridge (1323 m above sea level) and the Shankoz ridge with a height up to 1360 m above sea level (Dzhanaleeva, 2010) are located to the north. The seven-summit Koktyube (1254 m above sea level) is located to the west. Karkaraly mountain and forest massif is divided by wide inter-mountain valleys Kendara, Kurozek, Karatoka and others and is abundant in fresh groundwater (Figure 2) (Keukenov, 2022). Natural and climatic zones are represented by steppe and semi-desert

landscape zones of the temperate zone. Chestnut and dark-chestnut soils prevail in the steppe landscape zone of the Karkaraly lowlands geosystems. High-altitude landscape zonality areas are apparent in the central parts. In terms of soil cover, granite lowlands differ significantly from the surrounding plain area. Dark-colored forest and mountain-forest sod-podzol soils occur under pine forests. In stream valleys, alluvial gleyey and forest-meadow soils occur under birch-aspen forests.

Forests are the main wealth of the mountains. The Karkaraly group of island pine forests is located in the southern part of the steppe zone in the dry fescue-grass steppe subzone. These preserved islets of forests are relics of the glacial period and the remains of vast forest massifs that stretched in a cooler and wetter period over a vast area from the Urals to the Altai. The park's flora includes a significant number of relic forest species: pine, aspen, bird cherry, raspberry, brambleberry, black currant, wood horsetail, wintergreen, wood bluegrass, etc (Dikareva and Leonova, 2014; Keukenov and Dzhanaleeva, 2021; Berdenov et al., 2021; Indrie et al., 2020). The climate here is sharply continental, with relatively comfortable summer temperatures and very cold winters. The wind regime is determined by general circulation processes and the orographic features of the area. The warm period is 3 to 4 months on average, mostly from mid-May to mid-September. During this period, comfortable and even hot weather is most frequent here. During the nighttime the air temperature is also comfortable and drops to chilly values only occasionally. The hottest month is July, with an average monthly air temperature of +18.0°C; during the daytime the temperature reaches +25.0°C, at night it drops to +10.3°C.

Winters are long, 5 to 6 months. Cold weather is set in October and ends only in late March. In December, January and February frosty and even very frosty weather is highly recurrent. Spring lasts 2 to 3 months, heat builds up from late March to mid-June, and the average daily air temperature steadily rises above 0°C at the end of March. In spring, cold weather prevails most often during the nighttime, and cool and sometimes comfortable weather is prevalent during the daytime.

Nighttime are characterized by cold and chilly weather, while daytime, occasionally, are characterized by comfortable weather. The average daily mean air temperature drops below 0°C in early November. The wind regime in the territory of the area under study is quite active. High wind speeds are recorded throughout the year, with wind speeds slightly lower only in the summer months and in September. At the same time, there is a sufficiently large number of windless days. Southern and south-western winds have the highest annual frequency of occurrence. The prevailing directions slightly change from winter to summer. In winter (with a probability of up to 47%) southern, south-eastern winds prevail. Summer is characterized by southern (18%), northern and north-western (16%) winds. Snow cover on the territory of geosystems is established in late November, and melts in mid-April *(Website of the Karkaraly National Natural Park).

RESULT AND DISCUSSION

Karkaralinsk is one of the most beautiful places in the region. Its main treasure is the unique, one-of-a-kind nature – the Karkaraly mountain and forest oasis, which is located in the Karkaraly State National Nature Park. The total area of the Karkaraly SNNP is 120.0 thousand hectares. Of these, 29.1 thousand hectares, i.e. 26% of the total area, are intended for tourist and recreational activities. For this reason, the State National Nature Park is perfectly suitable for the tourism development in the region. To develop regulated tourism and recreation in the national park, land plots with a total area of 146.6 ha were allocated for short- and long-term use for tourist and recreational purposes. 20 land plots (91.2 hectares) are provided for short-term use and 11 land plots (55.4 hectares) are provided for long-term use. It is planned to build tourist and recreation bases, campsites, catering facilities, etc. on the territory of these land plots. According to the Rules temporary facilities for the use of hiking trails and routes, bivouacs, tent camps, beaches, viewing platforms (retail outlets, catering facilities) can be located in these areas (Website of the Karkaraly National Natural Park).

Table 1. SWOT analysis

	Positive effect	Negative effect
Internal environment	Strengths: 1) location of the State National Nature Park in the district; 2) variety of cultural and historical monuments in the district; 3) economic prospects, growth of income and tendency to travel among consumers of domestic and foreign tourism in Karkaraly district; 4) comprehensive development of the tourism industry in Karkaraly district; 5) participation in EXPO 2017.	Weaknesses: 1) lack of qualified personnel from among local residents for developing ecological and rural tourism in the region (guides-translators, guides and service personnel); 2) sharply continental climate, low temperatures prevail most of the year, therefore, the season for some types of tourism is rather short; 3) remoteness of tourist sites and poor state of transport and logistics infrastructure, which complicates the accessibility of tourist sites in the region; 4) limited opportunities in the KSNNP territory.
External environment	Opportunities: 1) "Business Roadmap 2020" Unified Program; 2) establishment of interregional ties.	Threats: 1) financial crisis as a consequence of the decreased tourist flow; 2) natural and human-caused emergencies; 3) increase in tourist demand for outbound tourism to other regions.

To attract tourists to Karkaraly district and to introduce them to the national nature park, the nature museum and the aviary with wild animals continue their work. 11 tourist routes (trails) are approved in the national park, 6 of which are active tourist routes (4 hiking trails and 2 bus routes). The total length of tourist routes (trails) is 785.8 km. There are certificates for all routes (trails). Several projects are being implemented *(Website of the Karkaraly National Natural Park) to develop the tourism industry, such as:

- Construction of "Zholzhaksy" recreation center. Today, the recreation area can accommodate up to 90 people per day. The project initiator is Kent Service LLP. The infrastructure includes a two-storey cottage with two blocks with a total capacity of 20 people and a shared building with 24 rooms, 3 beds in each.

- Construction and opening of "Berloga" tourist complex in Karkaraly district on the territory of KSNNP. The project is implemented by Atlant Building KZ LLP. As of today, the first stage of construction is fully completed. Two buildings with a total capacity of 60 beds per day were constructed. 4 new jobs were created.

- Opening of "Assem" camp focused on ethno-tourism. Yurts for guests are installed on the rented land plot.

To ensure the comprehensive development of the city, the contribution of SMEs is necessary. This includes an increase in services, improvement of the service quality, etc. For this purpose, it is necessary to open entertainment centers, bowling alleys, billiard rooms, restaurants, etc. in Karkaralinsk. This will enable to increase the flow of tourists and holidaymakers to our region. The district is becoming more and more popular and attractive among holidaymakers. Ultimately, the task is to create the most favorable conditions for recreation and implement a set of measures for developing a tourist cluster in the district. The main objective is to create competitive tourist facilities in order to provide employment, stable growth of income of the state and the population by increasing the scope of inbound and domestic tourism.

As a result of the expedition research in 2021-2022, the optimal weekend route to the protected area of Karkaraly State National Nature Park (KSNNP) was identified. The program of the route is provided in Table 2 and Figure 3.

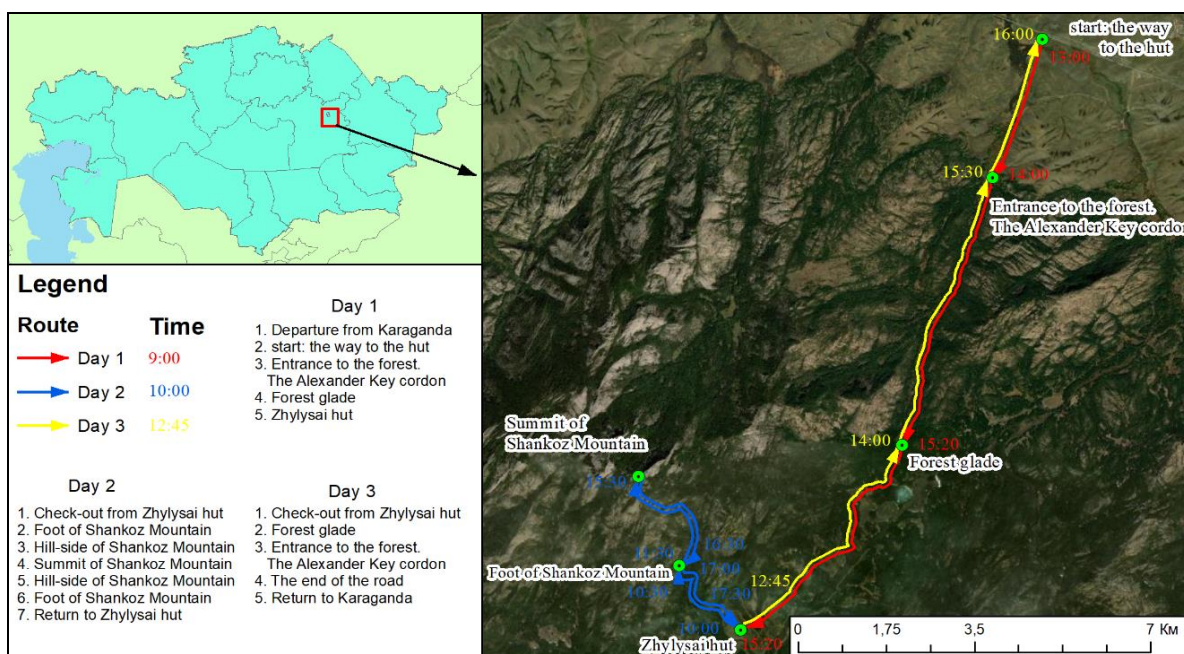


Figure 3. Map of the ecological route of the Karkaraly State National Natural Park (Source: developed by the author in ArcGIS, Photo taken from ArcGISonline)

The route was designed with the departure from the regional center, Karaganda, on February 23, 2022. The time to reach the tourist attractions (Figure 3, 4) was estimated with accommodation in the Zhylyssai hut. The route assumed recording the path on the GPS-navigator, and identifying campsites and attractive recreational areas (Table 2).

Table 2. The route to the Karkaraly State National Natural Park (KSNNP)

	№	Object	Time of stay	Length, m	Coordinates
Day 1	1	Departure from Karaganda	9:00		49.804826, 73.096554
	2	Start: the way to the hut	13:00	265200	49.498765, 75.409177
	3	Entrance to the forest. The Alexander Key cordon	14:00	2805	49.482196, 75.400317
	4	Forest glade	15:20	3503	49.450179, 75.384254
	5	Zhylyssai hut	17:00	3787	49.428012, 75.355435
Day 2	1	Check-out from Zhylyssai hut	10:00		49.428012, 75.355435
	2	Foot of Shankoz Mountain	10:30	1123	49.435764, 75.344479
	3	Hill-side of Shankoz Mountain	11:30	2123	49.435764, 75.344479
	4	Summit of Shankoz Mountain	15:30	1658	49.446443, 75.337194
	5	Hill-side of Shankoz Mountain	16:30	1658	49.435764, 75.344479
	6	Foot of Shankoz Mountain	17:00	2123	49.435764, 75.344479
	7	Return to Zhylyssai hut	17:30	1123	49.428012, 75.355435
Day 3	1	Check-out from Zhylyssai hut	12:45		49.428012, 75.355435
	2	Forest glade	14:00	3787	49.450179, 75.384254
	3	Entrance to the forest. The Alexander Key cordon	15:30	3503	49.482196, 75.400317
	4	The end of the road	16:00	2805	49.498765, 75.409177
	5	Return to Karaganda	19:00	265200	49.804826, 73.096554



Figure 4. Expedition photos from the ecological route in the Karkaraly State National Nature Park (KSNNP) (photos by the author February 24, 2022) A – Start: the way to the hut; B – Forest glade; C – Zhylyysai hut; D – Summit of Shankoz Mountain

Winter tourism is attracting people who know how to enjoy all the charms of the winter period and feel the beauty of a winter forest or a snow-covered slope. Those who like quiet walks and no-risk winter activities can take part in excursions, which will be of interest to both the youngest and adult holidaymakers. Visits to souvenir shops can also entertain all holidaymakers and allow them to bring their families nice gifts. Extreme sports enthusiasts can practice mountain climbing, ice skating or snowboarding. Riding a snowmobile is also fascinating and exciting, if not to follow a straight route, but ride twisting path with sharp turns. However, one should not forget about the difficulties that may arise, so it is worth planning the route in advance and making sure that the weather is going to be favorable during the hike. Winter is a great time to cheer up, stretch your bones, and get energized for the whole year. Fresh air, peace and quiet in the sun; winter hikes strengthen the body and restore mental resources. The nature gazing has always been and always will be a source of tranquility and well-being. And when there are caps of sparkling snow in front of you, the effect multiplies by several times. It is an incomparable amazement! Winter hiking is a kind of meditation against the background of breathtaking scenery. Hiking is a sport that is both relaxing and intense, strengthening the cardiovascular system without putting too much stress on the joints.

CONCLUSION

As a result of the study of the territory of the Karkaraly Mountains geosystems, it was found that one of the most attractive areas for the winter tourism development is the Karkaraly State National Nature Park (KSNNP). The tourist potential of geosystems of Karkaraly State National Nature Park (KSNNP) has a sufficient number of advantages: convenient geographical location, well-preserved natural potential. Karkaraly district has unique natural resources, the key of which is the Karkaraly mountain and forest massif, located on the territory of the Karkaraly State National Nature Park (KSNNP), the total area of which is about 112.12 thousand hectares, of which 29.1 thousand hectares are intended for tourist and recreational activities.

In order to further develop the tourism industry in the region, including winter tourism, it is recommended to:

- improve the transport infrastructure in the flat part of the territory;
- improve the service of tourist facilities, due to the development of the hotel and restaurant business of the city of Karkaralinsk;
- develop ecotourism as one of the most promising types of tourism that causes the most minimal damage to the environment: to develop eco-routes, organize hiking and horseback riding, organize outdoor activities, scientific and educational excursions on the territory of the geosystems of the Karkaraly Mountains;
- carry out activities to raise investment, including foreign investment;
- conduct sports tourism events: organize hiking trips, build the necessary infrastructure, organize and conduct sports tourism competitions on the slopes of the Shankoz, Saimantau, Paravozik mountains;
- organize information and advertising activities in the media to promote the development of tourism and recreation in Karkaralinsk;
- build facilities for winter tourism (ski resorts on the territory of Mount Shankoz, ice rinks on the territory of Lake Bolshoe);
- create favorable conditions for ski tourism development through the simplification and harmonization of tax and other types of regulation;
- create conditions for the accelerated development of ski tourism and resorts using the state support mechanisms, including those based on public-private partnerships;
- implement image-forming and advertising programs aimed at creating a positive image of domestic ski tourism in the international and domestic markets, to support the participation of leading tour operators in international exhibitions and events in the Karkaraly Mountains;

One of the main objectives is to ensure employment, stable growth of income of the population by increasing the scope of tourism activities. The most favorable time to organize winter tourism is late November to mid-March, because in early November there is still no sufficiently dense stable snow cover in the Karkaraly mountains, and by April the snow starts melting as the air temperature increases.

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INTEGRATION OF QR-CODE AND WEB-BASED APPLICATIONS FOR DEVELOPING DIGITAL TOURISM IN IBOIH VILLAGE, INDONESIA AS A LESSON LEARNED MEDIA ON THE VOLCANIC ISLAND

Muhammad YANIS* 

Geophysical Engineering Department, Universitas Syiah Kuala, Darussalam-Banda Aceh, Indonesia, e-mail: yanis@usk.ac.id

Muzakir ZAINAL 

Geophysical Engineering Department, Universitas Syiah Kuala, Darussalam-Banda Aceh, Indonesia, e-mail: muzakirzainal@usk.ac.id

Riza Aulia PUTRA 

Architecture Department, Universitas Syiah Kuala, Darussalam-Banda Aceh, Indonesia, e-mail: rizaauliaputra@usk.ac.id

Andri Yadi PAEMBANAN 

Geophysical Engineering Department, Institut Teknologi Sumatera, Lampung, Indonesia, e-mail: andri.paembonan@tg.itera.ac.id

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Abstract: The Great Sumatran Fault activity on Sumatra Island has presented a series of volcanoes and geological landscapes that can be developed as geo-tourism potential, such as in Iboih. The Weh Island has many natural tourism potentials that can be used to improve the community's income directly and as lessons learned for the dangers of living in a volcanic environment. The conventional method of delivering information is through a guide to visitors. This is very limited to the guide's ability to explain the phenomenon of tourist sites and the relation to lessons learned. In this study, we use the integration of QR-Code and web-based technology to develop a digital tourism system that can provide unlimited information to visitors and can be managed efficiently by the public. The data analysis shows that a QR code information board integrated with a web-based programming system can be used to monitor the number of monthly visitors at each tourism site. In addition, the java-script integration on the QR code board can present information that can be changed through links, images or videos without reprinting the QR-code model. Furthermore, we also present important locations from Iboih Village in the form of Web-GIS, such as tourist locations, road access, public infrastructure and food locations that tourists can easily access. Based on the research, we conclude that integrating QR-code and web-based programming can be an effective tool in tourism development as a medium for lessons learned by the community.

Key words: Geo-tourism, QR-Code, Web-GIS, Web-Based, Digital Technology

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INTRODUCTION

Weh Island is one of the areas in Aceh Province that has beautiful natural panoramas and underwater biodiversity (Abdullah et al., 2022; Marwan et al., 2020; Yanis et al., 2022). Geographically, this island is located at the western tip of Sumatra, directly adjacent to the Malacca Strait and the Indian Ocean, thus presenting a natural panorama that can be developed to attract visitors (Akla et al., 2019; Kurnio et al., 2016). The natural landscape in Weh Island creates a potential for tourism to increase the economic earnings for the community. The Weh Island such as Jaboi Village is famous for tourism for its volcanoes, Paya Village for marine tourism, and Iboih Village with various tourist destinations; there also has several geological landscapes, such as Sarang Cave and Rubiah Island, and several beaches that have the potential to be developed for geo-tourism (Akla et al., 2019). On the other hand, in this village there are also several old buildings designated as heritage destinations. So that Iboih has become one of the most visited destinations for domestic and foreign tourists in Pulau Weh. In addition, the consequences of tectonic and volcanic activities produce unique landscape forms, such as the presence of fault structures, underwater hydrothermal activity from volcanic activity, natural topography, and underwater panoramas that could be developed into tourist destinations (Yanis et al., 2021; Yanis et al., 2020), Figure 1 shows several tourist destinations in Iboih Village.

Currently, the development of tourism based on the geological landscape, apart from improving the community's economy directly, is also a new medium for increasing awareness about the potentially dangerous environment and education about the risks of living in a volcanic environment. One way to achieve the objectives of the lessons learned that impact the community is to provide content on tourist sites that contain geological information and the process of the existence of the volcanic mountain (Erfurt-Cooper, 2011; Newsome, 2006). However, this technique requires experience and training for tour guides which takes time and requires a lot of financial support (Marwan et al., 2020). Therefore, we

* Corresponding author

utilize digital technology based on QR-Code which can provide in various languages to tourists from different countries and is independent of the ability to deliver data from tour guides. In this study, each tourist location will be installed with a QR Code-based digital information board integrated with the Iboih tourist information center website. The QR-Code integration with the web-based system can provide unlimited information capacity on tourist sites because they are digital and can be deleted, edited and updated as needed. This combination produces better benefits than classical methods, such as information boards commonly used in tourist sites (Ekundayo et al., 2020).

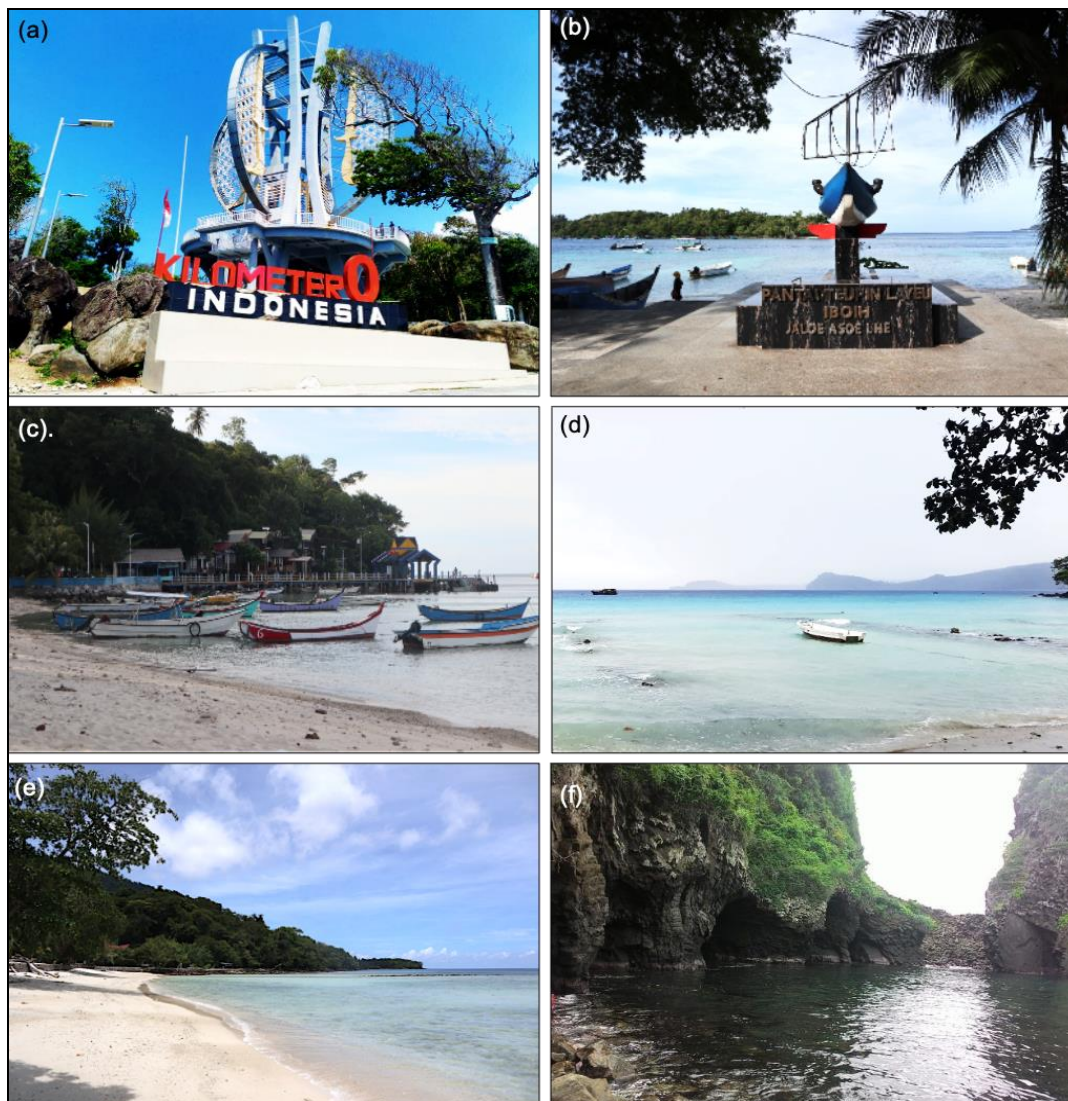


Figure 1. Some of the tourist destinations found in Iboih Village, Sabang are (a) Kilometer 0 which marks the starting point of Indonesian territory, several beaches such as (b) Iboih Beach, (c) Gapang Beach, and (e) Pasir Putih Beach, while (e) is Sarang caves formed by volcanic islands, this photo was taken on August 28, 2022

The use of the digital system for tourism purposes has been implemented in several developed countries such as in Southland Tourism Industry-New Zealand which combines information systems with QR-Code and NFC (Ekundayo et al., 2020), at heritage sites in Naples, Italy (Solima and Izzo, 2017), visitors management in Portugal based on QR-Code (Gutierriz et al., 2020), as well as a payment method at tourist destination locations in China (Tangit and Law, 2021). In addition, the development of the Iboih tourism digital system will also accommodate a camping permit system, feedback for message delivery with a web-based javascript language, as well as the implementation of a web-GIS system that provides various important Point of Interest (POI) information integrating with Google Maps, such as public sites, food, and tourism destinations. Specifically, this research aims to build a tourist destination in Iboih, Weh Island, as a digital tourism village with various features such as providing QR Code-based tourist information boards that can be updated as needed using the web, visualization of tourist destinations and other important information on the Web-GIS, as well as monitoring the number of visitors on QR-codes using web-based programming. The results can be applied to other locations, especially in developing countries, because this technology is easy, cheap and fast to transform into digital-based tourism.

Geological analysis of Weh Island

The tectonic activity of Sumatra Island has produced a series of volcanic island arcs that extend through the length of the island (Marwan et al., 2021). So along the active fault of the Great Sumatran Fault (GSF), which divides the island

of Sumatra from Lampung to the Andamans has presented various segments that can cause earthquakes (Burton and Hall, 2014; Marwan et al., 2021; Marwan et al., 2019a; Yanis et al., 2020).

On the other hand, this tectonic activity has provided several volcanoes such as Burnitelong (Yanis, et al., 2022), Seulawah Agam (Marwan et al., 2021; Marwan et al., 2019b, 2021), Peut Sagou (Yanis et al., 2020; Yanis et al., 2022; Zaini et al., 2022), and the Jaboi volcano (Yanis et al., 2022) which can be developed for electrical energy and also presents a natural landscape that can be developed for geo-tourism potential. This not only can directly improve the community's income, but it could also be used for educating people about the dangers of living on volcanic islands. Figure 2 shows a map of Iboih's tourism for potential disasters starting from the distribution of faults, manifestations, and volcanoes for lessons learned on the dangers of living in a volcanic environment.

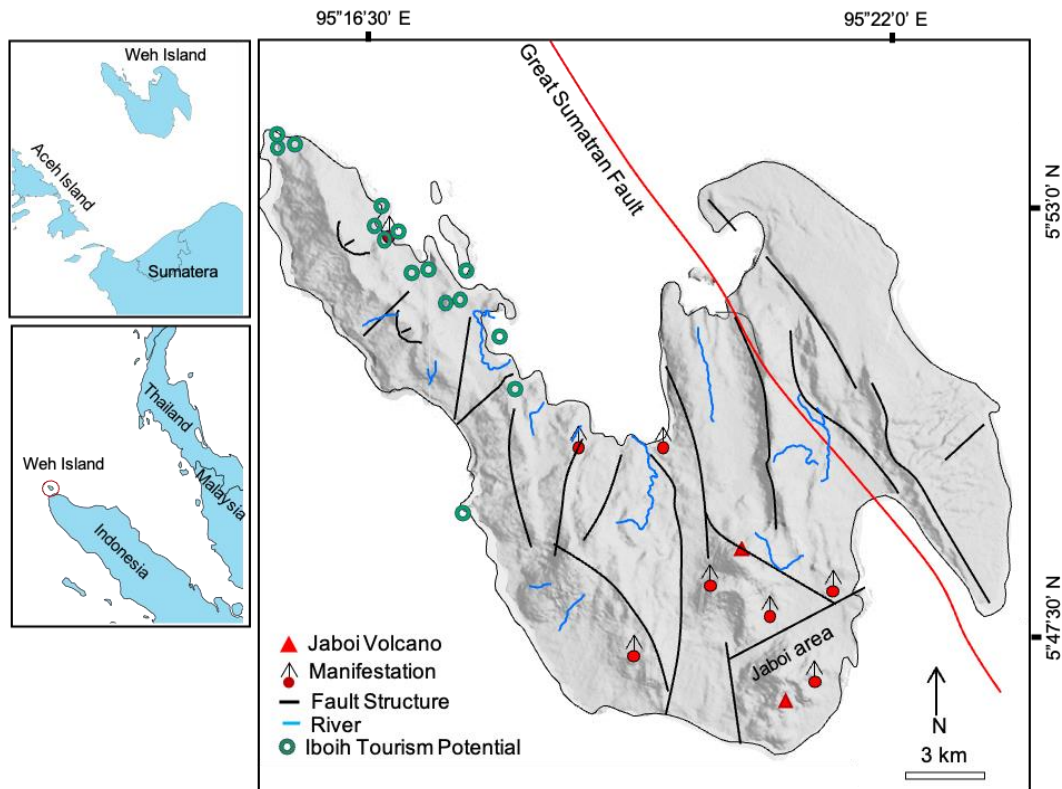


Figure 2. The map of Weh Island provides information on the distribution of faults that can pose a hazard but also presents several geological landscapes for geo-tourism development, as indicated by the green symbol as a representation of the tourism potential of Iboih. The data on Iboih tourism potential were visualized through information from the local government administration, while the manifestation data was obtained from direct field observations (Yanis et al., 2022)

Geologically, on the island of Weh, several faults have the same direction as the GSF, namely NW-SE. This system then forms segments and is accompanied by volcanic activity in the form of the Jaboi volcano (Dirasutisna and Hasan, 2005; Marwan et al., 2019; Yanis et al., 2022). Geologically, the volcanic area on Pulau Weh is a stratovolcano type located in the southeast, which is formed by andesitic and basaltic rocks (58%), volcanoclastic rocks (30%), and coral reefs and alluvium up to 12% (Dirasutisna and Hasan, 2005; Kurnio et al., 2016).

Therefore the geological object on Pulau Weh has great potential to be developed as a tourist location that prioritizes natural landscapes, and this is widely applied to developed countries to provide direct economic improvement to the community. Usually, an explanation of the geology at tourist sites is very important in the development of geo-tourism, but a special guide can only do this, therefore in this study we combined QR-Code and Web base programming in various languages for tourism transformation in digital form.

Basic Theory of Digital Technique

QR-Code

The most important point of QR-Code technology is accelerating the flow of information by using a smartphone camera to read the presented code. The QR-Code is considered one of the most influential visual factors to accelerate the flow of information in digital media. It is defined as an image bridge that can be embedded in a physical environment and has the capacity for storing data up to 2953 bytes which can be processed quickly. This system is an innovative development of standard barcodes (Solima and Izzo, 2017). In 1994, QR-codes were developed by a Japanese company called "Denso Wave" to follow vehicles in the production process and carry out inventories in the automotive industry, where this technology was released to the public without a license to generate codes for free (Marwan et al., 2020; Tangit and Law, 2021). Therefore, QR-Code has been widely used in its home country, Japan, and several countries for various purposes, such as tourist information management. This QR-Code has been considered a free, simple, and

effective tool in multiple fields. QR codes allow users to extract data in three modes: online, offline or combined. For example, users can use QR codes to connect to certain websites, send emails or read SMS on the device, save contact numbers, find GPS coordinates, listen to audio, watch videos, etc. (Cellaletin, 2017).

Web-based Programming

Several web-based languages are used in developing web-based applications, such as web servers, HTTP, MySQL, and PHP, which are integrated for different purposes. A web Server is software on the server to receive requests in the form of web pages via HTTP from clients known as web browsers and send back (response) the results in the form of web pages which are generally in the form of HTML documents (Franczuk et al., 2022). Hypertext Pre-processor or PHP is a web programming language on the server side. PHP is called server-side HTML-embedded scripting because all scripts in PHP are executed on the server side. PHP scripts integrated with HTML PHP are generally used to create dynamic web pages because PHP can generate and display the requested page simultaneously.

This mechanism makes users always get the latest pages from the website. Meanwhile, MySQL (My Structure Query Language) is a database engine often used in information system development (Ardito et al., 2019). MySQL has the advantage of fast and flexible management because it can be applied on various platforms. MySQL supports various data type formats, so it can be used to store data as needed (Nuanmeesri, 2021).

Web-GIS Technology

Web GIS is an application accessed through browsers such as Chrome, Mozilla, and Safari, which are available for various platforms. Depending on the capabilities of the software, users can display queries for geographic data analysis remotely via a web browser (Albuquerque et al., 2018). Web-based GIS is becoming one of the newest fields in Geographic Information systems for web-based map creation (Feng and Morrison, 2011). Different software and technologies are used to develop web mapping using commercial, open-source, and public software.

Commercial companies develop well-documented and licensed software with advanced features for commercial purposes, but the price for the technology is relatively high compared to open-source software. Open-source software systems are growing rapidly with the involvement of many people and can be used for free.

METHODOLOGY AND PLANNING

To achieve digital-based tourism management, we have integrated web-based programming with QR-Code and Web-GIS, which are implemented in Iboih Village, Sabang. This village has become the center for tourism development in Aceh Province, Indonesia. This QR-Code-based information board is integrated with the Iboih village tourism management system providing the number of visitors and modifying the links in the system. Specifically, the flowchart features and methods applied in developing digital tourism in Iboih are shown in Figure3.

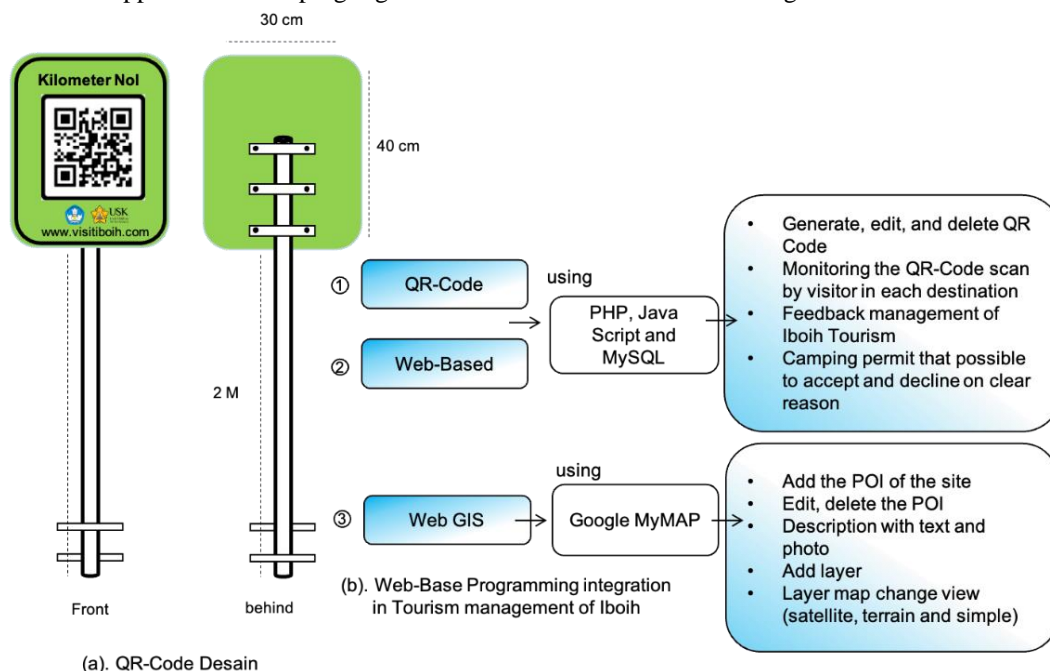


Figure 3. Integration of several technologies to develop E-tourism in Iboih Village, (a) a QR-Code model installed on each tourist site, while (b) showing a QR-Code-based web-based programming system and the features available in it

This dynamic QR-Code is used to modify the contents contained in the system without needing to change the QR-Code part. Developing a web-based system is designed to be as easy as possible so that community groups can use and manage it easily. Several features in the web-based include adding tourist sites, editing links in the QR-Code, feedback, and camping permits that allow visitors to obtain permits online. For Web-GIS, we use features from Google's My-Map, which would enable adding site locations and deleting and describing Points of Interest (POI) from tourist sites.

RESULTS AND ANALYSIS

QR-Code Installation

QR Code is a matrix of cells arranged in a dark pattern (logical '1') and light (logical '0') module pattern. Each QR code pattern consists of a function pattern and encoding region divided into several module patterns. Each pattern has a specific purpose for processing data readings, such as position detection, timing, pattern alignment, format, and version information. One way to present limited details is through a digital QR-Code that can contain data in the form of text, photos, and videos. This QR-Code is connected to the Iboih e-tourism system which provides complete information from tourist sites. Figure 4 shows documentation and diagrams of implementing QR code information boards at tourist sites in Iboih Village. In the initial stage, we installed digital information boards at six famous tourist sites, which include sea panoramas, caves, and cultural heritage. The information system of Iboih tourism can be accessed through <https://visitiboih.com/>, which has been developed with a CMS from WordPress to manage efficiently by the tour committee. For example, Iboih Beach (Figure 4a) is the main tourist attraction on Weh Island. This beach also has access to Rubiah Island.



Figure 4. Installation of QR code boards at several tourist sites in Iboih, Sabang, (a-c) a QR-Code board model installed, (d-e) the tour manager is scanning in front of the QR code integrated with the system

Various water sports attractions are provided at this location such as snorkeling, diving, and searching for dolphins. The location of the QR-Code installation is placed right at the tourist entrance gate to facilitate the transfer of information to visitors. When the QR-code board is scanned, it will be redirected to the link <https://visitiboih.com/pantai-iboih/> which includes various content such as videos guided with subtitles in various languages. Besides that, photos and text contain information about disasters and the dangers of life on the volcanic island. The same technique is also applied to other tourist sites such as the zero-kilometer (Figure 4b), a monument marking the westernmost territory of the Republic of Indonesia directly adjacent to the Indian Andamans. The Zero-kilometer memorial is a geographical marker of the region and has become a popular tourist destination on Weh Island. The position at the very end provides a landscape view of the open sea from the Indian Ocean. If the weather conditions are clear, Pulo Rondo will appear in front of it as the outermost island of the western tip of the State of Indonesia.

The Monitoring System of Iboih Tourism

E-tourism has a function to present information through QR codes created with the WordPress CMS. In addition, we have also developed this system to be user-friendly in terms of managing the QR code system, which provides features such as QR-code generation, editing and monitoring of visitors that scanned at the tourist location. This system was developed using several web-programming languages such as Javascript, PHP and MySQL database. Figure 5 shows the login page of the E-tourism system, which has been designed simply and is connected to a MySQL database so that only users who manage tours can access the system. Specifically, this system can be accessed via the link <https://monitor.visitiboih.com/user/login>.

After inputting the username and password, it will present several valuable features for QR-Code management, such as a monitor menu that aims to see the number of users who have scanned the code at each tourist location, making it possible to see the number of visitors. In addition, the QR-Code applied here is dynamic so that it can replace the links available on the QR-Code in the form of web, images or videos without changing the barcode display. This is done to be more economical and save time in changing information at each tourist site. This method combines Javascript and PHP to manufacture an API that generates a QR code based on a fixed link. This link redirects the information we input into the

system so that the link from the QR-Code that has been degenerated only serves to direct the link to the intended information. At the initial stage, we put all the information together on a website that presents videos, photos, and text in various languages. Specifically, the display of the system for generating and editing QR-Code links is shown in Figure 6.

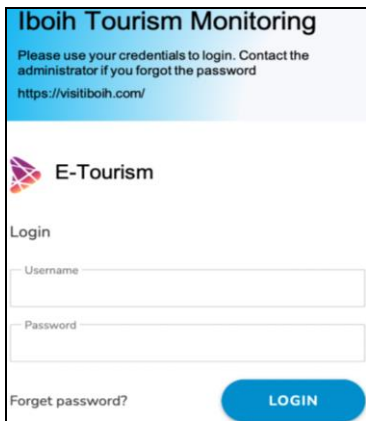


Figure 5. Login form developed with JavaScript and PHP for managing and monitoring visitors who scan QR codes at Iboih tourist sites. Login information is only given to the Iboih tour manager admin

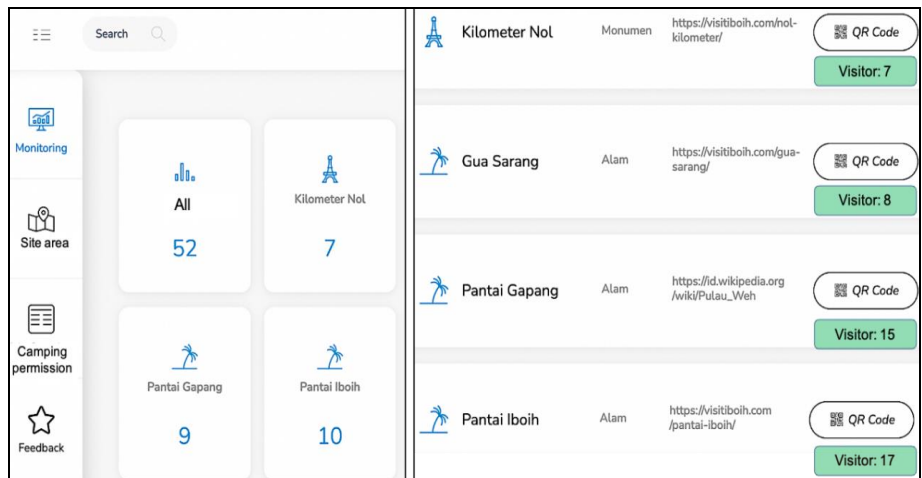
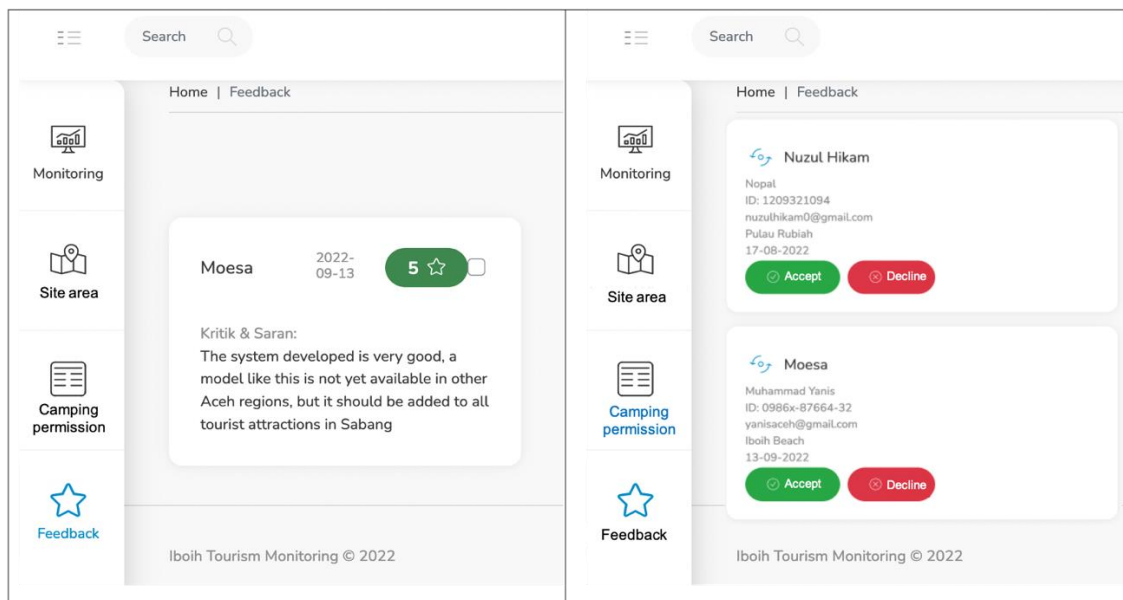


Figure 6. (a) Display of the system's homepage that presents the available features for monitoring Iboih tourism, (b) display of the monitoring feature that shows the number of visitors on each tour and allows for content editing without changing the QR-code model

In order to provide feedback to tour manager for better tourism development, the E-tourism system also has a feature for monitoring feedback. This is a helpful feature to give the opportunities for visitors to provide suggestions and criticisms for Iboih Village tourism improvement. The input form for the feedback can be accessed at the link <https://feedback.visitiboih.com>, and it is available on the QR-Code information board and the Iboih information center. Furthermore, we also developed a digital camping permit request system for visitors to apply for permits easily. Previously, visitors had to process permits manually, taking a relatively long time; the form permit can be accessed through <http://izin-camping.visitiboih.com>. This camping permit will be sent to the Iboih e-tourism system and can be accepted or rejected by the admin. The verification results will be sent to the visitor's email automatically. Specifically, the visualization of this system is shown in Figure 7.



(a). Monitoring for Feedback in the tourism site

(b). Monitoring for camping permission in Iboih tourism

Figure 7. The Iboih e-tourism system also has a menu for managing visitor feedback and can be viewed by the admin through the Iboih e-tourism application. Furthermore, there is also a menu requesting a camping permit.

WEB- GIS OF IBOIH TOURISM

A geographic information system is a helpful tool in tourism management that can analyze spatial and non-spatial data in an integrated manner. Developing a system that can support the decision-making process in tourism and allows visitors to get an overview of the diversity of tourism resources, products, and services is the primary goal of applying GIS in the tourism marketing (Vu et al., 2015).

In this study, we use Web-GIS to show Iboih tourism resources everyone can access via a browser platform link. We use the My-Map system from Google Inc., which is open source and has a user interface, making it easy to develop web-GIS tourism in Iboih Village. This system allows for adding site locations, deletion, and description of Points of Interest (POI) from tourist sites. This system can provide several important locations from Iboih Village, such as (1) a general site that contains the location of mosques, government, banks, schools, etc., (2) accommodation locations that provide complete lodging information with prices and telephone numbers, to make it easier for visitors to directly booking, (3) food and cafeteria locations and (4) tourism sites in Iboih Village.

Each Point of Interest (POI) category is given a different label and icon; road information is integrated with Google Maps. One can choose various base layers map models such as Earth view, a topographic that presents road information and a hybrid that combines both models. In total 160 locations we have filled in the web-GIS system, where each site is described in English. This system can be accessed via <https://visitiboih.com/web-GIS.html>, as shown in Figure 8.

Response of the Iboih community

To improve human resources in Iboih Village, we also disseminated the application of QR codes in tourism management. This activity involves students with various fields of knowledge to provide a better approach to people with diverse backgrounds. The main target of this activity is a tourism group as the person in charge of tourism sustainability in Iboih Village and for the community whose primary income is from tourism activities.

It is carried out with several approaches to increase public knowledge of the application of digital-based tourism management. We also analyzed the response of tourist visitors to the application of digital tourism in Iboih Village through a questionnaire. There are 48 respondents from different backgrounds.

Specifically, the results of applying QR-code and web-based for digital tourism are shown in Figure 9. Based on visitor analysis, 31 people or 65% chose that implementing the QR-code system was very effective and helpful for developing digital-based Iboih tourism. In contrast, 21% answered a Bad Idea and responded with no opinion for 15%, indicating a lack of knowledge about the system. However, some countries have integrated the QR-code system into tourism development, including presenting information in museums. Meanwhile, regarding the application of the Web-GIS system, feedback management and camping permit, 21 people or 44% answered a good idea that the system is helpful in Iboih tourism development, and bad ideas 17%, and those who chose no opinion were relatively the same, namely 40%. This is because many visitors do not know about the efficiency of web-GIS technology, so many respondents choose no opinion. In contrast, for general technology that has been widely used such as video, photo and text, 83% or 40 people choose that data obtained after the visitor scans the QR -Code is very informative and useful for digital-based Iboih tourism development, only 13% or six people choose no opinion, and 4% choose a bad idea. The analysis results obtained from these respondents indicate that implementing QR-Code and web-based programming is very effective for developing digital tourism in Iboih. Still, it is necessary to disseminate information to the public and visitors to implement this system perfectly.

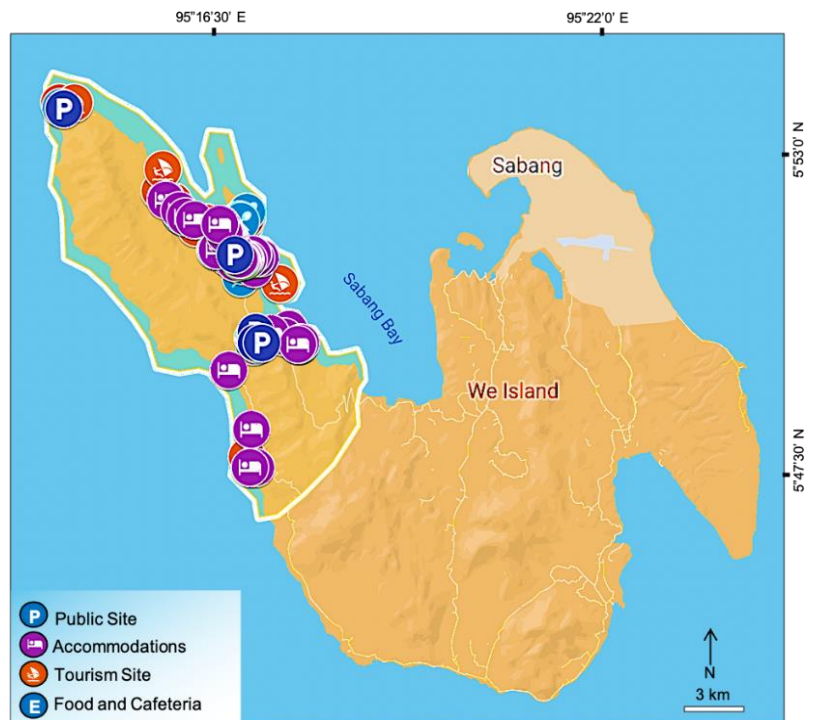


Figure 8. The webGIS application window developed by the Service Team in Iboih Village presents important information from Iboih village, divided into four categories: public information, tourist locations, accommodation, and cafeteria information. The point of interest data in Web-GIS was obtained from local government and field observations

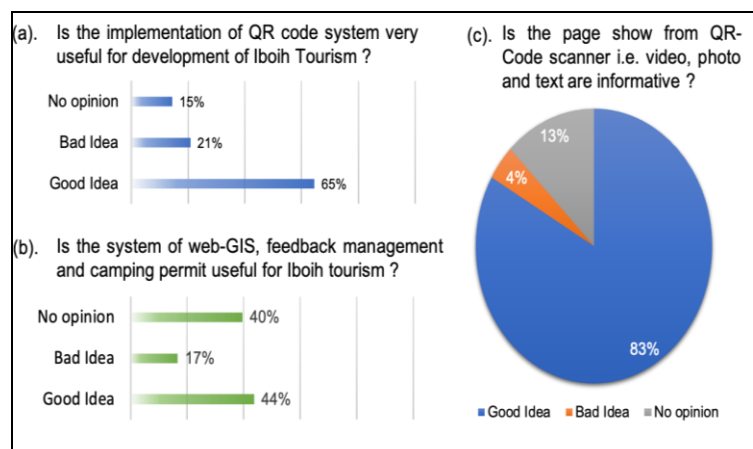


Figure 9. Response analysis from visitors to the application of QR - Code and web-based programming for tourism development in Iboih Village

The analysis results obtained from these respondents indicate that implementing QR-Code and web-based programming is very effective for developing digital tourism in Iboih. Still, it is necessary to disseminate information to the public and visitors to implement this system perfectly.

CONCLUSION

Digital marketing is one of the cheap tourism promotion methods that everyone can access easily with various platforms. We have implemented several QR-Code technologies and web-based programming to develop digital tourism in Iboih village, Weh Island. The QR-code information board provides unlimited information in various languages through videos, photos and text. This system is integrated with the Iboih tourist information center developed with WordPress CMS. In addition, the number of visitors can be monitored through a QR-Code visitor scanner integrated with the e-tourism system built by combining web-based programs such as java-script, PHP and MySQL. We also visualized the Point of Interest (POI) of Iboih tourism using a simple Web-GIS from Google Inc's MyMap, allowing us to create and edit layers and add other POIs. Based on the questionnaire analysis given to 48 visitors, 65% answered that the QR-Code system was helpful for tourism development in Iboih Village. Still, there was no opinion answering 15% which indicated that the public in general needed to be more familiar with digital systems for tourism. Hence, socialization in the community is one effective solution to increase visitor knowledge of the system that has been implemented. We conclude that integrating the QR-Code system with web-based technology is an effective and inexpensive method for transforming digital tourism, which can be applied to other parts of Indonesia.

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VIRTUAL TOUR AS A VIRTUAL EXPERIENCE OF DESTINATION MANAGEMENT ORGANISATIONS IN SLOVAKIA

Norbert BETÁK^{id}

Constantine the Philosopher University in Nitra, Faculty of Central
European Studies, Department of Tourism, Nitra, Slovakia, e-mail: nbetak@ukf.sk

János CSAPÓ^{id}

University of Pécs, Faculty of Business and Economics, Department of Marketing and Tourism, Pécs, Hungary; Constantine the
Philosopher University in Nitra, Faculty of Central European Studies, Department of Tourism, Slovakia, e-mail: csapo.janos@tkk.pte.hu

Ágnes HORVÁTH^{id}

University of Tokaj, Department of Social Sciences, Sarospatak, Hungary, email: horvath.agnes@unithe.hu

Lóránt Dénes DÁVID^{*id}

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; Constantine the Philosopher
University in Nitra, Faculty of Central European Studies, Department of Tourism, Slovakia, e-mail: david.lorant.denes@uni-mate.hu

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Abstract: An evaluation of ‘Destination Management Organisation’ (DMO) websites focused on creating attractive, user-friendly, and informative web pages that effectively promote tourism destinations to potential customers. The virtual tour as an innovative tool and form of tourism experience has potential to act as a powerful destination promotion tool. Therefore, for DMOs it may be especially beneficial in terms of destination marketing to offer attractive and suitable virtual tour experiences via destination websites. The study deals specifically with the issue of implementing virtual tours on the DMOs’ websites. The aims of the presented research were defined as: 1. Exploring the Slovak DMO websites by focusing on virtual tour experiences; 2. Measuring the potential customers’ opinions on accessing virtual tours on DMO websites. Quantitative methodological approach, website analysis and a special survey for potential customers were conducted in the presented research to achieve the main goals. Different types of virtual tours have been identified on DMO websites and potential customers’ opinions indicate the need to include virtual tours on DMO websites. Among the identified recommendations for the future highlighted are the improvement of DMO websites generally and expansion of the offer of virtual tours on DMO websites. Comprehensive research in this area within the Slovak DMO context is also desirable.

Key words: e-tourism, virtual tour, virtual reality, visual experience, destination management organisations

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INTRODUCTION

The rapid development of digital technologies is leading to rapid advances in various modern forms of tourism marketing. Adapting to developments in technology, communication, labour market, supply chain management, information and cross-border cooperation is important as a tourism promotion and development strategy (Dávid et al., 2007; Bujdosó et al., 2011; Dávid et al., 2011; Bujdosó et al., 2015; Pató, 2015; Pató, 2017; Wahyuningtyas et al., 2022). As a highly valuable tool, the Internet has transformed marketing strategies and ‘Destination Management Organisations’ practices substantially. It has contributed a lot to the general territorial development and development of tourism (Dávid et al., 2003; Dávid et al., 2009). It provides potential tourists with information about the products, events and services, giving them the chance to compare the prices of the products offered, institutions recommended and businesses (Dávid, 2009). The mobile systems also facilitate effective operation and information in entrepreneurs, airlines, hotels, weather, transportation, conditions, currency conversion and translation (El Maazouzi, 2020; Abouelhassan et al., 2021; Ogutu et al., 2023). While the dominant research stream on tourism technologies has investigated the adoption of self-service, mobile and web-based technologies, the potential of destination marketing through virtual technologies is yet to be fully investigated (Bogicevic et al., 2019; Kim et al., 2021; Verma et al., 2022; Åkesson and Ahmed 2022; Dey et al. 2022).

When tourists plan to visit a place (urban or rural environments), they develop an overall image of that place from exposure to the information available (Priatmoko et al., 2021; Plokhikh et al., 2023). Hence their plan to visit the destination changes accordingly. Information from websites also affects the tourist's cognitive belief, which further determines the intention to visit the selected tourist destination. Thus, it can be said that they affect the destination image building and should, therefore, be used to create a positive and influencing image of the tourist destination (Bogicevic et al., 2019).

* Corresponding author

In the tourism industry, numerous tourism destinations have invested substantially to claim virtual real estate in this three-dimensional online world. Moreover, a number of national tourism organisations consider the virtual environment as an effective emerging tool for destination marketing (Dávid and Szűcs, 2009; Huang et al., 2010). Most academic opinions concern the effect or “experience- quality” of virtual tourism. The discussions about virtual technology itself and the impact of its characteristics on tourists’ acceptance and usage attitudes are insufficient. It is urgent to clarify tourists’ technology-acceptance of virtual tourism (Bungau et al., 2022; Craiut et al., 2022a; Craiut et al., 2022; Li et al., 2022).

Currently, a new and increasingly common way of using modern forms of marketing based on digital/online technologies is the application of ‘Virtual Reality’ (VR) and/or ‘Augmented Reality’ (AR) tools. The basis of ‘Virtual Reality’ is the attempt to portray the real environment as faithfully as possible in an artificial, virtual environment and to work with this environment in real time. ‘Augmented Reality’ is a digital technology that transforms the perception of the physical environment provided that the individual sees it through a special device. This technology is similar to virtual reality, but it does not replace the real environment. Instead, it complements it by overlaying digital components. Virtual reality has been part of the travel and tourism industry for quite a while. The use of VR technology is one of the principal tools for Destination Management Organisations (DMOs), tour operators and tourism attractions.

Table 1. The list Slovak DMOs (Source: Own compilation based on own research, 2023)

No.	Name of the DMO	Official Website	3D Virtual Tour	360 Virtual Tour	Video Tour	Google Street View Tour
1	OOCR Región Vysoké Tatry	www.regiontatry.sk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	OOCR Severný Spiš-Pieniny	www.visitspis.sk			<input type="checkbox"/>	
3	OOCR Dudince	www.dudince.sk			<input type="checkbox"/>	
4	OOCR Región Horehronie	www.horehronie.sk			<input type="checkbox"/>	
5	OOCR Šariš-Bardejov	www.visitbardejov.sk			<input type="checkbox"/>	
6	OOCR Región Gron	www.regiongron.sk				<input type="checkbox"/>
7	OOCR Trenčianske Teplice	www.oocrtt.sk				
8	OOCR Turistický Novohrad a Podpoľanie	www.regionnovohrad.sk		<input type="checkbox"/>		<input type="checkbox"/>
9	OOCR Vysoké Tatry - Podhorie	www.tatrypodhorie.sk			<input type="checkbox"/>	
10	OCR Kysuce	www.regionkysuce.sk	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
11	OOCR Rezort Piešťany	www.visitpiestany.sk			<input type="checkbox"/>	
12	OOCR Región Horná Nitra	www.bojnice.eu	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
13	OOCR Tatry – Spiš – Pieniny	www.tatryspispieniny.sk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	OOCR Región Senec	www.regionsenec.sk			<input type="checkbox"/>	
15	OOCR Horný Zemplín a Horný Šariš	www.hornyzemplin.sk			<input type="checkbox"/>	
16	OOCR Gemer	www.regiongemer.sk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	OOCR Región Šariš	www.oocr.weebly.com				
18	OOCR Matúšova zem - Mátyusföld	www.matusovazem.eu	<input type="checkbox"/>			
19	OOCR Trnava Tourism	www.regiontrnava.sk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	OOCR Rajecká Dolina	www.rajeckadolina.sk		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	OOCR Záhorie	www.regionzahorie.sk			<input type="checkbox"/>	
22	OOCR Turiec	www.turiec.sk				
23	Nitrianska OCR	www.visitnitra.sk			<input type="checkbox"/>	
24	Zemplínska OCR	www.dolnyzemplin.sk		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	OOCR Malá Fatra	www.regionmalafatra.sk			<input type="checkbox"/>	
26	OOCR Región Liptov	www.visitliptov.sk			<input type="checkbox"/>	
27	OOCR Región Horné Považie	www.hornepovazie.sk	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
28	OOCR Klaster Orava	www.visitorava.sk	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
29	OOCR Trenčín a okolie	www.oocrtn.sk				
30	OOCR Malé Karpaty	www.malekarpaty.travel			<input type="checkbox"/>	
31	OOCR Slovenský Raj & Spiš	www.vraji.sk			<input type="checkbox"/>	
32	OOCR Žitný Ostrov	www.ostrovzitny.sk			<input type="checkbox"/>	
33	Bratislavská OCR	www.bratislavaregion.travel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34	OOCR Štúrovo - Parkan	www.sturovo-parkan.sk				
35	OOCR Visit Košice	https://visitkosice.org/	<input type="checkbox"/>			<input type="checkbox"/>
36	OOCR Tekov	https://regiontekov.info/			<input type="checkbox"/>	
37	OOCR Stredné Slovensko	https://centralslovakia.eu/			<input type="checkbox"/>	
38	OOCR Región Banská Štiavnica	https://supervulkanstiaavnica.sk/				
39	OOCR Podunajsko	https://www.visitdanube.eu/sk			<input type="checkbox"/>	

According to Guttentag (2010) and Issakov (Issakov et al., 2022), this technology has been used mainly as a marketing tool to improve and promote tourism destinations. Based on the results (Li et al., 2022), the usefulness of virtual tourism technology has significant effects on autonomy and enjoyment. Tourists’ perception of technology usefulness can basically meet their expectations, so that the autonomy and enjoyment are perceived as well as tourists expected. Ease of use is another basic factor that leads to enjoyment for both potential and actual tourists. Nunez San Juan (2017) found that the internet and virtual reality became a widely known phenomenon that has grown more popular and dominated the tourism sector. Consequently, virtual reality (VR) has become an indispensable tool in the tourism sector, especially in defining marketing strategies for tourism stakeholders. Specific market segments could consist of Generation Y and Generation Z - generations

who prefer to use this technology to virtually select the destinations and accommodation providers they want to travel to directly from home ((Dávid et al., 2007; Rončák et al., 2021). These generations also appreciate the creation of content for comprehensive physical immersion (animating a 3D environment or creating a 3D environment with the integration of photos and videos). Therefore, the use of VR technology in marketing strategy could influence the decision in favour of a certain destination and should attract new tourists or encourage existing tourists to consume more (Oncioiu and Priescu, 2022). It is important to promote new technologies among the silver generation (Novotny et al., 2015; Zsarnoczky et al., 2016).

From the traveller's point of view, VR can be helpful to improve the way they plan and book tourist activities in many ways. E.g., the efficient use of VR technology can greatly impact booking a simple flight, selecting the right hotel or discovering unvisited destinations. According to the Slovak situation analysis Gajdošík (2018) mentions that the image of the destination before the trip can be created by using videos and animations about the destination. These show all the activities that can be undertaken in the destination. It is also the marketing communication tool that can motivate the potential visitor to visit the destination. Based on the analysis of the web pages, 34 % of the destinations use this kind of interactive presentation. When examining the virtual tours, 17 % of destinations have created virtual tours for the destination or for some attractions (Gajdošík, 2018). In 2019 Slovakia started to develop the 2030 Agenda for Europe with the following main objectives: Sustainable use of the country's tourism potential; the development of 51 economic growth regions and to promote of Slovakia's image and building its identity as an authentic and attractive tourist destination (Dávid et al., 2012; Aubert et al., 2021). The survey shows that, across the three countries, (Slovakia, Hungary, Romania) Slovak tourism DMOs' are the ones that use the most virtual platforms in their marketing activities. The Act for the Development of Tourism' is dedicated to the introduction of a modern tourism management system in Slovakia. Similar to regional tourism bodies set up in other countries, OOCR (tourism management centre for the territory of a certain locality or region) appear here as well as the tourism organisation - KOOCR (tourism management centre for the territory of a certain region). As per the law introduced in the 21st century, there is also a requirement for these organisations to operate on modern management and marketing principles.

Established 'Destination Management Organisations' (DMOs) in Slovakia have been regulated since 2010. These regulations were amended first in 2011, then in 2013 and are still in force. In Slovakia, there are currently 39 'Tourism Destination Management' (TDM) organisations (see Table 1) organisations operating under the name of 'oblastná organizácia cestovného ruchu' (regional tourism organisation), according to the website www.mindop.sk. This is the official website of the 'Ministry of Transport and Construction of the Slovak Republic' (Ministerstvo dopravy a výstavby Slovenskej republiky). The same website also lists 8 district tourism organisations. The 'Destination Management Organisation' (DMO) register is available on the website of the 'Ministry of Transport of the Slovak Republic' (<https://www.mindop.sk/en>), according to which there are currently 8 regional tourism organisations (KOOCR), 38 local tourism organisations and 4 destination organisations which have been dissolved. For the purpose of further research, we analysed selected DMO websites, 39 in total (Table 1). During the process of analysis, we proceeded as follows: 1. We have identified websites of Slovak DMOs, 2. We have visited websites individually and searched for available forms of virtual tours. Among the Slovak DMO websites, several types of virtual tour were commonplace: a) 3D Virtual Tour; b) 360 Degree Virtual Tour; c) Video Tour; d) Google Street View tour. We found that only in 10 cases the websites offer a 3D virtual tour, and the same number offered a 360-degree virtual tour. All but 11 websites offer a video tour. According to the research of Yadav et al. (2011), video-based information outperforms text-based information by triggering higher levels of users' engagement.

MATERIAL AND METHODS

Marisova and Smolkova (2020) in their research finds out how Destination Management Organisations in Slovakia perceive their roles in tourism. According to the research, the DMOs put a lot of effort as well as natural, economic, cultural, financial, and human resources into the promotion of their destinations (Duda-Gromada et al. 2010; Herman et al., 2020). They create printed promotional materials; promote destinations at tourism fairs and exhibitions, create and manage destinations' webpages; communicate with visitors through social media like Facebook, Instagram and YouTube; pay for advertisements on television, radio, newspapers, magazines, billboards and online. Since destination marketing is usually considered as the main DMO function, many authors refer to DMO as a 'Destination *Marketing* Organisation'.

It is mentioned by Sean Boyle (2023) that it is a smart marketing strategy to use virtual tours and they are effective in attracting people to a location of interest. It is also effective in helping to set the expectations of what activities will be offered and how the time can be spent in the destination upon arrival. The popularity of virtual tours – as well as technologies such as virtual reality, augmented reality, and artificial intelligence in general, has increased recently. There is no doubt that the rapid developments in these technologies will shed further light on their applications (Issakov et al., 2022). Tourism marketing is an area where digital technologies are being used with great popularity and this is also relevant in case of virtual tours. It is therefore desirable for DMOs to offer on their own online platforms, not just up-to-date information - but innovative forms and methods of obtaining information and experiences. In this study, the authors seek to extend the knowledge and overview of the current situation of Slovak DMO websites by focusing on the availability of virtual tours offered as a new form of acquiring a virtual experience. While the primary purpose has been to obtain up-to-date information on whether DMOs offer virtual tours on their websites, additionally the study attempts to present and analyse the respondents' views of actual virtual experiences in different areas – and to seek the opinions of respondents as potential users of virtual tours.

Three research questions were posed:

1. How well known is the technology of 'Virtual Tour'?
2. How often are the Slovak DMO websites used before a trip?
3. How important are virtual tours on Slovak DMO websites?

Based on previously designed research questions, we identified and examined three different variables: *Knowledge*, *Usage*, *Importance*. The study utilised a descriptive quantitative design to obtain the opinions of the respondents. The respondents of this study were not selected directly, and the prepared questionnaire was distributed in an online environment, shared on social networks such as Facebook and Instagram. The data was collected in a systematic way in 2022.

During the research process, we proceeded as follows. Firstly, we studied the available literature – secondary sources in relation to the virtual tour as a product offered on the DMO websites. This part of research included a detailed analysis of Slovak DMO websites. We started from the official register of Slovak DMO websites (<https://www.mindop.sk/>) and then as a first step we identified the DMO's URL addresses, which we also processed into a tabular form. We proceeded to a deeper analysis of these websites, looking for available forms and types of virtual tour. Furthermore, a research tool – a questionnaire was created to measure the opinion of the respondents. The questionnaire was distributed online to potential DMO customers. The evaluation of the responses of a randomly selected sample of respondents, statistical analysis, processing and evaluation of the results followed. Subsequently, the process proceeded to the formation of conclusions and recommendations.

Table 2. Demographic profiles of respondents and data regarding to variables Usage and Knowledge (Source: Own research, 2022)

Variable	Items	Total	%
Gender	Male	57	28
	Female	145	72
Age	<18	14	7
	19-28	50	25
	29-38	24	12
	39-49	28	14
	>50	86	42
Experience in any Slovak DMO website	Yes	129	64
	No	67	33
	Don't know	6	3
Experience in any Slovak hotel website	Yes	27	13
	No	175	87
	Don't know	0	0
Knowledge of Virtual Tour technology?	Yes, I've heard about it	111	55
	Yes, I've experienced it	57	28
	No, I haven't heard about it	16	8
	No, I haven't experienced it yet	18	9

RESULTS AND DISCUSSION

The respondents to this study consisted of 202 participants with different social backgrounds. We also took into account diversification in demographic profiles of participants such as age and gender. The vast majority of respondents were female (72 %) and the most of participants were over 29 years of age (Table 2). The questionnaire contained different types of questions – closed, open and also included Likert scale questions.

Table 3. Basic Statistics (Own research, 2022)

Statistics	Statement1	Statement2
Question Averages	4,4	3,3
Maximum	5	5
Minimum	1	1
Standard Error	0,080	0,079
1.96 x Standard Error	0,156	0,154
95% Confidence Mean Upper Value	4,60	3,42
95% Confidence Mean Lower Value	4,29	3,11

The survey tool included questions to investigate the demographic background and questions regarding opinions of “Knowledge”, “Usage” and “Importance” in the context of Destination Management Organisations' websites and virtual tours. To obtain data on “Usage” we asked two questions in the questionnaire. Both focused on the experience on websites before the trip. The questions were concentrated on DMO websites as well as hotel (or other kind of accommodation facilities) websites. The results of these questions are depicted in Table 2. According to the results, it is clear that the participants prefer DMO websites to hotel websites. After comparing these data sets, we find that DMO websites received up to 102 more votes than hotel websites. Of the total number of respondents (202), 33 % (67 respondents) do not browse DMO websites and 87 % (175 respondents) do not visit the websites of Slovak hotels. These results suggest that great care should be taken in the design and content creation of DMO websites. The information and virtual experience they provide can reach a large number of potential customers and visitors. The “Usage” survey was also considered appropriate as we wanted to highlight the reasons for visiting DMO websites. It is evident, that different kind of measurement tools - even digital analytics (e.g., Google Analytics) could be used for this purpose, but we have been focused on questionnaires to collect information about the respondents' opinions. Increasingly, virtual tours are also mentioned on television, in the media, on the Internet, on various social networks and in articles. Our obtained data indicates that the technology of ‘Virtual Tour’ is well known by the respondents. More than half of respondents (55 %) have heard about virtual tour technology and 28 % of them (57 respondents) have experienced it. However, 8 % of the respondents had not heard of it and 9 % had not experienced the virtual tour yet. To complete this information, an open question was asked. The purpose of this question was to get information from respondents about the concepts they could associate with the term “virtual tour”.

Respondents were also asked an open-ended question and asked to answer, “what they could think of when they thought of the term virtual tour”. All responses were carefully reviewed and based on these we assessed that very few respondents had not come across the term virtual tour. The answers to this question were varied, with some respondents even associating ‘Virtual Tour’ with ‘Virtual Reality’. However, the two terms are very different to each other. Respondents did associate the virtual tour with travel and exploring new places or sights. Most respondents were from the young and middle generations, which suggest that they are both, more open to new digital technologies and also travel more often, taking advantage of the innovations of the digital age (Novotny et al., 2015). Some of the most common comments in the open-ended question were:

- Tour with 3D glasses, 3D image presentation, 3D city view.
- Sightseeing via the web, the internet.
- Possibility to take a virtual tour of a given place. Either on a computer display or with VR glasses.
- Sightseeing without direct contact with the site.
- Transporting yourself to the space created by the computer.

- I can experience any building from the comfort of my home, visit natural beauty and all on PC.
- Online tour via video or photos.
- Multiple panoramic photos create a whole.

The opinion of respondents as potential customers is very important for several reasons. Among other things, opinions can shape and influence the image of the tourist organisation and their marketing activities as well.

To measure the respondents' opinions in another topic we used a five-scale Likert. In the questionnaire we asked respondents about the importance of offering virtual tour on DMO websites. To observe a variable of importance the survey asked respondents to rank statements. These ranged from 1 (Strongly Disagree) to 5 (Strongly Agree).

Statement 1 was related to experiencing a virtual tour on Slovak DMO websites. Statement 2 relates to the importance of offering a virtual tour experience on Slovak DMO websites. From the results of the statistics (Table 3) it is evident that the respondents were of the opinion that they would definitely take a virtual tour on Slovak DMO websites (M=4,4) and that they agree with the importance of offering virtual tour on Slovak DMO websites (M=3,3).

As can be seen from the graphical representation of data (Figure 1) only a small proportion of respondents are of the opinion that they would not be interested in a virtual tour on the DMO websites. Specifically, in relation to this question, 9 % of respondents are not at all interested in a virtual experience on DMO websites; 87 % do consider it important and 2 % were undecided in this regard. The distribution of responses for question 2, which explored whether it is important to embed and offer a virtual tour on DMO websites, is already more evenly balanced. Even the portion of undecided respondents is much larger (34 %) compared to the previous question. Nevertheless, after summarising the responses for each of the counterpoints, it is evident that opinions lean more towards the importance of offering a virtual tour on DMO websites.

The opinions gathered from Statement 1 and Statement 2 also express the general interest of the respondents in the virtual tour as a new form of virtual experience on DMO websites. The above-mentioned questions were asked within the same questionnaire and followed in order. There is another significant possible interpretation of these results which may need to be taken into account when assessing respondents' views and expectations: Based on the results, the largest proportion of respondents are undecided about importance (34 %). However, if the DMO website offers the possibility of a virtual tour, they would definitely experience it. A virtual tour on a DMO website may therefore represent a kind of added value and additional service that has its own justification and importance to a wider audience.

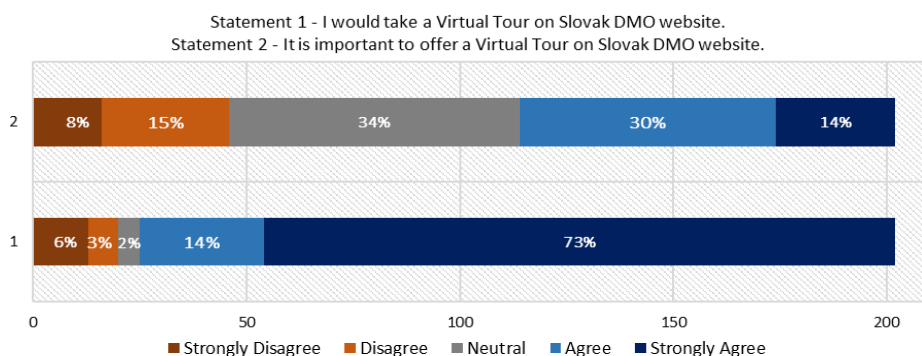


Figure 1. Responses to the statements: "I would take a Virtual Tour on Slovak DMO website" and "It is important to offer a Virtual tour on Slovak DMO website" (N=202) (Source: Own research, 2022)

In the virtual tours of the DMO, special emphasis was placed on presenting the diversity of cultural tourism, exploring the possibilities of innovative attraction development from the perspective of various cultural institutions, museums, castles and other historic buildings, as well as music and festival tourism. As we have seen so far, the sector's value creation processes are also shaped by increasingly powerful information technology solutions (De Luca et al., 2022), so the role

of various smart (for example: augmented reality, virtual reality) and artificial intelligence-based achievements could be used more widely not only for marketing purposes, but also for destination development.

This should be regarded as a new role of DMOs, taking into consideration the education potential of virtual tours combined by educative elements of gamification ("edutainment") such as VR games, reward games, interactive, virtual reconstruction of historic sites, escape-rooms, etc (Theodoropoulos and Antoniou, 2022). Obviously, these solutions can be developed for all types of tourism, such as ecotourism, country tourism, wine- and gastro tourism, etc. The main goal should be going beyond the marketing of already existing products and product packages by developing the destinations with "self-marketing" interactive attractions combining the virtual and on-site experiences. Furthermore, this approach would attract more the youngest generations, those, "who are born with their mobile phones" but have a very different attitude towards the values of cultural heritage or nature conservation (Buhalis and Karatay, 2022).

CONCLUSION

The virtual tour has a presence in a wide variety of industries and sectors from education to healthcare to marketing. Interactive elements (e.g., virtual tours, augmented reality) are finding their way into the market, complementing, and often replacing traditional video or image galleries. Marketing tools and trends are changing, and various new forms of presentation and promotion of tourism products are being developed. 'Destination Management Organisations' (DMOs) are responsible, among other things, for the relevant promotion of destinations in the most effective way. Recently, it has become apparent, that digital technologies are having a significant impact on tourism. There are opportunities for virtual tours of museums, galleries, hotel rooms, destination locations and activities offered. Technically 'savvy' prospective customers are embracing the use of digital technologies when deciding whether to use a given service, visit a destination or purchase a desired product. The virtual tour is precisely the tool that can influence customer decision-making and therefore

its use should be carefully considered when presenting and promoting destinations via DMO websites. The current study presents the results of an analysis of the websites of domestic DMO websites in terms of the offer and use of virtual tours as a new form of gaining virtual experience. The contribution of the study can be clearly considered as an overview of Slovak websites and an identification of the types of virtual tours used. A questionnaire method was applied to obtain information on DMO website visitors' opinions on the use of 'Virtual Tour'. The authors of the study intended to explore the potential of 'Virtual Tour' use by destination organisations in Slovakia. At the same time, an important general objective was to highlight the need to develop e-tourism and address the issues of introducing modern digital technologies in the promotion of destinations. After analysing the DMO websites, we found for some of them the URL has been changed since the original DMO register. In relation to virtual tours, it was found that the vast majority of researched DMO websites offer a video tour as a form of the virtual tour, but relatively few DMO websites offer 3D virtual tours. (10).

The same number of '360-degree virtual tours' were found on DMO websites. 'Street View Tour' is also a more prominently used form of the virtual tour on Slovak DMOs. The presented research shows a positive attitude of respondents towards the virtual experience on Slovak DMO websites. As many as 73 % of respondents strongly agree that they would try a virtual tour on Slovak DMO websites, with 6 % taking the opposite view. The concept of the virtual tour was quite familiar to the respondents, as evidenced by the results of the survey. (55 % of the respondents had heard of virtual tour technology and 28 % had even experienced it personally). However, the limited experience of a number of respondents is evident as well from their random responses. A defined selection of respondents for a specific population would be desirable. Furthermore, it would be beneficial to identify examples of good practices from a foreign sample and to find out the opinions of the DMOs themselves. Future research in this field could focus on a deeper and more comprehensive analysis of respondents' needs and their attitudes towards the virtual experience. That being said, the present baseline study provides an introduction and overview of the topic with the possibility of extending and complementing the research to create a more comprehensive analysis going forward.

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THE PROTECTION OF WATER RESOURCES FOR SUSTAINABLE TOURISM UNDER CLIMATE CHANGE IN SOUTH CAUCASUS: IN THE CONTEXT OF AZERBAIJAN

Vasif ALIYEV*

Azerbaijan State University of Economics (UNEC), Turkish World of Economics Faculty, Baku, Azerbaijan, e-mail: vasif.aliyev@unec.edu.az

Firuz SULEYMANOV

University of Eastern Finland, Joensuu, Department of Geographical and Historical, Joensuu, Finland, e-mail: Firuzsul@uef.fi

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Abstract: Water is a vital resource for humans, but there is a lack of understanding about its value. The tourism industry will need more water because there are more tourists, hotel standards are getting better, and there are more water-intensive tourist activities. Climate change is also anticipated to affect the water supply. This study aims to investigate the role of the tourism sector in water resource depletion in Azerbaijan, a country facing water scarcity, and recommend actions for the hotel industry. This research employed a comprehensive analysis of published articles in high-ranked journals to investigate the impact of tourism on water resource depletion in Azerbaijan. The study also analyzed the current state of water resources in the country and identified the major factors contributing to their depletion. The study found that the tourism industry in Azerbaijan significantly contributes to the depletion of water resources through increased water consumption and wastewater production. The analysis also revealed that the major factors affecting water resources in the country include increasing urbanization and global warming. The study recommends that the hotel industry take action to reduce their water consumption and wastewater production to mitigate the impact of tourism on water resources. Additionally, the study proposes that policymakers should prioritize sustainable water resource management practices to ensure the availability of water resources for future generations.

Key words: sustainable tourism, water, climate change, South Caucasus, Azerbaijan

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INTRODUCTION

Water is critical for the continuance of life. Water is an essential element for all inhabitants, particularly humans. Humans utilize water resources for various purposes, including daily needs. There has recently been a lack of understanding about the worth of this resource, which necessitates scientific and practical efforts to stimulate the establishment of a new cultural attitude toward water. With greater visitor numbers, improved hotel standards, and increasingly water-intensive tourist activities, the tourism industry's demand for water is anticipated to expand. Furthermore, water demand is expected to rise as a result of climate change and its effects on water supply. Warmer air can store more moisture than cool air, and in a warmer world, the air will absorb more water from seas, rivers, soil, and plants. The drier conditions left behind by this air might have a significant impact on drinking water sources. Climate change consequences on sustainable tourism are crucial because it increases the danger of species extinction, decreases freshwater, increases wildfire accidents, heat waves, and illnesses, all of which cause visitors to avoid certain places (Shariff, 2022).

The supporting strategies from countries are essential for the sustainable development of the tourism field in the future (Tung and Thang, 2022). Water's centrality in our lives and ecosystems involves considerations of its worth, management, and the functions it performs for people and the environment. At the moment, the ease of reach to water resources, which is frequently characterized by consumerist logic, risks their availability in the close future and fosters a loss of communal consciousness about the worth of water and the need for its protection, responsible utilization, and valorization. Furthermore, water is a rare resource in most places of the world, particularly in the South Caucasus. As a result, every choice and action involving water is critical. Drinking, cooking, bathing, washing clothing, dishes, and automobiles, flushing toilets and watering gardens are all ways that people utilize water frequently. Moreover, people need and demand enough water during using tourism facilities. Tourism has a high potential for water resources since it promotes the development of such appealing resources while balancing their conservation and responsible usage.

The tourism field is one of the most essential socio-economic activities and has a great potential effect on global development in the future (Lin et al., 2019; Akadiri and Akadiri, 2021; Tung, 2021; Singh and Kumar, 2022). Tourism is reliant on water resources and plays a significant role in water use. Water scarcity might also result in exorbitant expenses for ecosystem restoration. The nexus between the tourism potential of Azerbaijan and water resources is critical. Without enough water resources, the growing tourism potential of Azerbaijan could be threatened. Elshan Ahmadov (2020) claims that water resources management is essential to achieve sustainable development in many fields in Azerbaijan (Ahmadov, 2020). Phan et al. (2021) pay attention to the role of water in tourism under climate change. Ahmadi et al. (2022) highlight

* Corresponding author

how the protection of water resources in Azerbaijan is important (Ahmadi et al., 2022). There are many ways to conserve water for sustainable tourism under climate change in the context of Azerbaijan. In this study, in the category of countries with water shortages, in Azerbaijan, where the quantity and quality of water resources are gradually decreasing due to dynamics such as increasing urbanization and global warming, the role of the tourism sector in water resources and consumption is discussed. This paper explores the importance of water resources for sustainable tourism under climate-change from Azerbaijan's perspectives in the South Caucasus. The paper illustrates how sustainable tourism is strongly linked with water security under climate change. In conclusion, tourism has become an important industry for many countries, providing significant economic gains through "invisible exports." However, the increased demand for tourism has also put pressure on the natural and cultural resources that constitute the main source of tourism.

As a result, the concept of sustainability has become increasingly important, with many countries focusing on the efficient and responsible use of resources, including water. In the hospitality industry, hotels can play a significant role in promoting sustainable tourism by adopting measures such as repairing leaking faucets, installing low-flow showerheads, using recycle flush filters, and harvesting rainwater. By doing so, hotels can fulfil their social responsibilities towards the environment while also reducing their operational costs. It is essential for the tourism industry to promote responsible tourism practices and work towards a more sustainable future for tourism.

METHOD

The research methodology used in this study was the document analysis approach, which involved the examination of various textual and visual resources to contribute to the research issue. Secondary data sources were used, including documents, publications, statements from influential figures in the tourism industry, press releases from the minister of tourism, official reports, statistical information from the World Tourism Organization, the OECD, Statista, news in the media, and interviews. To gather the necessary data, the study searched databases from WoS, SCOPUS, EBSCO, PROQUEST, SCIENCEDIRECT, EMERALD INSIGHT, DERGIPARK, and other worldwide sectors under the categories of service products for information on tourism using document analysis.

The flowchart of the research steps is as follows:

1. Define the research issue and objectives.
2. Identify relevant secondary data sources for document analysis.
3. Search databases and other sources for relevant documents and publications.
4. Collect and compile relevant documents and publications.
5. Read and analyze the documents and publications to identify key themes and patterns.
6. Interpret the findings and draw conclusions.
7. Present the results in a clear and concise manner.

Overall, the document analysis approach allowed for a thorough examination of the relevant resources to gain a comprehensive understanding of the role of tourism in water consumption and the need for sustainable practices in the industry.

LITERATURE REVIEW

Water resources are essential elements for any touristic destination. Tourism's impact on water resources, particularly the hotel industry's impact on islands and coastal areas, jeopardizes the resources and, ultimately, the destination's viability. Various global institutions advocate using pricing policies to enhance efficiency and punish excessive water usage. This study examines the short-term efficacy of a water rate adjustment adopted by the Balearic Islands regional government in 2013 on hotel water use. The transition is from a linear to an increasing block rate scheme. On panel data from 2011 to 2015, the study employs quantile regression with within-artificial block modification. The findings indicate that the reform was ineffective in lowering water usage levels. The inefficiency of the reform can be explained by the disproportionate fixed component of the water price and the excessive first block of the sanitation payment (Deyà-Tortella et al., 2019). This article examines direct freshwater consumption in tourism from both quantitative and qualitative perspectives to analyze the tourist sector's present water requirement and identify existing and forthcoming governance concerns.

The research finds that, while tourism boosts worldwide water consumption, direct tourism-related water usage is less than 1% of global consumption and will not become substantial even if the field grows at the expected rate of about 4% per year (international tourist arrivals). The condition varies by location since tourism concentrates traveller flows in time and space, and frequently in arid places with limited water supplies. In addition, the comprehension of tourism's circuitous water demands, which include the production of food, construction materials, and energy, is still lacking but is expected to be greater than straight water usage. The research concludes that, given the predicted changes in worldwide precipitation patterns as a result of climate change, it is especially important for existing water-stressed areas to participate in proactive water management. There are recommendations for reducing tourism's water footprint (Gössling et al., 2012).

Tourism has developed significantly as an economic activity, adding to the local and seasonal stresses on water supply infrastructure in tourist areas across the world. This study examined tourism-related water usage in 21 states and compared it to other municipal uses using data from the AQUASTAT and EarthCheck tourist accommodation databases. Tourists' water use per guest night varied significantly, with water consumption being the greatest (up to 956 l per guest night in China) and most diversified in developing nations. The discrepancy between tourist and local water usage is likewise highest in low- and middle-income states. On the other hand, highly developed states have a high tourist water effect, with no discernible difference in water usage between tourism and non-tourism consumers. The research's implications for managing possible water disputes and the need for greater tourism destination water resource management are explored

(Becken, 2014). The purpose of this paper is to assess the regional growth hazard for the luxury tourist sector in Saidia, Morocco's northwestern area. The research's goal is to give recommendations for tourism-related water management and governance. Essential pressures on regional water resources are classified based on a thematic literature assessment from several discipline perspectives. The highlighted primary difficulties and constraints associated with the serious regional water situation are compared with Moroccan tourist policy initiatives that stress a sustainable regional tourism pathway. In addition, the practical implementation of sustainable concepts in hotel management standards was evaluated.

The competing viewpoints of science and policy on possibilities and challenges serve as the foundation for a destination-specific SWOT analysis to analyze and debate current tourism development risks and opportunities. Important strategies and related measures are developed to ensure impetus for sustainable water management and governance, as well as to promote real policy implementation (Tekken and Kropp, 2015). During "World Water Day 2007," Jaques Diouf, director general of the United Nations Food and Agriculture Organization (FAO), warned of the significant concerns relating to water management that man would confront in the twenty-first century. Water is significant because it is an essential yet scarce resource. We cannot create more than the Earth provides, nor can we use water resources beyond the globe. Nonetheless, water remains a critical asset, with demand predicted to rise significantly in the future years: It is anticipated that by 2050, over half of the world's population would be subjected to hazardous water stress circumstances. The goal of this research is to examine the role of tourism on water spending, specifically the volumes of water "indirectly" consumed to suit the demands of visitors. We shall describe in detail what these "indirect consumption" entail, as well as delve into the features of the tourist sector to better comprehend the processes that connect it to water resources (D'Ascenzo et al., 2020). Water is critical for ecosystem protection as well as human well-being.

There has recently been a lack of understanding about the worth of this resource, which necessitates scientific and practical efforts to stimulate the establishment of a new cultural attitude toward water. Tourism has a high potential for water resources since it promotes the development of such appealing resources while balancing their conservation and responsible usage. On the other hand, research on the link between water tourism and territory is still uncommon. The goal of this research is to look at the existing tourism usage of aquifer sites in the Spanish area of Extremadura to see if these practices have the ability to raise awareness about the value of water and its role in socioeconomic development and environmental conservation. This study employs both qualitative and quantitative approaches, yielding findings that support the strategic role of water in ecosystem management and the development of human well-being. The empirical findings indicate the beginning of a shift in water-based tourism from both the providing and request parties. The findings propose potential new approaches that can help people comprehend the importance of water, improve everyone's quality of life, and protect ecosystems (Folgado-Fernández et al., 2019). While tourism brings economic advantages to locations, it also puts some environmental stresses on them. The geographical and temporal differential features of water consumption at tourism locations have become a focus of interest in the global context of water shortage.

The current study uses input-output analysis to calculate the change trends in China's tourism water footprint (TWF) from 2013 to 2018, analyzes regional differences in TWF changes using kernel density estimation and the Theil index, and investigates the driving factors of the TWF's spatial and temporal differentiation using the logarithmic mean Divisia index model (Xiao et al., 2021). Unsustainable water consumption, exacerbated by climate change, poses a danger to water access, potentially resulting in conflict between visitors, tourism enterprises, communities, and the environment. It also raises concerns regarding water access rights. The findings highlight the true nature and size of tourist water usage, as well as their lack of understanding of the effects of this use on the local ecosystem and community.

Sustainable tourism

The World Tourism Organization defines sustainable tourism in terms of tourism development as follows (World Tourism Organization, 1998) "It is the enrichment of the resource opportunities of future businesses in an economically, socially, and aesthetically satisfactory manner, provided that the cultural integrity, sensitive ecological processes, biological diversity, and vital support systems are maintained and protected while the needs of the local people are met with the tourists offered." The plans for managing resources support cultural integration, the environment, biological diversity, and vital systems, but their main goal is to get rid of economic, social, and aesthetic problems (World Tourism Organization, 1998). The sustainable tourism phenomenon is based on sustainable development (Hardy and Beeton, 2009). Environmental awareness and evaluations, which serve as the foundation for development, are especially important in the tourism industry. Sustainable tourism is considered to be a balancing factor in economic development, the protection of environmental resources, and the satisfaction of local people and tourists (Hunter, 2002). Sustainable tourism accepts the realization of development by protecting natural resources and basing tourism development on planned foundations as a prerequisite. Thus, while protecting natural and cultural assets, economic and social development is provided in the region (Rebollo et al., 2009). One of the biggest problems in touristic destinations is the unplanned use and destruction of resources by tourism stakeholders for short-term benefits (Dimitrios, 1999). Sustainable tourism can be expressed as preserving the distinctive attractiveness of the tourist center and transferring it to the future.

The World Tourism Organization has identified three basic principles for sustainable tourism. These include the protection of ecological and biological diversity, the preservation of the original socio-cultural values of the host societies, and the increase of social living standards by providing employment to the local people in the tourism sector (World Tourism Organization, 2002). "Sustainable tourism" has become a keyword in the discussion of environmentally integrated tourism development. A general result of this idea is that the environmental consequences of this rapidly growing industry cannot be ignored any longer. In the past, it was possible to assess the environmental consequences of tourism through

Environmental Impact Assessments (EIA), understanding what level of change is tolerable. Carrying Capacity Concept (CCC) and Limits of Acceptable Change System (EIA) = LAC) has been suggested (Gössling et al., 2002).

Relationship between tourism and water use

The increase in the reception of foreign tourists creates an additional burden on local infrastructure: water and electricity supply, sewerage, garbage removal, roads, transport, communications, and security services (Akbulaev and Mirzayeva, 2020). So, from a development perspective, one thinks water is your most important need that needs to be addressed. But the community was unaware of the fact that they were entitled to free, clean water. The government was supposed to provide free clean water (Tshepiso and Ramukumba, 2022). Water, which is the main source of life, appears as an important parameter in every aspect of life in every period of history. As for all living things, it is necessary for humans to consume a certain amount of water, both directly and indirectly, for their survival and health quality. According to the calculations of the World Health Organization (WHO) (World Health Organization, 2013), the total daily water consumption, which varies between 7.5 and 15 litres, is 2.5–3 litres for drinking, depending on personal and climatic reasons and personal and social norms. 2–6 litres of it serve hygienic purposes, and 3–6 litres of it serve cooking purposes, depending on the types of food consumed and social and cultural norms. The change in production dynamics for nearly three centuries has emerged as a result of the increase in agricultural areas, the rapid development of urbanization, the increasing diversity of human activities, the increase in human mobility with increasing transportation opportunities on earth, the increase in energy production and consumption, and the decrease in the amount and quality of usable freshwater resources. Regions that are a source of water for people have always been centers of attraction. For this reason, in all images imagined when tourism is mentioned, a square directly or indirectly related to water resources comes to mind.

The symbol of modern mass tourism is almost in the form of the sun, sand, and sea trio. In addition, the relationship between water resources and tourism is not limited to sea tourism. Lakes, waterfalls, streams, thermal springs, pools, water parks, nature-related sports such as surfing, fishing, skiing, and all imaginable tourism activities are directly or indirectly linked to water resources. Golf courses, agro-tourism, wildlife-related tourism activities, or tourism types based solely on ecological solutions are also dependent on the presence of water in nature. The water problems experienced constitute an obstacle to the development of tourism in many regions. For example, in the Beijing Summer Olympics held in 2008, the chemical change in the waters flowing into the sea caused algae formation (low bloom) that could affect an area of 1200 square meters. 5000 people, 1185 boats, and 200 trucks worked for 46 days, and 593 million yuan was spent (Qihong et al., 2014) to clean up about 40% of the pollution that hinders water sports. On the other hand, tourists have intense water consumption in regions that are dependent on it, especially in tropical and coastal tourism regions. In these regions, not only excessive water consumption but also waste threaten the sustainability of tourism due to infrastructure inadequacies and deficiencies such as planning, which directly affect the national, and local economy, and ecology negatively (Cole, 2012). Direct water use refers to the water used for watering the garden, golf course, and lawn; filling and maintaining pools; installing showers, tubs, and toilets in rooms; opening taps; washing and cleaning clothes; and preparing food in the kitchen on site. Indirect water use is defined as the water consumption used throughout the production chain of the product in some cases and in some cases used in the production process of the service, which we encounter in forms such as food, energy, hotel infrastructure, shopping, services, activities, sales, and marketing. Systemic water use, on the other hand, refers to other elements such as road and port construction, which are necessary for tourism production.

Calculations for tourism water consumption are made over accommodation units in general. In the literature, the amount of water consumed in hotels varies between 84 and 2425 litres with an approach that includes the water used in rooms, garden irrigation, and filling the pool, but it has been observed that these amounts increase by 300 litres in the summer months (Gössling et al., 2012). The difference in scope and methods used in the calculations makes it difficult to obtain an exact amount of water consumed in accommodations. The amount of water required by these elements varies depending on factors such as climate, precipitation, plant species, and evapotranspiration. The amount of water used for irrigation increases, especially in dry periods when the temperature increases. Regarding pools, the amount of water used for filling the pools, the evaporation factor, and cleaning are taken into account. Factors such as the area covered by the pool, volume, evaporation, air temperature and pool temperature, and humidity pressure in the air appear as the determining parameters in measuring the amount of water used for pools. In the calculations made with the assumption of an 85% occupancy rate for two five-star and one four-star hotel on the island of Rhodes, an average of 40 litres per tourist per day for filling the pool, 33 litres per tourist per day for evaporation in the pool, and 7 litres per tourist per day for cleaning the pool and spa are used. It has been determined that the pool and its operations require 2 litres of water.

The water used in the rooms is classified into four usage areas: shower, bathtub, toilet, and tap. Since it is not always possible to obtain the said usage amounts directly from the hotels, information is obtained through surveys made with tourists. The accuracy of this information is also highly doubtful. The amount of water used in the rooms is not only dependent on the economical shower heads used in the hotel and the volume of the bathtub. In addition, it varies according to the purpose of the visit and the cultural and individual preferences of the tourists.

Water use categories and estimated use per tourist per day

Although such direct water use values seem significant, indirect tourism-related water consumption is far more important, leading to the creation of water hinterlands, or areas from which "virtual" water is imported. For example, it is estimated that 17% of the world's water is consumed by the building industry, primarily for the production of cement, and that the creation of fuel can require up to 18 L of water for every 1 L of gasoline. Since biofuels presently use an estimated 2% of all irrigation water, they are particularly water-intensive and are frequently viewed as the answer to future energy constraints. The amount

of water needed to produce 1 L of liquid biofuel is currently estimated at 2,500 L. Water is also utilized for mining, hydropower, mineral extraction, and thermoelectric cooling, while pumping, transporting, treating, and desalinating water all demand energy. As a result, there are several connections between the usage of energy, building materials, and tourism.

The overall impact of tourism on local or regional water resources depends on the context, even if it may be a significant factor in total water use in some vacation spots. Some places may have a shortage of water while others may have an abundance. Additionally, there are differences in the amount of water provided locally and the share embedded in the consumption of items made abroad, as well as seasonal variations in rainfall and visitor patterns. The relative abundance and quality of water in the specific tourism region, current and projected water abstraction rates, the proportion of non-consumptive versus consumptive uses, the seasonal and spatial characteristics of water abstraction, competing uses, and the treatment of sewage and wastewater are just a few of the variables that affect how much fresh water is available and how it is used.

Because so many of these problems are connected, it is important to carefully consider all management options for freshwater resources. There may be "win-win" solutions available or trade-offs between several criteria may be necessary. Demand-side management (lowering water usage) and supply-side management are two major categories for management responses to water scarcity (increasing water provision). There are numerous potentials for many hotels to reduce water use by up to 45%. However, as a significant portion of water use could be included in the consumption of commodities imported from other countries, water management should also take indirect water consumption into account. Evidence suggests that where water usage is decreased, this can typically be done without compromising guest convenience and with a financial advantage. A few months to less than five years are typical payback periods for investments in water-saving technologies in hotels, such as new showerheads, pan and cistern replacements, or flow control taps. The average of all the data points for each hotel was calculated because several hotels provided water use data spanning more than a year, though not always the most recent. Then it was decided that this mean value was a more reliable indicator of the hotels' direct water use than any particular year. This study, in contrast to (Hadjikakou et al., 2013), did not take into consideration indirect water use by tourists, such as that resulting from food or petrol consumption. Figure 1 lists the total number of hotels, the total number of data points across years for each nation, and the typical number of years reported by each hotel.

Table 1. Direct water use categories in contrast to L per tourist per day illustrated in this table (Source: Gössling, 2012)

Water use category - direct	L per tourist per day
Accommodation	84 - 2000
Activities	30-Oct
Water use category - indirect	L per tourist per day
Infrastructure	n.a.
Fossil fuels	750 (per 1000 km by air/car)
Biofuels	2500 (per 1 L)
Food	2000-5000
Total per tourist per day	Estimated range: 2000-75000

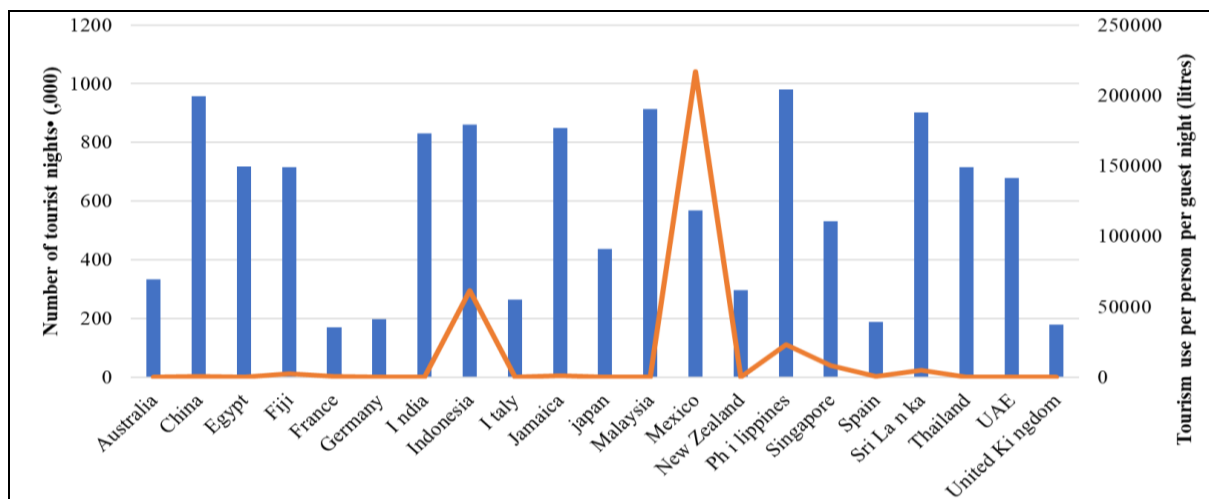


Figure 1. Summary statistics of hotels that provided water consumption data for one or more years (Source: Becken, 2014)

- Country: The name of the country for which the data is provided;
- Tourism use per person per guest night (litres): The average amount of water used per person per guest night in the tourism industry in that country, measured in litres;
- Number of tourist nights (in thousands): The total number of tourist nights spent in that country in thousands;
- Estimated tourism water use (m³ per annum 2000): The estimated amount of water used by the tourism industry in that country per year, measured in cubic meters.
- Tourism's share of municipal water withdrawal (%): the percentage of the total municipal water withdrawal in the country that is used by the tourism industry.

The Figures 2 provides information about the water use of the tourism industry in different countries, highlighting the differences in water consumption patterns across destinations. The data suggests that the tourism industry in some countries, such as Fiji and Sri Lanka, uses a relatively high amount of water per person per guest night, while in other countries, such as Japan and the Philippines, the water use per person per guest night is relatively low. The table also shows

the estimated total amount of water used by the tourism industry in each country and its share of the municipal water withdrawal, indicating the potential impact of tourism on the local water resources. This information can be used to identify destinations where water conservation and management practices are particularly important and to develop strategies to promote sustainable and responsible water use in the tourism industry.

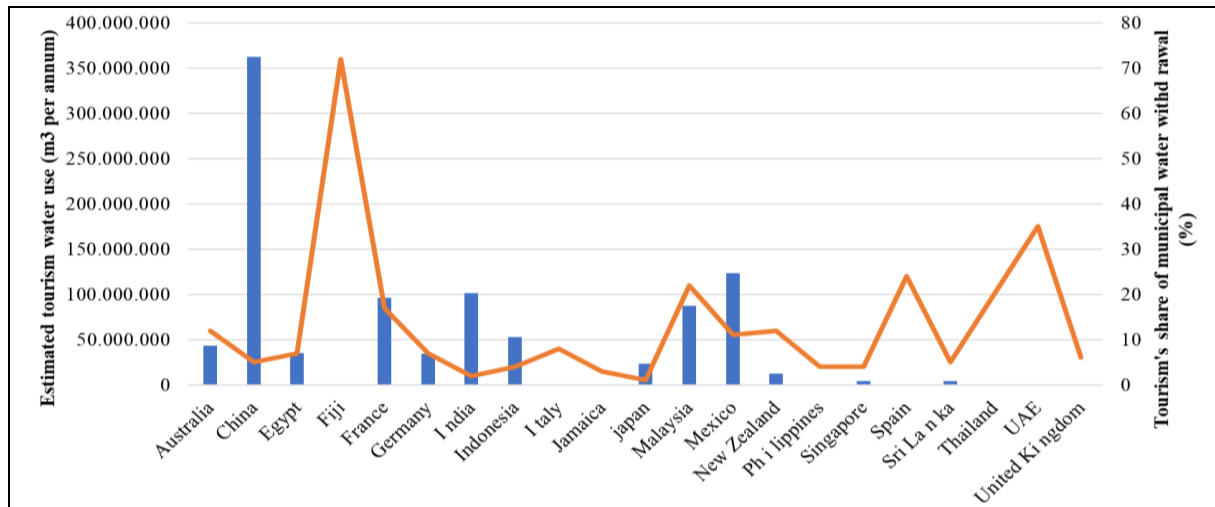


Figure 2. Summary statistics of hotels that provided water consumption data for one or more years (Source: Becken, 2014)

Azerbaijan

Generally, climate and growth-management strategies are appropriated after determining the menaces influencing public water systems and stores. On the other hand, territories without remarkable population growth frequently collapse to enact the resource governance policies essential for adapting to current and further water-providing risks. The South Caucasus already suffers from a lack of water resources. Few rivers, small size of groundwater, low precipitation, high evaporation, unstable situation, and other human activities are major reasons that create this problem. During armed conflicts between countries, barriers are created to access water resources in the region. Conflicts between countries decrease the chance of regional cooperation in transboundary water and the management of water resources. The safety of tourists seems to be acting an increasingly essential role in terms of the market place (Kaszás and Keller, 2022).

Moreover, the impact of climate change exacerbates the scarcity of water and decreases the productivity of human activities such as sustainable tourism. Water is a vital element of the Planet and human activity and without enough water resources, the environment can not be rich. An environmental approach generally ensures the main goals for sustainable tourism growth as nature is frequently a crucial restricting element. On the other hand, there is a need to protect environmental resources by decreasing the ecological influence of tourist actions. Environmental water resources interest millions of tourists, whose trips have an impact on the precious environment. Tourists need and spend water resources (own hygiene and laundry, ski or golf tourism, spas, wellness places, swimming pools, maintaining gardens and landscaping of accommodations places and attractions, etc) (Gössling, 2001). The next part evaluates current literature on responsible tourism with an emphasis on water management and gives an in-depth analysis of the major aspects or indicators discussed in the literature. The topics of inclusive conversation have included sustainable water planning and the sustainable development of tourism locations. An examination of significant elements or indicators can aid in the development of improved solutions for the planning and management of sustainable tourism in various contexts.

Some authors have centred the discussion on identifying and organizing the aspects that should be included in a comprehensive collection of indicators. The research of indicators in sustainable tourism management (quantitative and qualitative indicators) and water management in tourism objectives (mainly quantitative indicators) has revealed that the completion of appropriate indicators in both contexts with a focus on stakeholder perspectives has not been widely investigated.

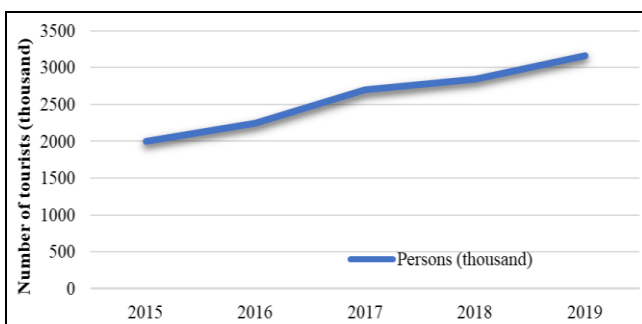


Figure 3. Statistics of tourists visiting Azerbaijan by years (Source: The State Statistical Committee of the Republic of Azerbaijan, 2023)

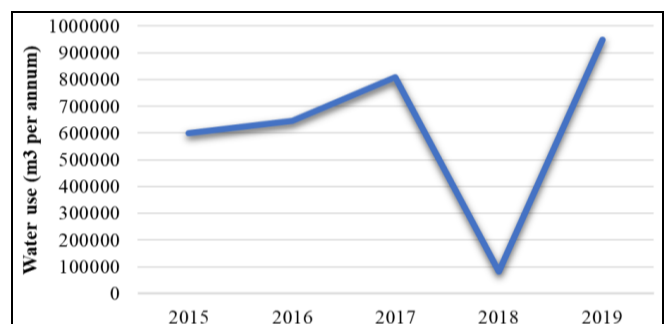


Figure 4. The estimated amount of water used by the tourists coming to Azerbaijan (m³ per annum) This data illustrates how water use by tourists increased year by year from 2015 to 2019

Because tourists use more water when on holiday, here estimated at an average of 300 L per day (direct water use), than at home (160 L per day), tourism increases global water use; an argument also supported by Eurostat (Eurostat, 2009). Based on this information, if we multiply the number of tourists coming to the country annually by the daily water consumption, we can find how many m³ of water they use annually. Looking at the figures, we can see that the amount of water used in 2015 was 601,800 m³, in 2016 it was 647,000 m³, in 2017 it was 809,100 m³, in 2018 it was 855,000 m³, and in 2019 it was 951,000 m³ and 2022 it was 206,400 m³ have used (m³ per annum).

CONCLUSION AND RECOMMENDATION

Today, tourism is considered one of the most basic service industries in the world. At the same time, the number of people participating in international tourism activities is increasing day by day. After World War II, developments in transportation technologies and the shortening of working hours in working life, along with increasing welfare and income levels, enabled people to participate more in tourism activities. Today, considering the data of the World Tourism Organization, we see that approximately 1 billion people participate in tourism activities. In this sense, tourism has become an important industry through which countries obtain foreign exchange through "invisible exports." This situation has caused significant pressure on the natural and cultural values that constitute the main source of tourism, or, in other words, the touristic product, in order for countries to get a larger share from tourism.

Although the income from tourism seems to be an important economic gain for countries in the short term, it is obvious that there will be a decrease in income as a result of the destruction of resources in the long term. In this context, as the idea that environmental resources are consumed rapidly but these resources are scarce grows, the concept of sustainability has come to the fore as countries and societies begin to spread, and some studies have been carried out around the world so that future generations can benefit from these resources, taking into account the exhaustibility of these resources. In this respect, the following are the recommendations that can be given to them:

Efficient Use of Water in Hotel Rooms

A leaking toilet cistern consumes an average of 185 liters of extra water per day. Leaking faucets, toilet cisterns, and showers should be repaired or replaced immediately. While conventional shower heads consume an average of 15 - 22 liters of water per minute, it is possible to reduce water consumption to 7 - 9.5 liters with low-flow shower heads with aerators. Thus, it is possible to do the same with 45–60 liters of hot water instead of 90 - 120 liters of hot water during a shower of 5 - 6 minutes.

- ✓ Therefore, water is used efficiently. Room cleaning staff should be trained on the efficient use of water during cleaning.
- ✓ The temperature of the hot water coming into the bathroom should not be too high. If this is provided, no water will be wasted trying to make the hot water warm with cold water.
- ✓ It is necessary to pay attention to the efficient use of water in the hotel kitchens and the efficient use of water in the laundry.

Efficient Water Use in Swimming Pools

- ✓ The water level in the pool should be kept a little low to prevent splashing and dispersal of the water.
- ✓ Using recycle flush filters can help you save water.
- ✓ Pools should be covered with a pool cover to prevent evaporation and heat loss when not in use.
- ✓ To prevent the splashing water from going out of the pool, a channel should be built around the pool.

Efficient Use of Water in Open Areas and Gardens of the Hotel

- ✓ A rainwater storage tank should be placed in the garden in order to benefit from rainwater for garden irrigation.
- ✓ The grass in the green areas of the hotel should not be cut short. It is necessary to let the grass grow as long as possible. Long grass cuts prevent moisture from remaining in the soil and water evaporation.
- ✓ Irrigation of green areas and plants in hotels should be done early in the morning and late in the evening. Irrigation should not be done at other times. In this way, the evaporation of water will be minimized.

Today, hotel businesses are responsible for more than just their customers and employees. In addition, they have to be sensitive to the environment. With the efficient use of water, hotel businesses will fulfil their social responsibilities towards the environment, and thus, a significant reduction in accommodation costs will occur. By developing and evaluating it within the framework of tourism principles and focusing on alternative tourism types, it can have an opportunity to benefit the whole country from the economic and social benefits of tourism. It should be stated that an effective organization is also necessary in order for this approach to be adopted and implemented effectively. In this way, Azerbaijan will have the opportunity to progress by consolidating its place in world tourism.

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MANAGEMENT OF THE SUSTAINABLE UTILIZATION OF ORNAMENTAL CORAL WILDLIFE ON PULAU KAUNG VILLAGE AS HOBBYIST TOURISM

Candra ADI INTYAS* 

Universitas Brawijaya, Faculty of Fisheries and Marine Science, Graduate Program in Agricultural Science, Faculty of Agriculture, Malang, Indonesia, e-mail: candra.intyas@ub.ac.id, candra.adi@student.ub.ac.id

Djoko KOESTIONO 

Universitas Brawijaya, Faculty of Agriculture, Malang, Indonesia, e-mail: d.koestiono@ub.ac.id

Agus TJAHJONO 

Universitas Brawijaya, Faculty of Fisheries and Marine Science, Indonesia, e-mail: tjahjonoagus@ub.ac.id

Suhartini SUHARTINI 

Universitas Brawijaya, Faculty of Agriculture, Malang, Indonesia, e-mail: suhartini.fp@ub.ac.id

Fitria DINA RIANA 

Universitas Brawijaya, Faculty of Agriculture, Malang, Indonesia, e-mail: fitria.fp@ub.ac.id

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Abstract: The coral reef ecosystem is one of the biodiversity that the most significant component of coral reefs, namely corals, has been traded in various sizes. Not only beneficial for marine ecotourism, but the current trend is that ornamental coral has become a legal hobby. These hobbyists make coral one of the main components that decorate their aquariums because of their attractive shapes and colors. However, several types of hard corals are included in CITES Appendix II, so their permits and trading activities are stringent. Indonesia has more than 14% of the World's reefs and is known as the coral triangle area, where one of the centers for ornamental coral production is the Bali Strait. One of the suppliers established in 2015 is PT Lombok Samudera Abadi (PT LSA). PT LSA is a supplier of wildlife ornamental coral products in West Nusa Tenggara that fulfills orders from exporters who are members of the Indonesian Ornamental Coral Farmers Association (KPKHN) for exporters in Bali and Banyuwangi and the Association of Indonesian Ornamental Coral and Fish Association (AKKII) for exporters in Jakarta. The purpose of this study was to analyze the level of corals utilization at PT. LSA and its impact on sustainability. The study's results showed the level of utilization of corals by PT. LSA in Pulau Kaung Village delivered an average actual production of 1,862 individuals /month, which means it does not exceed the maximum production value (CMSY = 3,743 individuals/month) and JTB (2,995 individuals/month). The actual corals harvesting average of 133 trips is still below the optimum harvesting effort (EMSY = 211 trips), so this condition still shows that over-exploited has not occurred in the area with a utilization rate of 0.48 which is still in the moderate status, which means that utilization efforts can be increased. There are 36 hard corals and 9 soft corals taken from nature. Besides corals utilization, PT. LSA also engages in CSR activities by offering restocking from corals transplants in particular areas and training for academics or coastal communities. However, not all restocking is successful, primarily because of seasonal factors that can impact the corals' health. In light of this, more investigation is required.

Key words: Ornamental Reef, Maximum Sustainable Yield (MSY), reef trading, Corporate Social Responsibility (CSR), Hobbyist Tourism

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INTRODUCTION

Coral reefs are important ecosystems that support a variety of marine life and have a vital ecological function because they are home to 93,000 species of marine biota (Bellwood and Wainwright, 2002; CRITC Coremap-LIPI, 2016; Intyas et al., 2020; United States Environmental Protection Agency, 2022). Coral reefs are found in many tropical waters, including Indonesia, which has approximately 12,5% - 18% of the total worldwide (Karim et al., 2021; Susiloningtyas et al., 2018). Indonesia is also included in the corals triangle area, often referred to as the Amazon of oceans, because it has various types of coral reefs, around 69% of the species worldwide (Allen and Erdmann, 2013; Asian Development Bank, 2014; NOAA, 2015; Seascales Working Group CTI-CFF, 2015). Coral reef ecosystems have an essential ecological, social, and economic role in the fisheries sector. From an ecological perspective, coral reefs are home to approximately 93,000 species of marine life and protect the coast from abrasion. Meanwhile, from a health perspective, it is a place to obtain supplementary materials and medicines. From a socio-economic perspective, it can increase the productivity of fishery

* Corresponding author

resources, which are a source of income for the community, especially coastal communities (CRITC Coremap-LIPI, 2016; Intyas et al., 2022). The main components of the coral reef ecosystem are coral animals (corals) with a hard structure and containing lime which are in symbiosis with zooxanthellae algae plants. There are two types of coral: hard and soft (LIPI P20, 2018). Because of its beauty, this coral is also traded globally but several types of coral are included in CITES appendix II (Biondo, 2017; CITES, 2023) so that their circulation is highly monitored and regulated by the World.

Currently, the beautiful and well-maintained coral reef ecosystem also has economic value as part of marine ecotourism. Coral reefs are a popular destination for tourists for various reasons, including those interested in marine ecology and horticulture. For example, Europeans and Americans have been watching television for about 7 hours per day as their favorite hobby, followed by outdoor hobbies such as gardening, hanging out with friends, going to cultural celebrations, and visiting museums, theatres, or concerts.

The trade-in ornamental coral reef wildlife, which includes the aquarium, jewelry, and curio trades, supports a multi-million dollar industry (Grey et al., 2005). Overall the aquarium industry is of relatively low volume yet very high value, thus potentially providing an incentive to conserve reef habitats and offering a livelihood to coastal communities often living in low-income areas (Wabnitz et al., 2003). But aquariums are already playing a key role by providing knowledge and expertise in coral reproduction and restoration techniques in natural habitats (Silva et al., 2019).

Over the last five years, the hobby of raising ornamental fish and corals has become a trend, especially during the pandemic, which requires people to stay at home and place restrictions on one another so that this hobby is an alternative to watching television. These hobbyists make coral one of the main components that decorate their aquariums. Even though it looks beautiful, maintaining ornamental coral requires money. So high-end consumers and the export market still dominate these hobbyists. Aquascaping is the art of decorating the shape and contents of an aquarium. According to Hariyatno et al. (2018), Aquascape is the art of arranging stone, coral, sand, wood, and aquatic plant components in an aquarium. Aquascape's main goal is to provide a view below the surface of the water in an aquarium so that the aquarium looks aesthetically as part of beautifying a room or a specific location. Currently, Aquascape is also one of the subjects that are in great demand by students. Children and adults alike are fascinated by the stunning beauty of ornamental coral, the primary component in an aquarium besides ornamental fish. Therefore, many tourist attractions, offices, and even airports have added aquariums with ornamental coral and ornamental fish using Aquascape, which has been positively received by those who see it. In 2012-2016, 153 countries traded ornamental coral in the global market, including Indonesia, the second largest after Japan (33.67%), with export growth of 5.25% per year.

The export value of Indonesia's ornamental coral in 2016 reached US\$ 10.70 million, equivalent to 6.35 percent of the total world export value of ornamental coral (US\$ 168.51 million, but the trade in ornamental coral during that period did not affect the damage to the existing coral in Indonesia (Riadi et al., 2018). Moratoriums on certain species, no-take reserves, tiered quota systems, and import and export restrictions, among others, provided examples of management successes. Bright spots in the marine aquarium trade include the quickly expanding trade in transplanted corals and improved fisheries management in small fisheries, which demonstrate that this trade can be a part of a larger strategy for reef conservation (Fattah et al., 2021; Rhyne et al., 2014). The increasing consumer concern that the trade in ornamental coral will not damage the ecosystem requires that this ornamental coral business have a clear traceability and legality system because some ornamental coral species included in CITES Appendix II are strictly monitored. Only a few areas have obtained permits to carry out domestic harvesting and distribution of ornamental coral taken from nature. According to Intyas and Abidin (2018), one of the policy directions for fisheries development since 2015 are fostering standardization, accreditation, and certification of fisheries, is to ensure certainty of the form, quality and standards of goods and services produced so that consumers (domestic and foreign) accept them so that they are able to compete in the global market. Based on Intyas et al. (2022), currently the block chain digitization system is also widely used related to traceability.

Based on information from 1153 coral reefs in Indonesia collected in 2019, 390 coral reefs (33.82%) were classified as bad, 431 reefs (37.38%) as sufficient, 258 reefs (22.38%) as good, and 74 reefs (6.42%) as very good (Hadi et al., 2020). Human activities (destructive and illegal fishing), bleaching conditions, and current waves can all contribute to the poor condition of coral reefs (Hadi et al., 2018; Swara and Intyas, 2021). Currently, research that has been conducted in Indonesia is only about monitoring and the condition of corals (Dutra et al., 2021; Johan et al., 2019; Koroy et al., 2014) but research on how often ornamental coral is harvested is still lacking. In order to prevent over-exploitation, it is important to monitor the utilization rate of corals harvesting such as a number of studies by (Auger et al., 2022; Costa and Anjos, 2021; Yanto et al., 2020; Zhang and Fong, 2021) that examined the utilization rate of fish resources being used sustainably in nature. It will be beneficial to take wildlife ornamental coral if it is sustainable, particularly in terms of the economy and the environment. One of the long-established ornamental coral producers is PT. Lombok Samudera Abadi (LSA). PT LSA was established in 2015 and obtained a permit to trade corals from wildlife and aquaculture (transplants) with fishing areas in West Nusa Tenggara namely in Labuan Jambu Village, Tarano District, and Pulau Kaung Village, Alas District, as stated in the recommendations from the West Nusa Tenggara BAPPEDA. Therefore, this research aimed to analyze the sustainable potential and utilization rate of wildlife corals by PT LSA.

MATERIALS AND METHODS

Corals in Indonesia are scattered from Sabang to the north of Jayapura. The distribution of corals is not evenly distributed throughout Indonesian waters, there are certain areas where corals does not grow well, and in other areas, it grows very well. The areas around Sulawesi, Maluku, Sorong, West Nusa Tenggara, and East Nusa Tenggara are good for corals growth (Suharsono, 2008). This research was conducted in January 2023 at PT LSA, which has a fishing area in the

waters of Pulau Kaung Village, Buer District, Sumbawa Besar, West Nusa Tenggara, Indonesia, where the majority of the population is the Bajo Tribe and work as fishermen. The type of research used is descriptive research. Nazir, (2003) defines descriptive research as finding facts with the proper interpretation that accurately describes the properties of several phenomena, groups, or individuals. The methodology of our research is below on Figure 1.

Based on Figure 1, using schaefer's model of resource potential for sustainable corals utilization is based on the Maximum Sustainable Yield (MSY) in Pulau Kaung Village. According to (Conrad and Clark, 1987), from the ecological and economic aspects of MSY, it has the meaning of the most significant number of fish catches (predators) that can be taken from stocks of a type of fish (prey) unlimitedly. Meanwhile, the MSY concept aims to maintain the size of the fish population at a maximum point, namely when the fish growth rate is maximum (the maximum catch rate that provides net economic benefits or benefits to society). Harvesting individuals and adding them to this population allows the population to remain productive. MSY (Maximum Sustainable Yield) is a guideline to manage fishery resources with economic utilization without reducing their population. MSY is often called the maximum value of fishing in waters in the maximum sustainable capacity or the maximum sustainable catch (Munica et al., 2016) MSY is a management parameter resulting from the wildlife assessment of fishery resources. Estimating these parameters requires annual production catch data (time series) (Widodo and Suadi, 2016). Adopted from (Sparre and Vennema, 1998), the following data analysis is used to estimate the sustainable potential and utilization rate of corals, namely :

a) CPUE (Catch per Unit Effort) analysis aims to determine the level of utilization of ornamental coral collection units based on the division of the total catch by effort, using the formula (Sparre and Vennema, 1998):

$$CPUE_i = \frac{C_i}{E_i}$$

C_i : The result of taking the i (individuals)
 E_i : Retrieval attempt to - i (trip)

CPUE $_i$: The number of results taken per unit of retrieval efforts to- i (individuals/trip)

b) MSY (Maximum Sustainable Yield) analysis is to estimate the sustainable potential value of ornamental coral by analyzing catch and effort using the Schaefer production surplus method by calculating the estimation of maximum sustainable potential (C_{MSY}) and optimum harvest effort (E_{MSY}) by using the linear regression equation below (Sparre and Vennema, 1998):

$y = a - bx$ - y = dependent variable (CPUE $_i$) in individuals/trip; x = independent variable (f_i) in trip and b = regression parameters, where the values of a and b are obtained from the following formula (Sparre and Vennema, 1998):

$$a = \frac{\sum x_i^2 - \frac{(\sum x_i)^2}{n}}{n \sum (x_i y_i) - (\sum y_i)}$$

a = intercept; b = slope/variable E_i ; x_i = retrieval attempt i (f_i); y_i = retrieval result per unit of retrieval attempt i (CPUE); which is input into the Schaefer equation, namely $CPUE = a - b(f)$

This method can be applied if the value of b is negative, which means that each additional retrieval effort decreases CPUE. Furthermore, bio technic analysis determines the parameters r , q , k , and biomass under MSY conditions using the fox algorithm estimation model with the formula (Sparre and Vennema, 1998) :

$$x = \left[\left(\frac{z}{U_t} \right) + \left(\frac{1}{\beta} \right) \right], y = \left[\left(\frac{z}{U_{t+1}} \right) + \left(\frac{1}{\beta} \right) \right], z = \left[\left(-\frac{a}{b} \right) - \left(\frac{U_t + U_{t+1}}{2} \right) \right], r = \frac{kq^2}{\beta} \quad q = \left[\prod_{t=i}^n \ln \left(\frac{x}{y} \right) \right]^{1/t}, \quad k = \frac{a}{q}$$

Based on Sparre and Vennema (1998), the estimated value of biomass (x_{MSY}) = $\frac{k}{2q}$, maximum sustainable potential (C_{MSY}) = $\frac{r.k}{4}$ and optimum retrieval effort (E_{MSY}) = $\frac{r}{2q}$

c) Then, an estimation of the level of utilization (TP) and the number of allowable withdrawals (JTJ) is carried out in Pulau Kaung Village. TP estimation presents the amount harvested in a particular year with the maximum sustainable potential value (C_{MSY}). The TP formula is (Sparre and Vennema, 1998):

$$TP = \frac{C_i}{C_{MSY}} \times 100\% \quad \text{While the JTJ formula} = 80\% \times MSY \quad (\text{Anna, 2016; BPS, 2018})$$

RESULTS AND DISCUSSION

The collection of wildlife corals by PT LSA is a request from an exporter who is a member of the Indonesian Ornamental Coral Farmers Association (KPKHN) in Bali and Banyuwangi and the Association of Indonesian Ornamental Coral and Fish Association (AKKII) for exporters in Jakarta. Based on recommendations from the use of ornamental coral that are not protected by law, they must meet the requirements to be outside the conservation area/ protected area set by central and regional agencies and be carried out with caution to avoid damage to the coral reef ecosystem. During 2020 – 2022, PT SLA took 46 types of corals divided into 37 types of hard corals, with the most species being *Euphyllia* sp and 9 types of soft corals, with the most species being Substrat *Ricordea* sp. The types of corals are mostly taken because their corals patterns and shapes are the most preferred by consumers. The harvest period for hard corals consists of 3 periods, namely 4 months (13.51%), 8-12 months (70.27%), and 24 -30 months (16.22%). The types of corals that are

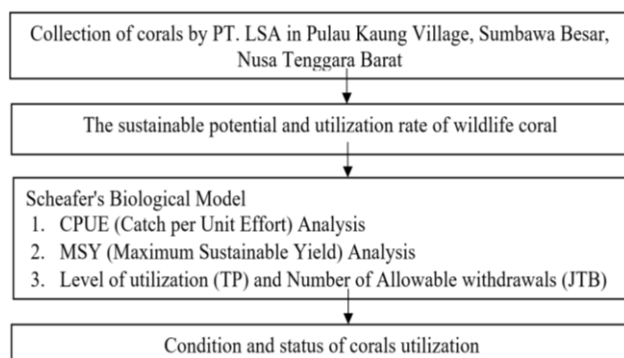


Figure 1. Research flowchart of Corals Utilization by PT. LSA

Table 1. Level of Utilization category (Source: Kepmen KP No. 50, 2017 annex 4)

Index value	Category
TP < 0,5	Moderate
0,5 ≤ TP < 1	Fully exploited
TP ≥ 1	Over exploited

mostly taken are presented in Figure 2. The results of wildlife corals harvesting conducted by PT LSA in May 2020 - December 2022 were 59,490 individuals on 133 trips with an average monthly corals harvest of 1,862 individuals.

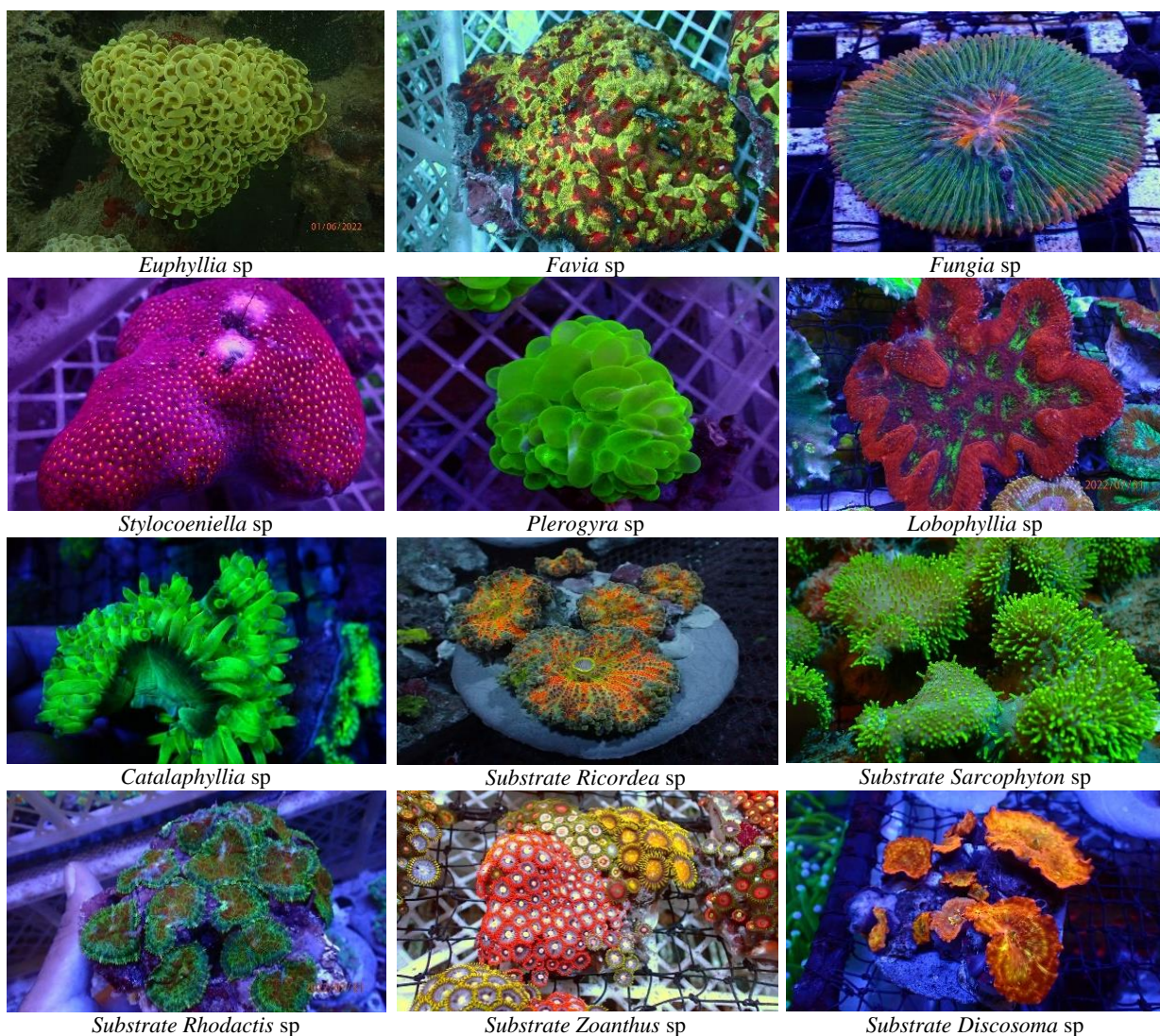


Figure 2. Dominant corals species taken by PT. LSA in Pulau Kaung Village (Source: Primary Data, 2023)

The highest corals harvest was in October 2020 at 8,237 individuals, while the lowest was in May 2022 at 98 individuals. The taking of wildlife corals decreases every year due to restrictions on corals harvesting quotas from the government, which support sustainability. Moreover, the growth period and season also affect the harvest time, which is usually low in March-May and high in October-November for three years (2020–2022) as can be seen in Figure 3.

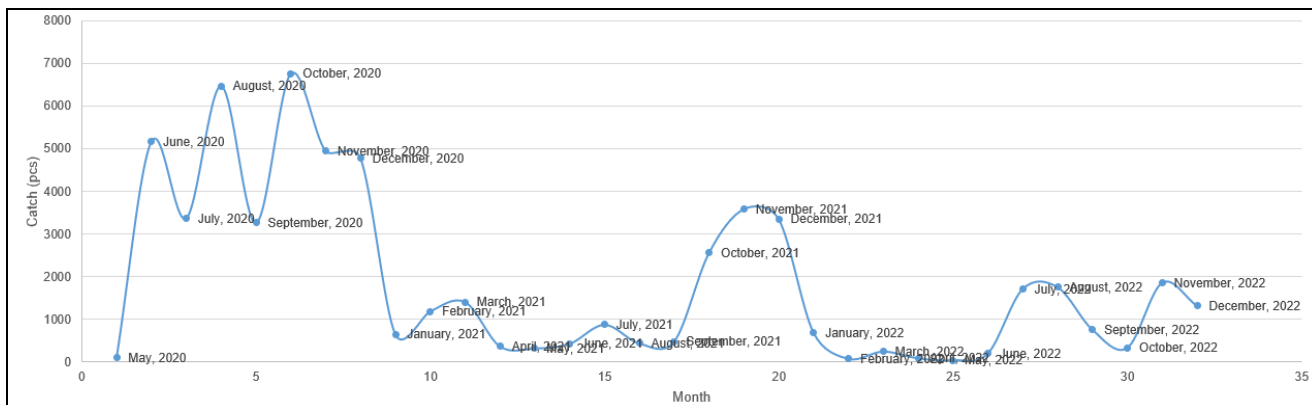


Figure 3. Results of PT LSA Corals Harvesting from May 2020 – December 2022

Based on the Catch Per Unit Effort (CPUE) calculation, the value of ornamental coral from May 2020 – December 2022 is represented in Figure 4.

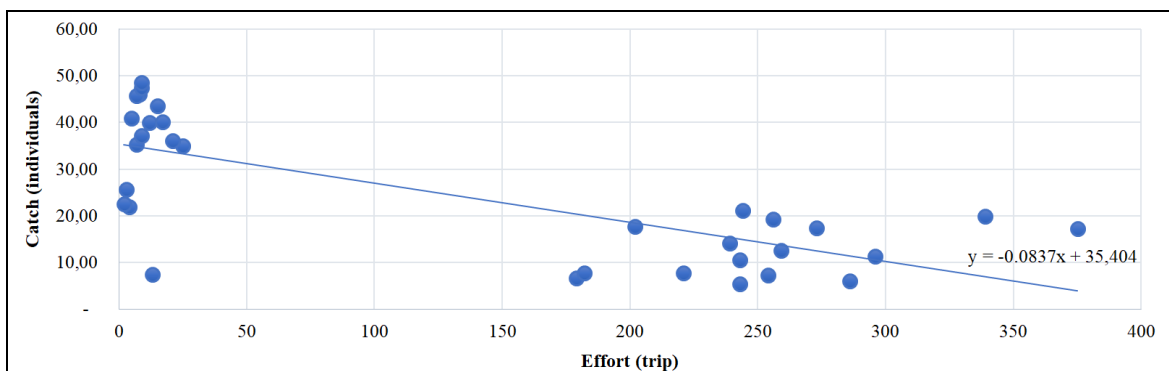


Figure 4. Relationship between Effort and CPUE of Wildlife Ornamental Coral PT. LSA in Pulau Kaung Village in May 2020 – December 2022

The relationship between effort and PT LSA's Wildlife Ornamental Reef CPUE in Kaung Village in May 2020 – December 2022 in Figure 3 showed an increase in the number of corals taken (effort) per ship, which led to a decrease in corals yields per ship (CPUE). The varied CPUE values indicated that there had been an increase and decrease in corals harvesting but tended to decrease. Furthermore, the results of biotechnical, bioeconomic, and utilization rates are presented in Table 2. Based on the graph in Figure 4 and Scheafer's biological model in Table 2, the regression equation is as follows: $y = 35,404 - 0.0837x$. This equation shows that: The regression coefficient (b) of -0.0837 states that there is an inverse relationship between production and effort (trips) and that the addition of 10 taking trips means that production will decrease by 0.837 individuals/month, and vice versa. If the trip value is zero, the production is 35,404 individuals/month. The coefficient of determination (R^2) is 0.5484 or 54.84%, indicating that CPUE is affected by the total effort (trip) of 54.84%. In comparison, the remaining 45.16% was influenced by other factors such as fishing ground, type gear, stock, weather, or did not address in the model. Biological parameters include intrinsic growth rate (r), gear coefficient (q), and the carrying capacity of the aquatic environment (k). The intrinsic growth rate (r) is 1.11 which means that corals resources grow naturally without any disturbance from natural phenomena or human activities of 1.11 individuals/month. The gear coefficient (q) of 0.003 indicates that each increase in the unit of harvesting effort will have an effect of 0.003 individuals per trip. The carrying capacity of the environment (k) is 10,319.9, indicating that the ability of the ecosystem to support the production of corals resources is 10,319.9 individuals/month from biological aspects, including food abundance, population growth, and fish size. The maximum sustainable potential is obtained by biomass (x_{MSY}), which is 5,160 individuals/month. The maximum sustainable potential (C_{MSY}) is 3,743 individuals/month, and the optimum harvesting effort (E_{MSY}) is 211 trips. Degradation analysis was carried out to determine how much the degradation rate occurred due to resource extraction (Sobari et al., 2009). Generally, the average actual production (1,862 individuals/month) is less than the maximum sustainable potential (C_{MSY}). In addition, the actual corals harvesting effort (133 trips) is also smaller than the optimum harvesting effort (E_{MSY}). This condition indicates that overfishing has yet to occur because both the number of corals taken (catch) and the actual level of effort (effort) have not exceeded the level of potential and sustainable harvesting efforts (MSY). These conditions can also be seen in Figure 5.

Table 2. Analysis of Scheafer's Biological Model

Data	Value	Analysis	Value
a	35.404	x_{MSY}	5,160
b	-0.0837	C_{MSY}	3,743
R^2	0.5484	E_{MSY}	211
P-value	0,0000126	JTB	2,995
r	1.11	TP	0.48
q	0.003		
k	10,319.9		

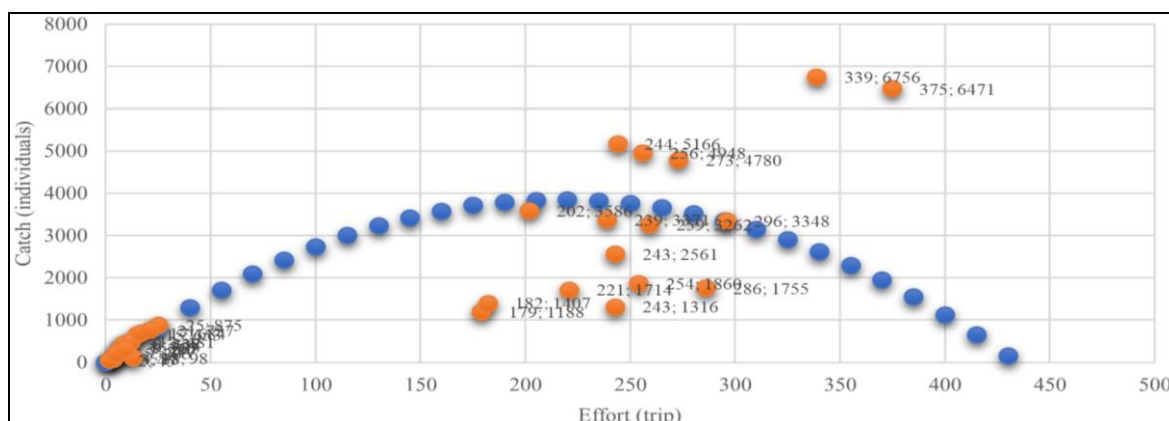


Figure 5. Coral Maximum Sustainable Yield Curve in Kaung Village

Referring to Kepmen KP No. 50, 2017, the Ministry of Maritime Affairs and Fisheries provides standards for the utilization of fish resources in the fisheries management area of the Republic of Indonesia. Based on the MSY estimation analysis, this study showed a utilization rate of 0.48 which was included in the moderate category because it was in the range $TP < 0.5$, which means that corals harvesting efforts can be increased. In addition, the number of corals harvests allowed (JTB) is 2,995 individuals, whereas the average actual corals production/taken was 1,862 individuals/month, which means that

PT LSA takes corals still on the JTB boundary. The difference between the actual average corals harvest and JTB was 1,133 individuals (37.83%). So that this condition is still safe for corals harvesting, although policies are still needed regarding corals harvest quotas, especially corals species included in CITES appendix II. To support sustainability, PT LSA also conducts corals transplantation (aquaculture), which is traded on the export market. In addition, PT LSA conducts Corporate Social Responsibility (CSR) activities in collaboration with POKMASWAS and related stakeholders for restocking coral transplants in several areas of West Nusa Tenggara annually and conducting training for academics and coastal communities. Restocking is carried out not in coral collection areas but in areas with a high level of corals damage or beach tourism areas that require improving coral conditions. Figure 6 and 7 illustrates PT LSA's CSR activities from 2020 to 2022.

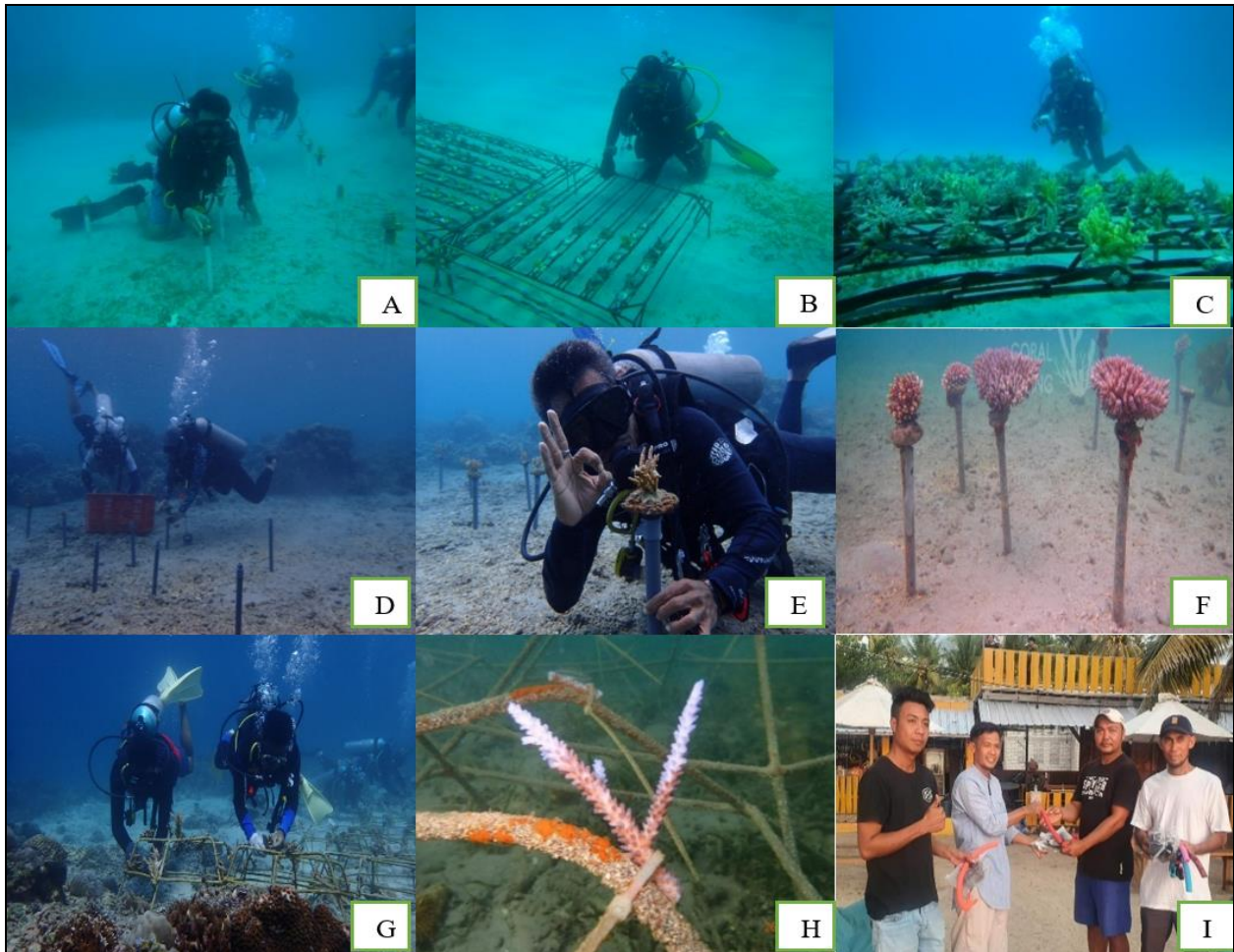


Figure 6. Restocking Corals (Corals Transplantation) on 2020–2022

(A–C) at Pandanan Beach, North Lombok, in 2020: planting corals in shelves [A], planting corals with the peg method [B], and only corals in shelves surviving within two months [C]. On November 21, 2020, at Moyo Island Beach, Sumbawa Besar, planting corals with the peg method of 50 stakes on a sandy rubble substrate area [D–E] and checking on December 4, 2021, it was found that 17 stakes had survived, and the corals were developing quite well [F]. (G) planting corals on shelves on Gili Meno Beach, North Lombok, in 2021. (H–I) planting corals on Mutiara Beach, Pulau Kaung Village in 2022 (Source: Primary Data, 2023)



Figure 7. Corals Transplantation (Aquaculture) Training and Assistance

(A – B) for teachers is scheduled for October 12th–17th, 2020, at the PT LSA Office in Pulau Kaung Village. This training includes material on how to cultivate corals, identification, and regulation, as well as practice on how to plant both hard and soft corals and good coral harvesting methods. There were two schools on the figure namely Teachers of Seteluk 1 Public Vocational School, Sumbawa Regency [A] and Teachers of Alas 1 State Vocational School, Sumbawa Regency [B]. (C) assisted community groups from Natural Resources Conservation Center (BKSDA) Sumbawa on 13th December 2021 (Source: Primary Data, 2023)

CONCLUSION

The commerce in decorative corals as hobby tourism is becoming a global trend that is thriving during the pandemic with the growth of Aquascape, which is not only a hobby at home but also tourist sites, airports, offices, and hotels. PT LSA collected 36 types of wildlife ornamental coral, including hard corals, with the most species being *Euphyllia* sp, and 9 types of soft corals, with the most species being substrate *Ricordea* sp.

The research results show that the average actual production is 1,862 individuals/month, which means it does not exceed the maximum production value ($C_{MSY} = 3.743$ individuals/month) and JTB (2,995 individuals/month). The actual coral harvest of 133 trips still below the optimum harvesting effort ($E_{MSY} = 211$ trips). So this condition still indicates that overfishing has not occurred in this area. The level of corals utilization in Pulau Kaung Village has a value of 0.49 or is in a moderate condition, which means utilization efforts can be increased. In addition to using corals, PT LSA also carries out CSR activities by providing restocking from corals transplants resulting in certain areas and training for academics or coastal communities. However, not all restocking goes well, mainly due to seasonal conditions, which also affect the condition of the corals. In light of this, more research is required.

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HOUSING AND SPATIAL IMPACTS IN ALGIERS PROVINCE 1984 - 2021: EASTERN REGION CASE STUDY

Faiza ABBAS* 

University of Science and Technology Houari Boumediene (USTHB), Faculty of Earth Sciences,
Department of Geography and Land Use Planning, Algiers, Algeria, e-mail: faizaabbasusthb@gmail.com

Fawzi BOUDAQQA 

University of Science and Technology Houari Boumediene (USTHB), Faculty of Earth Sciences,
Department of Geography and Land Use Planning, Algiers, Algeria, e-mail: ab.fawzi23@gmail.com

Naziha LAMRI 

Akli Mohand Oulhadj University of Bouira, Laboratory for the Management and
Valorisation of Natural Resources and Quality Assurance, Bouira, Algeria, e-mail: n.lamri@univ-bouira.dz

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Abstract: Algeria underwent expedited urbanization in response to a growing demand for housing. The study aims to identify the current housing situation in Algiers from 1984 to 2021 using official statistics and a field investigation of a sample of 600 households. The study also used Landsat 5 and 8 satellite images to analyze the development of vegetation cover in the province, so the results analyzed in SIG. This study shows that the built-up area has increased from 47.32 km² in 1984 to 81.34 km² in 2021, damaging the fertile Mitidja plain. Inadequate housing persists despite the rise in residential construction, and insecure dwellings are proliferating due to migration.

Key words: Algiers province, housing, vegetation index NDVI, Mitidja plain, Housing formulas, Precarious housing, migration

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INTRODUCTION

The housing problem is one of the most significant problems confronting policymakers worldwide, but the extent of its impact varies depending on the population, social, and economic regulations that control the two poles of the supply and demand problem (Lombard, 2023; Prayitno et al., 2023). Algeria's housing crisis is the result of a series of housing policies that lacked a clear and thoughtful strategy characterized by circumstance, resulting in a multi-faceted crisis characterized by a continuous shortage of housing supply in the face of increasing demand.

The procedures followed within the framework of the national reconstruction policies have resulted in radical changes in its urban composition (Ahlem and Zina, 2023; Djafri et al., 2019) and the emergence of different consumption patterns for urban space (Kadri and Khalfallah, 2023) that are experiencing rapid growth in all provinces, each with its own unique expansion, in conjunction with facilities for granting building permits and land plots designated for housing. This has contributed to the formation of an unregulated and non-harmonious urban scene (Djouablia et al., 2022), resulting in excessive space consumption, a reduction in the buildable area, and the impediment of agricultural land.

Therefore, the Algerian authorities have established several laws for real estate management, such as Reconstruction Law 90-29 of 1990, which liberalized the real estate market, introduced flexibility in its management methodology, and delegated the study and implementation tasks to private real estate agencies, in addition to encouraging private initiative and recruiting new means and systems for housing finance (Mihoubi and Boukhemis, 2021). This has made the housing production policy, especially in the state, a field for the diversity of actors from both the public and private sectors.

The National Urban Development Plan (SNAT) is regarded as the primary foundation for this law (Samir and Bouchareb, 2023), as it embodies long-term decisions regarding the planning and organization of the national territory over time horizons of 10–20 and 20–25 years. The Regional Urban Development Plan (SRAT) clarifies the national scheme's guidelines and principles (Hafsi et al., 2022). There are also local development plans that facilitate spatial regulation, such as the State Development Plan (PAW), Municipal Development Plan (PAC), Development and Reconstruction Orientation Plan (PDAU), and Land Use Plan (POS) (Chorfi and Madani, 2022; Naziha and Hassib, 2023).

Algiers has experienced remarkable urban expansion in recent decades as a natural result of rising housing demand (Bellout et al., 2020; Rabehi et al., 2019). The opening to the market economy that characterized Algerian public policy necessitated changes in housing and real estate policies, which resulted in the liberalization of the real estate market, with direct consequences for urban organizational structure. As a result, the capital and its suburbs have evolved into a dynamic

* Corresponding author

urban area worthy of study and attention, whether it is related to major housing projects or housing programs developed by real estate promotion bureaus and large and medium private contractors. Housing patterns in the province's suburbs have varied, resulting in a wide range of urban formulas ranging from individual to collective, and from social to clavicular and even unregulated. As a result, urban sprawl has spread in all directions (Otmani et al., 2020; Souiher and Abdessamed Rezzaz, 2020).

The province of Algiers was chosen as a field for study and analysis because it contains the country's capital, which is considered the head of the national urban system and the first population center with a population of over 3 million people. The province of Algiers, like the other provinces in Algeria, has greatly benefited from special housing programs for collective housing as part of the province's efforts to overcome the housing crisis and organize the urban space.

Within the academic literature concerning the change of residential infrastructure in Algeria, many researchers have contributed to the discourse. Notably, authors addressing this topic include:

In their study, Yelles and Khalfallah (2022) investigated the influence of citizen involvement in initiatives aimed at mitigating substandard housing conditions in the deprived neighborhood of Sidi Slimane in the medium-sized city of Boussaâda located in the Algerian high plains. The author examined the effectiveness of such participation in programmatically addressing the issue of precarious housing. Following the end of the 1990s, a series of interventions have been initiated within this vulnerable district with the objective of ameliorating its residential atmosphere, such as the implementation of the Precaire Habitat Reduction program (PHR).

A recent examination conducted by Slimani and Raham (2023) have expounded upon the consequences of urbanization on the decline of agricultural land. This study was conducted in the city of Setif, and its findings confirm that economic activities are contributing to the rapid and unplanned urban growth observed in the area, and exacerbating the resultant environmental impact. Another study presented by Ali et al. (2023) proposed ways to organize space in the province of Algiers by balancing the building process while preserving the beauty of the landscape and nature.

We also have a study by Hind et al. (2022) that used satellite images to show the decline of agricultural areas and forests in the province of Algiers from 1987 to 2018. Predictions were also made for the changes in land use that will occur by the year 2040. The aim of this research is to examine the housing situation in the province of Algiers from 1984 to 2021, focusing on the impact of increased housing inventory and relevant factors on the spatial aspect.

The present discourse focuses on the causes and ramifications of arbitrary interventions that have impacted the spatial realm, as well as the salient factors that contributed to the expansion of housing units, including the phenomenon of intra-national migration. The present study aims to ascertain the effects of urban expansion on the vegetation cover and the attendant issues that ensue, such as the emergence of pre-existing and unregulated settlements as well as illegal abodes that impose unaesthetic encroachments on the space of Algiers which are deemed imperative to be eradicated.

To demonstrate the urban metamorphosis transpiring within the Algiers province and its concomitant decrease in vegetation, we collected a study sample from three municipalities (Bordj El Kiffan, Bordj El Bahri, and El Marsa) in the eastern part of Algiers province in order to facilitate the field investigation process and distribute questionnaires. According to previous studies, these municipalities were chosen because they have seen growth in housing stock over the last two decades. Therefore, it was natural to inquire about these residents' original residence, the reasons that led them to migrate to these three municipalities, and the type of housing in which they currently reside. The focus of our inquiry pertains to the contemporary status of the housing industry within the province of Algiers, and the challenges arising from the influx of citizens migrating from other provinces, as well as the disproportional balance between the supply and demand of housing.

MATERIALS AND METHODS

Research methodology

To achieve the research objective, we adhered to a set of stages as follows:

- Introducing the study area and the most important changes that occurred in the housing stock of the province of Algiers;
- Identifying the new formulas of housing stock in the state with an explanation of their impact on the space;
- Analysing the results of the field survey that was conducted in the eastern part of the state in the three municipalities (Bordj El Kiffan, Bordj El Bahri, and El Marsa).

Initially, we approached various relevant departments and organizations, conducting interviews to collect data, including the Directorate of Urban Planning, Housing, and Construction (DUCH), the National Statistics Office (ONS), the National Institute of Maps (INC), and the Office for Promotion and Management of Real Estate (OPGI). These statistics were included in tables, graphs, or maps to facilitate analysis. We also utilized the Normalized Difference Vegetation Index (NDVI) calculated from a set of satellite images, LANDSAT 05 ETM+/Landsat 08 OLI, taken in 1984 and 2021.

The NDVI is used to display the chlorophyll activity of vegetation by utilizing the infrared band of the electromagnetic spectrum, where vegetation reflects the most energy that can be observed and recorded by a satellite sensor (Berger et al., 2020; Joiner et al., 2018; Martín et al., 2023). The NDVI determines a high value to areas with defensible and living vegetation, while a low value to areas without vegetation. The methodological approach, on the other hand, is based on calculating the index using the following formula (Huang et al., 2021, p. 3):

$$N_{DVI} = \frac{N_{IR} NIR - R_{ed} Red}{N_{IR} NIR + R_{ed} Red}$$

NDVI is normalized difference vegetation index; R_{ed} and N_{IR} are spectral radiance (or reflectance) measurements recorded with sensors in red (visible) and NIR regions, respectively. We distributed a set of questionnaires (600 surveys) to the residents of the three municipalities: Bordj El Kiffan, Bordj El Behri, and El Marsa, by distributing the questionnaires to three secondary schools. Generally, the questionnaire included 25 questions divided into three axes:

- The first axis is personal data.
- The second axis is the external framework of housing and the neighborhood.
- The third axis includes social and economic characteristics.

After distributing 600 questionnaires, we collected 579 copies and did not consider 21 copies for the following reasons: unreadable and incomplete answers. The methodology employed in this study is succinctly depicted in the following schematic diagram:

STUDY AREA

The province of Algiers represents the capital of the country, where the center of political decision-making in the northern part of Algeria is located. It is bordered to the north by the Mediterranean Sea and is surrounded by the provinces of Boumerdes to the east and Tipaza to the west, and Blida to the south and southwest (Cheniki and Baziz, 2020). The state covers an area of 809.22 km² (Figure 2). The state is characterized by the abundance of agricultural land; the most important is Mitidja Plain, which is characterized

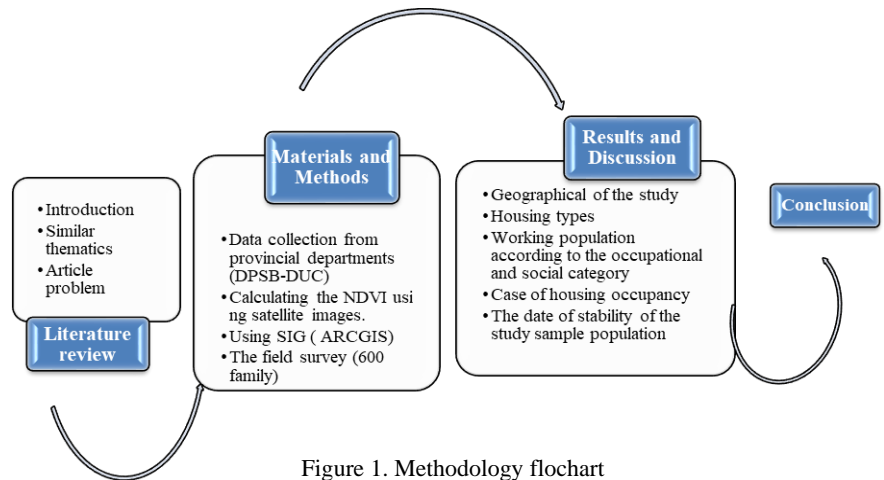


Figure 1. Methodology flochart

by a low slope and where 87% does not exceed 3%. What increased its importance is that it contains watercourses such as Oued El Chiffa and El Hamiz, which extend from Mount Chenoua to Oued Boudouaou. Its lands are considered to be among the most fertile and high-quality ones. The percentage of exploited agricultural land in the state is estimated at 43.5% of the total area of the plain. The areas where the slope ranges from 3% to 12.5% are called lower mountain foothills, as their lands are characterized by a moderate slope and limited exposure. This is what distinguishes the western coast of the city of Algiers. As water is the primary factor for economic and social activities, it receives considerable amounts of precipitation throughout the year, ranging from 600 to 900 mm/year. On August 2, 1997, the Greater Algiers province was established (Boudaqa, 2009), which replaced the province of Algiers by virtue of Presidential Decree N° 97-292 relating to administrative organization (Benakezouh, 2002). The new administrative entity included 24 municipalities from the neighboring provinces of Blida, Tipaza, and Boumerdes. On this basis, the number of municipalities in the province of Algiers has increased from 33 to 57, expanding its area to 809.22 km².

The spatial distribution of the population and housing in the state of Algiers

The population of the province of Algiers has increased between 1987 and 2021 (Ali et al., 2023). The number of inhabitants rose from 2122319 people in 1987 to 2562428 people in 1998, an increase of 440109 people and a growth rate of 1.2%. This increase can be attributed to the expansion of the province’s territory to include a considerable number of municipalities, namely the 24 municipalities that were taken from its metropolitan areas of Blida, Tipaza, and Boumerdes, which we previously explained. The population continued to increase from 2562428 people in 1998 to 2987160 people in 2008,

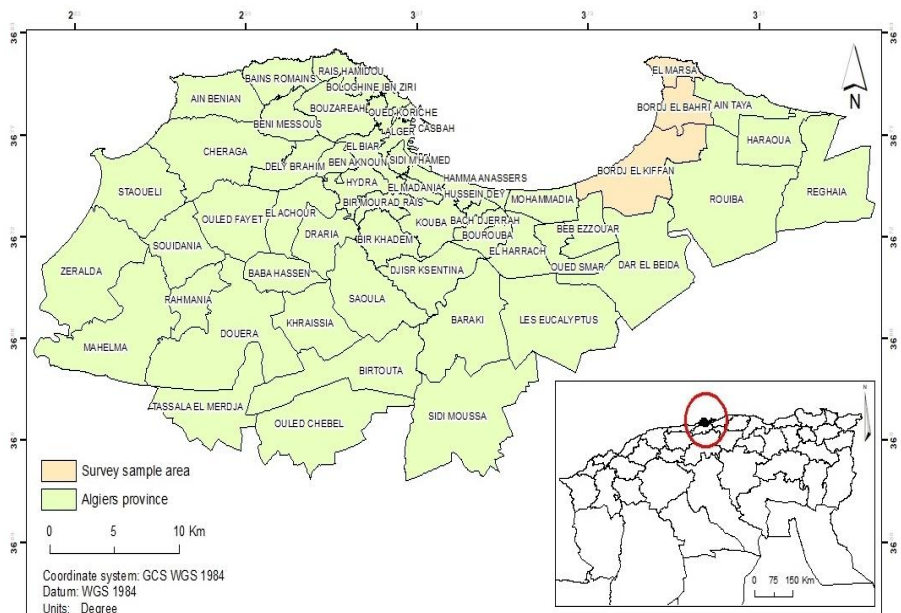


Figure 2. Location of Algiers province and Sample Survey Area (Source: authors)

an increase of 424732 people and a growth rate of 1.6% (Figure 3). Currently, the population of the state has reached 3309896 people in 2021(DPSB, 2021). The reasons for this development can be attributed to several factors, such as the attraction of rural migration waves in search of work opportunities or educational prospects, given the improved living conditions, availability of healthcare, urban facilities, and vital amenities. In addition, the capital has benefited from several housing projects, making this state a major workshop. As for the population growth rate, we notice that it has declined in recent years, as it moved from 1.51 between 1987 and 1998 to 1.10 between 2008 and 2021 (Figure 4).

This is due to a decrease in the number of births, as many Algerian families have reduced the number of children due to the decrease in purchasing power, in addition to the factor of an increase in the age of marriage for women due to education and work, which has become a priority for Algerian women recently.

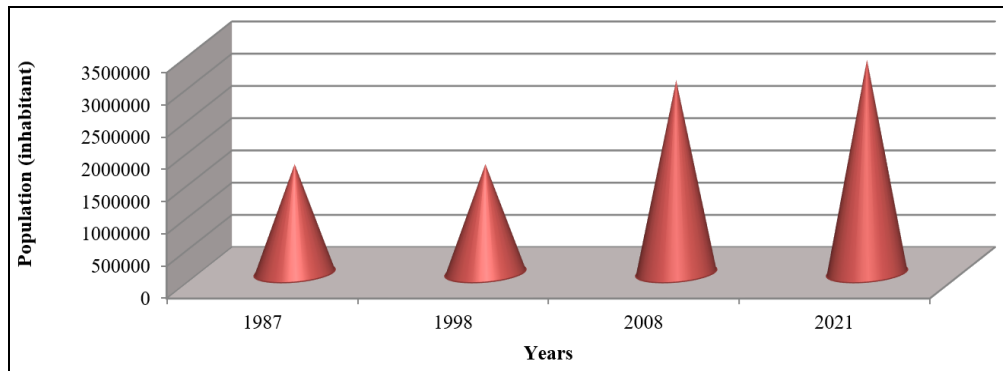


Figure 3. Evolution of the population of Algiers from 1987 to 2021 (Source: DPSB, 2021)

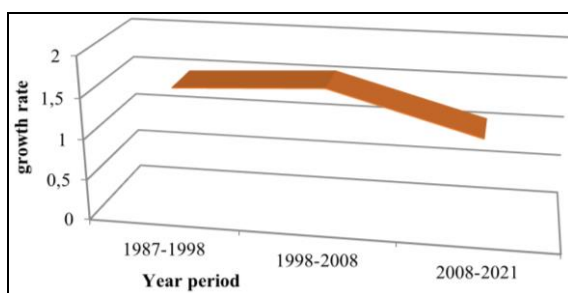


Figure 4. The population growth rate developed between 1987 and 2021 (Source: DPSB, 2021)

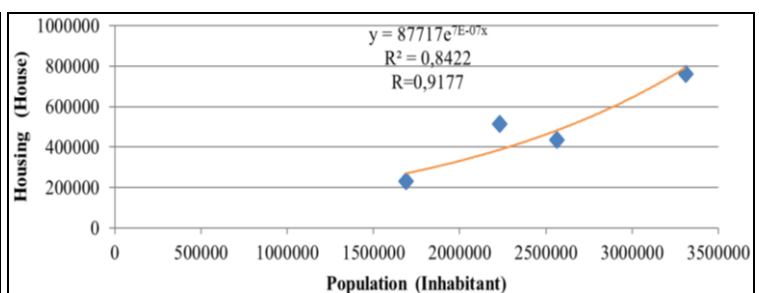


Figure 5. Correlation between the number of the population and the housing stock in the province of Algiers (Source: DPSB, 2021)

The housing stock in the province of Algiers witnessed rapid development between 1987 and 1998, with the number of housing units increasing from 233384 in 1987 to 435605 in 1998 and reaching 624738 in 2008. This increase was due to the availability of land for housing construction in the suburban administrative districts of the province, however in 2021, the number of housing units reached 760619 (DPSB, 2021). Through the relationship between population growth and housing stock in the province of Algiers, it becomes clear that there is a strong correlation of 91.77% (Figure 5).

As the population increased, so did the demand for housing. Given that the state of Algiers has experienced demographic growth due to natural increases and internal migration, the housing stock has increased. Figure 6 shows the gradual rise of the housing stock throughout the province of Algiers between 1998 and 2021.

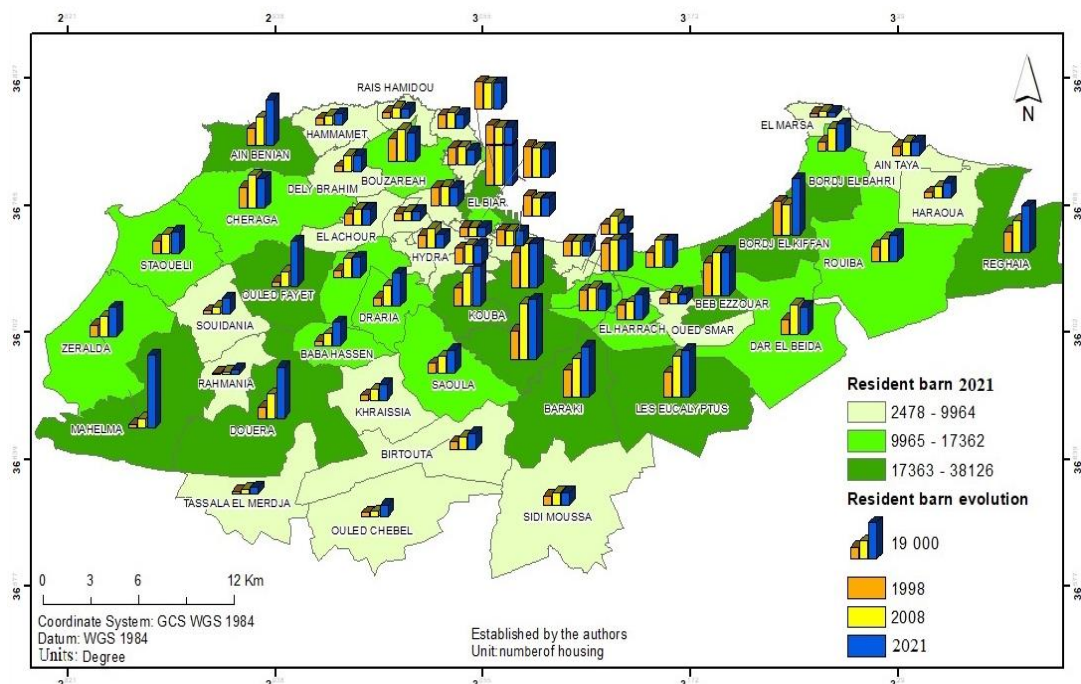


Figure 6. Development of the housing stock in Algiers from 1998 to 2021 (Source: DPSB, 2021)

This can be summarized as follows:

- Municipalities with a high increase in housing stock for the year 2021 range from 17363 to 38126. These include the municipality of Mahelma, which witnessed an increase in its housing units from 2033 in 1998 to 38126 in 2021. Additionally, there are Douera, Ouled Fayet, and Ain Benian in the western region, as well as Gue de Constantine, Bir Khadem, Kouba, Bab El Oued, Bir Mourad Rais, Baraki, and Douera in the central and eastern regions. We can explain this rapid increase in housing in the eastern and western regions by the desire of the public authorities to open up space for construction and move away from the coastal areas close to the Bay of Algiers. In recent years, important projects for building or housing have been recorded, such as public promotional housing (AADL, LPP). We will talk about this next.

- Municipalities with a medium level of housing stock ranging from 9965 to 17362 units in 2021 include Dar El Beida, El Achour, Staouali, and Zeralda in the western region, as well as El Harrach, Bourouba, Mohamedia, Bordj El Bahri, Rouiba, and Dar El Beida in the central and eastern regions.

- Municipalities with a low housing stock, where the number of units in 2021 ranges from 2478 to 9964. These municipalities include: Souidania, Rahmania, Tassala El Merdja, Ouled Chebel, Bir Touta, and Sidi Moussa in the southern region, Dely Brahim, Beni Messous, El Hammamet, Hydra, Raïs Hamidou, Oued Smar, and El Marsa in the central and eastern regions of the state of Algiers. In general, these municipalities have not experienced a significant increase in housing stock in the past decade due to their saturation and inability to accommodate additional housing because of the lack of real estate inventory. If found, the price of the property is very high, and a simple citizen cannot afford it.

It is worth mentioning that the rate of growth of the housing stock in the last decade is evidence of the public authority's determination to provide decent housing for citizens and to change its pattern to a civilized urban style. However, this has negatively impacted the vegetation cover in the province (Bellout et al., 2020). Especially since the province contains the most fertile plain in Africa, which is the Mitidja Plain. Thus, we observe the phenomenon of unregulated expansion on agricultural lands and random horizontal spread when construction lands are consumed before the deadlines set for them, impeding any urban expansion if the pace of reconstruction continues (Tahraoui et al., 2023). Figures 7 and 8 represent the growth of built-up areas, which have increased from 47.32 km² in 1984 to 81.34 km² in 2021. In 2021, the black dots will be growing, indicating an increase in housing stock. The NDVI vegetation cover index shows a reduction in vegetation cover. Green dominates the map's color in 1984, indicating that vegetation cover is spreading across the province. However, the green color on the 2021 map is shrinking and almost disappearing this is due to the urban expansion on the agricultural land in the province remaining only in the province's southern and eastern regions, which represent the airport area (Soulard et al., 2018).

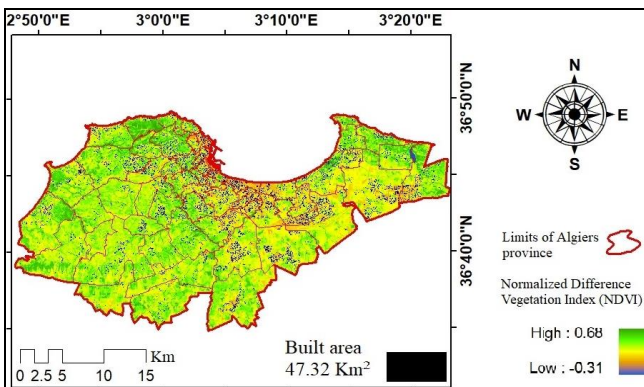


Figure 7. Algiers' urbanization in 1984 was compared with NDVI analysis (Source: Landsat 5)

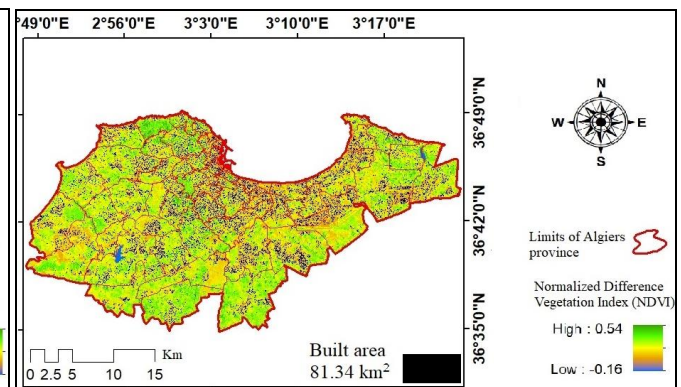


Figure 8. Algiers' urbanization in 2021 was compared with NDVI analysis (Source: Landsat 8)

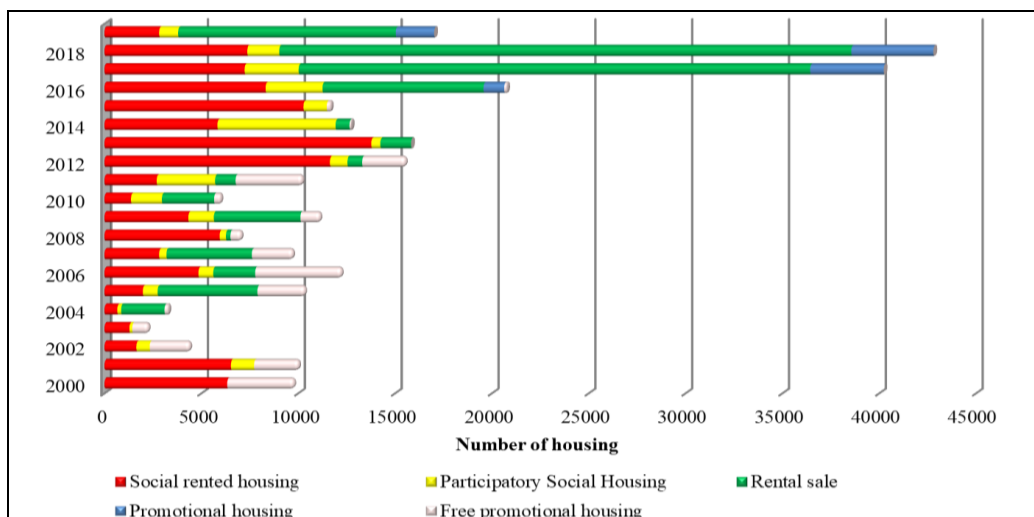


Figure 9. The development of housing stock types in the province of Algiers from 2000 to 2019 (Source: DPSB, 2021)

The province of Algiers has benefited from the various housing formulas because it is an attractive state for the population, so it must keep pace with the growing demand of the population. Figure 9 illustrates the evolution of urban housing in various formulas in Algeria between 2000 and 2019, with 286689 homes delivered. Prior to 2001, there were no formulas available, as housing shares were provided through social and self-construction, resulting in the delivery of 107787 social rented housing units and 27407 participatory social housing units. However, after 2001, an economic revitalization policy aimed at developing all sectors was implemented (Kheira and Rachida, 2021). We also observe the beginning of the release of housing units for rental sale, which began with 2241 in 2004 and reached a high of 29540 in 2018. In terms of the promotional housing formula, housing unit delivery began in 2016 and reached a total of 11084 units in 2019.

Despite the efforts of local governments to provide decent housing for residents, the phenomenon of precarious housing has spread. According to statistics compiled by the Ministry of Housing and Urban Planning's directorates, the number of precarious housing units reached 45480 in 2007 (Ben-Hamouche and Medjitna, 2021; Lamri et al., 2020), accounting for 8.21% of total precarious housing. Figure 10 illustrates the evolution of precarious housing in municipalities across Algiers from 1998 to 2021, with informal housing decreasing in 2021.

This observation is common in most municipalities and is due to the desire of local and national authorities to eliminate precarious housing. According to reports, massive relocation operations took place between 2014 and 2016, relocating 46000 families. In October 2016, 3000 families were relocated from Hafra neighborhood in Oued Smar and other capital municipalities, including Bab El Oued, Bordj El Bahri, Bordj El Kiffan, and Oued Smar. Seven major neighborhoods, housing over 7000 families, were relocated in May 2016.

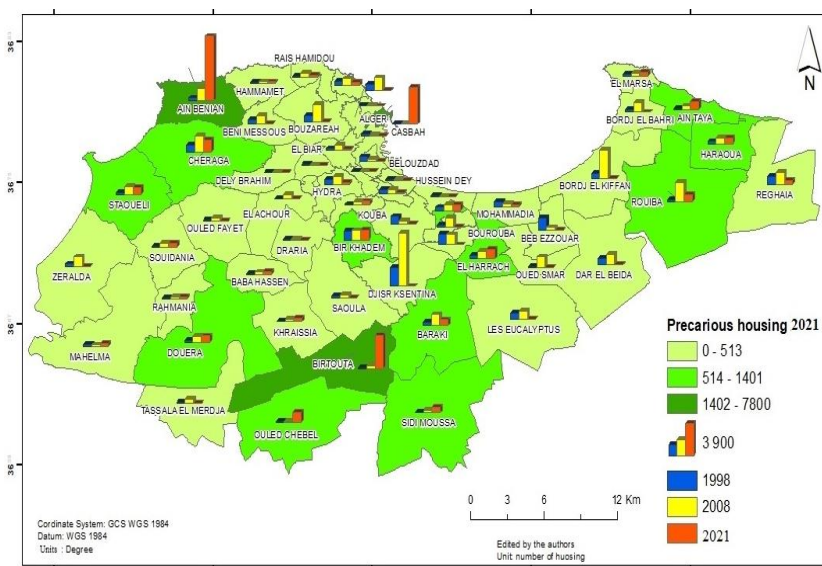


Figure 10. Evolution of the precarious housing in Algiers province from 1998 to 2021 (Source: DPSB, 2021)



Figure 11. Precarious housing within the neighborhood in the municipality of Staoueli (A), and near the buildings (B) (Source: Authors, December 2022)

It is also worth noting that the number of precarious housing units in the following municipalities has increased significantly in 2021: Ain Benian, Casbah, and Bir Touta. In Ain Benian, the number of precarious housing units has increased from 1497 in 2008 to 7800 in 2021. In Casbah municipality, the figure will reach 4500 by 2021, up from 87 in 2008. It can be observed that the number of precarious housing units has increased significantly in recent years in the western and southern regions of the state. In the past few years, the construction sector has been worked on and improved. This is evident in the map above. The increase in the number of precarious housing units can be attributed to several factors, summarized as follows:

- The resurgence of the phenomenon of precarious housing, due to the inability of low-income families to purchase or rent a proper housing unit, and thus these families found temporary shelter in precarious housing units with social characteristics.
- Living in a precarious housing unit has become a solution for many greedy people seeking housing units in the capital city, where they move from other provinces and live in inadequate ones in sensitive areas of major cities, especially in the absence of local government monitoring. They then demand adequate housing units in exchange for leaving the neighborhood.
- In reality, the municipalities that have seen an increase in precarious housing units after 2008 are either inadequate, which are tin houses that have been set up and inhabited due to the housing crisis and citizens' inability to obtain adequate housing units, or they are old, deteriorating buildings due to natural disasters and erosion factors.

The increase in the number of precarious housing units is considered a reflection of the weakness of municipalities in monitoring and following up on urbanization processes, which requires new approaches to alleviate the daily suffering of citizens. As Figure 11 shows, the mixing of promotional housing with tin houses tarnishes the overall view of the city, indicating the province's inability to meet the housing needs of its citizens. As a result, residents are forced to live in these shacks that lack the minimum standards for a decent life.

RESULTS AND DISCUSSION

The study sample consists of 600 families residing in the eastern part of the province in the municipalities of Bordj El Kiffan, Bordj El Bahri, and El Marsa (Figure 2), which have witnessed significant urban growth between 1998 and 2021. Through our analysis of the results of the field survey, we have concluded that:

1. The geographical origin of the study sample

The phenomenon of migration has been associated with populations since their existence on earth and has had an impact on societies. It is among the factors responsible for demographic changes in any community (White and Lindstrom, 2005). Migration can be defined as the movement of people from one place to another with the intention of permanent or temporary residence during a certain period of time. According to the field survey and

Figure 12, it appears that the majority of the residents in our study area originate from the municipalities of Algiers province, accounting for 73%. We notice that 5.52% are native inhabitants of Bordj El Bahri municipality and 5.35% are from Bordj El Kiffan municipality. Meanwhile, 6.90% are from the capital, Algiers, indicating that some families have migrated to the area. Based on our investigation, after the 2003 earthquake, many houses were threatened with collapse, especially in the old neighborhoods such as the Casbah, and families were distributed to neighborhoods in Bordj El Kiffan municipality. Likewise, taking another example, the residents of Bab El Oued, whose houses collapsed, have moved to Bordj El Kiffan municipality. According to Figure 13, we can observe that the province of Algiers has the highest number of immigrants in the study sample at 73.06 % out of a total of 476 immigrants in 2021. The eastern region comes next with a rate of 10.88%. Then, the western region comes in with a rate of 5.01%, followed by the southern region with a rate of 0.9%. We also notice that neighboring provinces such as Blida, Boumerdes, Tipaza, and Tizi Ouzou are among the ones from which people have migrated in larger numbers due to the short distance between them.

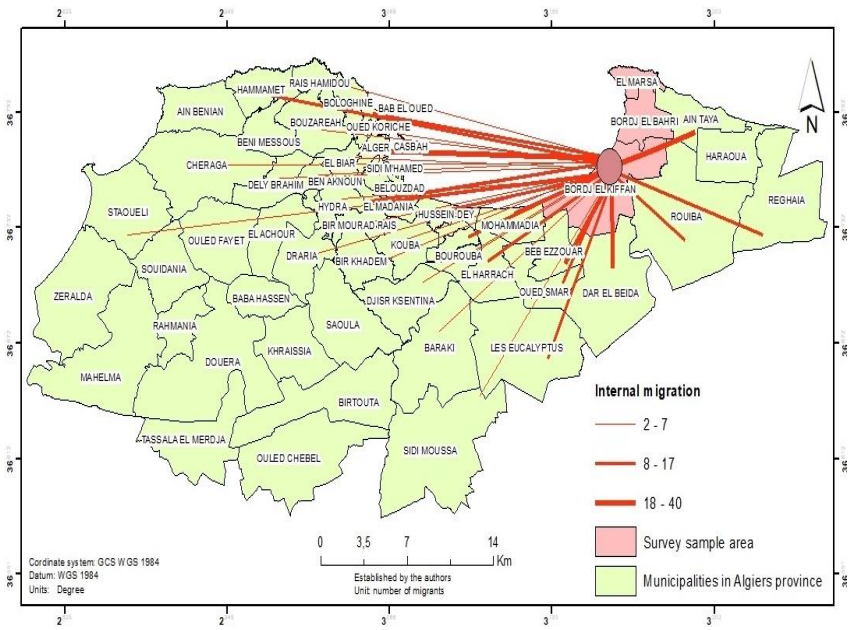


Figure 12. Geographical origin of the population of Survey sample area (Internal migration) (Source: Field survey, 2021)

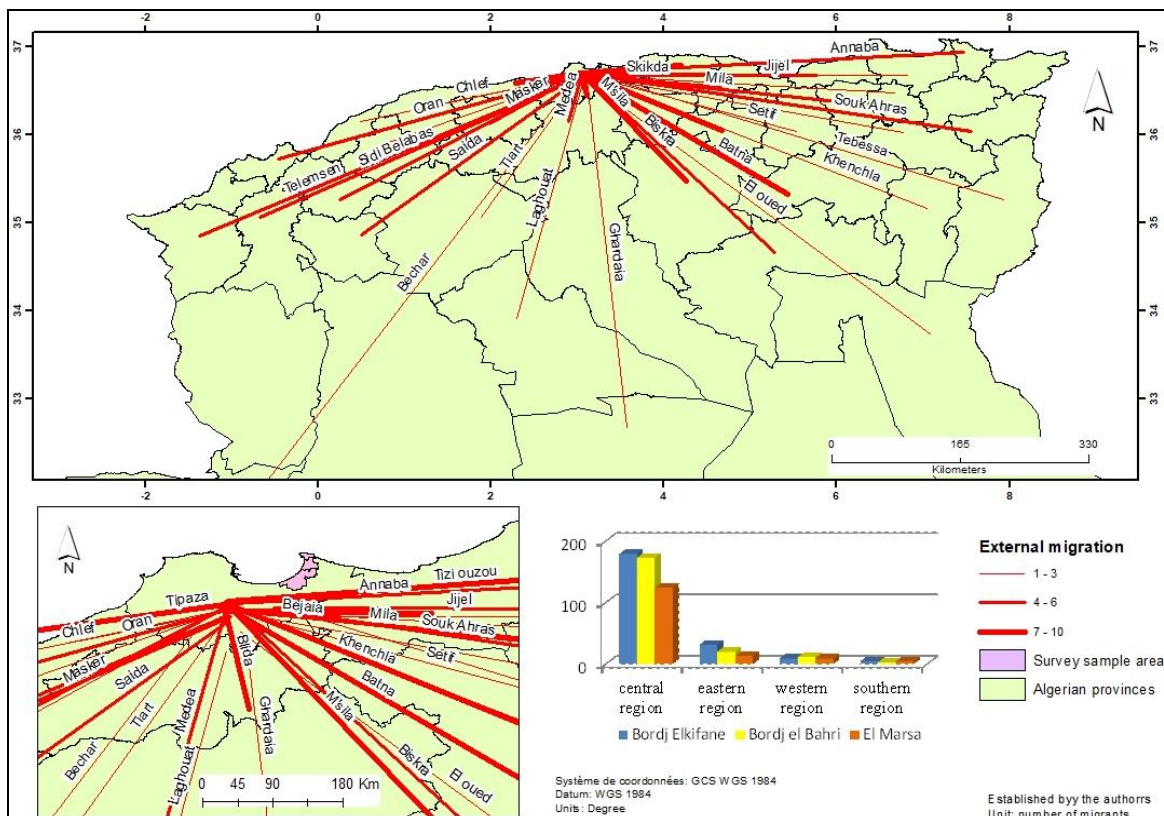


Figure 13. Geographic origin of the population of the survey sample area (external migration) (Source: Field survey, 2021)

This movement is a global migration of people from the interior to the capital (Kelley, 2022), because there is a greater advantage in terms of employment and services (Prayitno et al., 2023). On the other hand, not requiring a residence permit during migration opens the door to people who do not reside in the municipality. This study confirms that the migration factor, whether from municipalities in the province of Algiers or from outside, has contributed to the increase in the population and the demand for housing, which naturally leads to an increase in the housing stock over time. Additionally, initial immigrants contributed to building homes with fragile materials such as bricks or sheets, as their only concern was to provide shelter for their families, especially those who migrated during the "black decade" (Daoudi, 2018; Martinez, 2004) or were looking for work. The province of Algiers also utilized vast areas intended for agriculture to meet the demand for housing and solve the housing crisis. The field survey conducted in the municipality of Bordj El Kiffan (Figure 14) showed an influx of 223 citizens out of a total of 579, representing 38.51%. Therefore, we note that with the passage of time, due to migration and natural increase, the population seeks stability. And due to self-construction or by local authorities, urbanization increases and green areas shrink, especially since the municipality of Bordj El Kiffan is part of Mitidja plain. We also note a contraction in agricultural land on the map, as its area has decreased from 1002.36 hectares in 2000 to 371.12 hectares in 2021. Since urban growth directions occur on fertile plains and specifically on the coast, the public authority should anticipate the losses resulting from new expansions on these lands if alternatives and solutions are not found before it's too late.

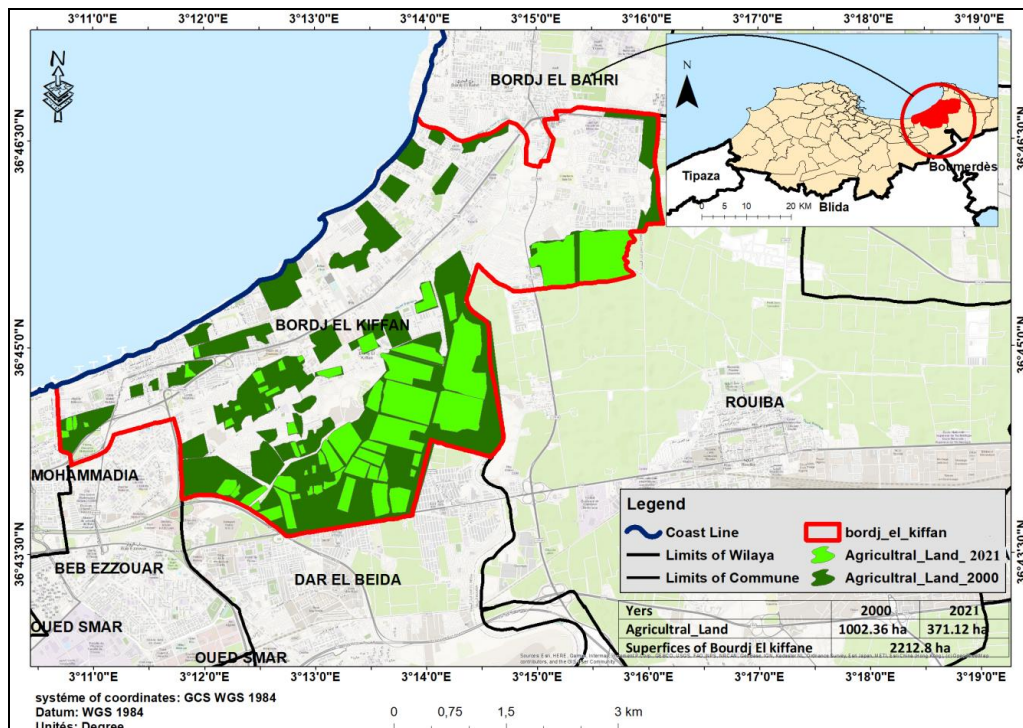


Figure 14. Evolution of the agricultural area of the municipality of Bordj El Kiffan (Source: Landsat 8/ Landsat 5)

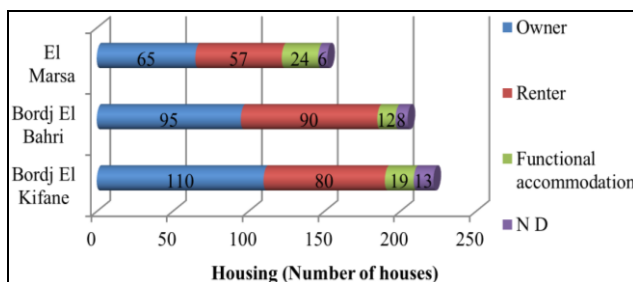


Figure 15. Nature of housing occupancy for the category studied (Source: Field survey, 2021)

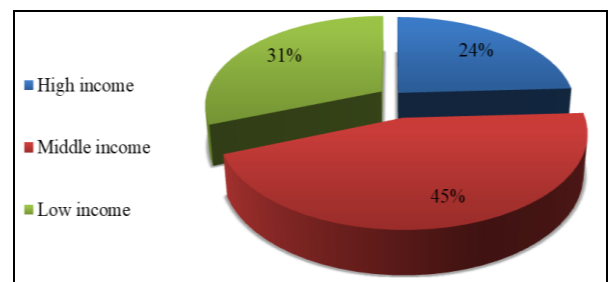


Figure 16. Income levels for the studied category (Source: Field survey, 2021)

2. The case of housing occupancy

With regard to the housing occupancy status and according to the results of the field investigation, four forms were distinguished: owner, functional housing, and Renter. The occupancy status of the house determines the legal status of the household with regard to its occupancy. Through Figure 15, the nature of housing for the studied group is shown, where we can see that 46.63% of these homes are owned by them, while 37.13% are rented homes. It can also be inferred that this group does not own a home and therefore is seeking housing through one of the housing programs or waiting for their under-construction homes to be completed. As for the group living in functional housing, they represent 9.49%, as this is temporary housing that residents will have to vacate at the end of the employment period, and therefore they are also housing seekers or waiting for their own homes.

3. The date of stability of the study sample population

We will learn about the history of population stability in the study sample through this element. Based on the obtained statistics (Table 1) from the field investigation, it is clear that only 1.20% of the population settled in the area before 1986, which is a low percentage. On the other hand, 5.87% of the population migrated to the study area between 1986 and 1996, which is a relatively high percentage compared to the previous one.

This indicates that people from other municipalities and provinces migrated to the area in search of security, as they fled from areas where security was lacking to reach larger cities (Roufeida, 2022). As the percentage of migration to the study area increases between the years 1996 and 2006, a period in which fear is still widespread among the population due to a lack of security, in addition to the socio-economic crisis resulting from the failure to revive the national economy, and therefore the spread of unemployment during this period. Between 2006 and 2021, we noticed an increase in the rate of migration, reaching 70%, whether from municipalities in the province of Algiers or other areas, as the region has experienced an increase in housing stock, including various housing formulas. Therefore, the region has become a destination for migrants from different areas. Especially since the authorities have begun to reconstruct the area, which is attractive due to its strategic location and is also a tourist destination (Alloui-Ami Moussa, 2021).

4. Distribution of the working population according to the occupational and social category

To identify the social level of the resident population in the three municipalities, we grouped the functions of the working population

Table 1. History of population stability in the study area (Source: Field survey 2021)

	Before 1986	1986-1996	1996-2006	2006-2016	2016-2021	ND	Total
Bordj El Kifane	4	13	34	67	92	12	222
Bordj El Bahri	2	11	36	65	75	16	205
El Marsa	1	10	40	26	70	5	152
Study area	7	34	110	158	237	33	579
%	1.20	5.87	18.99	27.28	40.93	5.69	100

according to income levels in order to determine the different socio-professional categories of the studied group. According to the results shown in Figure 16, the dominant category is the middle-income group in the study sample, with 260 individuals, which is 45% of this group. The low and modest income group comes in second place, representing 31% of the total working population. This percentage highlights the importance of the group that benefits most from social rented housing, given their monthly income of 24000 Algerian dinars (Djafri and Mohamed Osman, 2021). These families have a hard life because they live in unsafe or unstable homes. This can make poverty worse and cause more crime, drug use, and problems like not having a stable place to live. As for the high-income social group, 140 workers, which is 24% of the people studied, are included in the survey. They represent company owners and managers. The data analysis shown in Figure 17 indicates that the working population included in the study sample belongs to the socio-professional category, with the majority being those with intermediate qualifications, reaching 50.43%. They are the dominant category in the three municipalities and work as teachers, traders, and self-employed. This category is likely to opt for rental-sale and promotional housing formulas. Meanwhile, 28.3% of citizens reported being workers or employees in schools or public institutions. This category is directed toward rental-sale housing, and they can also obtain functional housing. As for the low-income category, its percentage among the target group is 21.42%. This category benefits from social rental housing and also performs simple jobs.

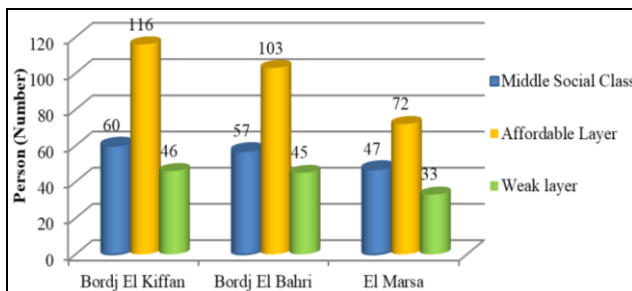


Figure 17. Income levels for the studied category (Source: Field survey 2021)

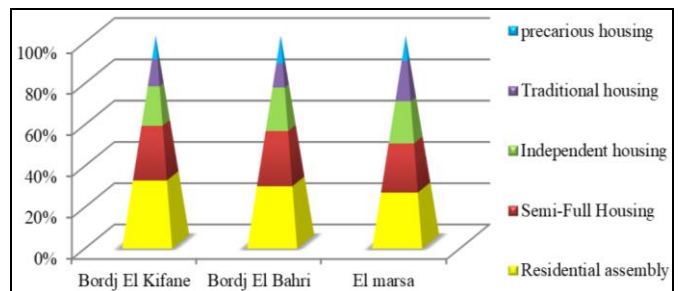


Figure 18. Type of housing of the studied category (Source: Field survey 2021)

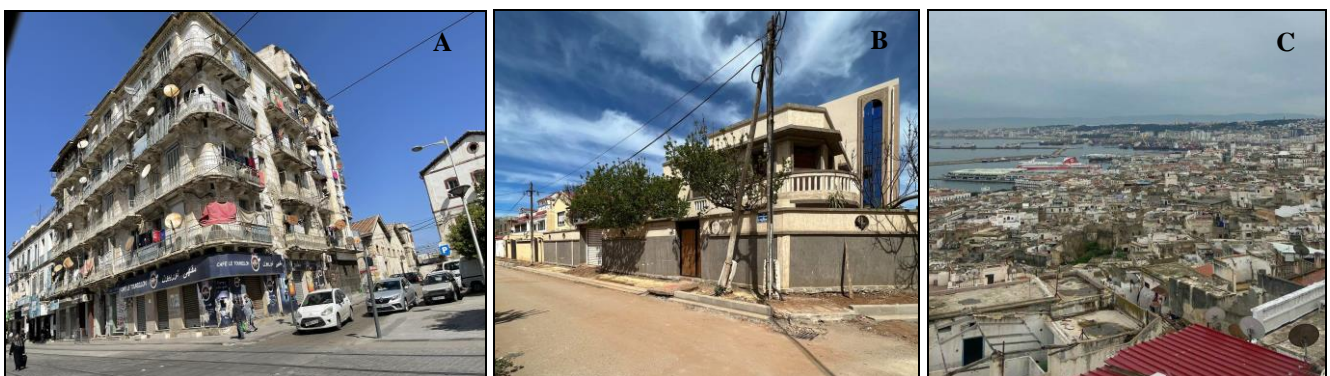


Figure 19. Types of housing in Algeria (Residential assembly (A), Independent housing (B), Precarious housing (C) (Source: authors, April 2023)

5. Housing types

The field of study is characterized by heterogeneity in the classification of housing, where we find many types of housing. Through Figure 18, we can observe that residential assembly represent 29.53% and are the most common type of housing in the region. They are followed by 23.66% of semi-full housing, which consists of residential projects, buildings, or individual unfinished homes. Independent housing, which includes small houses or villas, represents 19.51%. Traditional housing, which has an old architectural style, represents 13.81%. Moreover, precarious housing accounts for a considerable percentage of 12.08%, especially considering that we are in the capital and a tourist area. We will provide some pictures of the different types of housing we mentioned in Figure 19.

CONCLUSION

The Algerian state has witnessed population growth during the period between 1984 and 2021, which has made housing a matter that cannot be separated from the social development plans that successive governments have outlined. The housing sector in the province of Algiers witnessed a series of changes during the period of 1984–2021, where it experienced various housing experiments that aimed primarily to alleviate the severity of the housing crisis and eliminate precarious housing. In fact, this high population growth is due to a natural increase in the population as well as the factor of internal migration, whether rural or urban, which has led to an increasing demand for housing and, consequently, excessive consumption of space in the absence of strict urban planning laws that preserve urban space. Despite the emergence of new housing formulas, the housing shortage continues in the face of growing demand, which has led to arbitrary use of space, such as encroaching on agricultural land, and the spread of precarious housing due to population migration from other municipalities and provinces. The pace of development, which has accelerated in recent years, is now threatening Mitidja Plain, which is gradually shrinking. The built-up area has increased from 47.32 km² in 1984 to 81.34 km² in 2021. For example, the municipality of Bordj El Kiffan, which is part of the Mitidja plain, has decreased from 1002.36 hectares in 2000 to 371.12 hectares in 2021. In order to find a solution to the housing crisis, Algeria has introduced new housing formulas, including rental social housing, participatory social housing, rental sale housing, and free and public promotional housing. Where the citizen benefits from one of these formulas depending on his financial ability and social status.

Through our study, it becomes clear that social housing is found in areas that have been affected by natural disasters, such as the floods of Bab El Oued and the earthquake of 2003. This prompted the authorities to build housing units to compensate the affected people, while the public authorities are working towards solving the housing problem by constructing new housing units. In general, all housing projects planned for the province of Algiers under rental sale and promotional housing have had their locations chosen in the suburban municipalities, i.e., in the western, eastern, and southern regions, in order to reduce the pressure on the central region, which suffers from the depletion of real estate in addition to the historical architecture of its facilities. We can conclude that social rental housing is the formula that has prevailed and gained great popularity in the state, but over time the AADL formula of rental sale housing has become more popular, especially after 2016. There has also been an increase in the type of housing formula used, LPP. This is a desire from the public authorities that citizens, especially workers, contribute to the purchase of their own housing and that each citizen benefits from housing according to their financial ability. All of this is to ensure the formation of an organized and balanced urban area that current urban development tools have failed to achieve due to changing circumstances.

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LOCUS OF CONTROL THEORY IN TREATING TOURIST BEHAVIOR: THE THEORY ROOTS AND RESEARCH DIRECTION IN DESTINATION BRANDING FIELD

Mohamed Ahmed GOUDA 

Social Studies Department, College of Arts, King Faisal University, Al Ahsa, Saudi Arabia, e-mail: mgouda@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

Mostafa A. ABDELMOATY 

StatisMed for Statistical Analysis Services, Giza, Egypt, e-mail: mostafa@statismed.com

Sanaa MABROUK 

Social Studies Department, College of Arts, King Faisal University, Al Ahsa, Saudi Arabia, e-mail: smabrouk@kfu.edu.sa

Mohamed Y. HELAL 

General Management Department, Institute of Management, Economics and Finance, Kazan Federal University, Kazan, Russia; Hotel Management Department, Faculty of Tourism and Hotel Management, Helwan University, Cairo, Egypt, e-mail: mykhelal@stud.kpfu.ru

Amal Salah Darder MOHAMED 

Accounting Department, Applied College, King Faisal University, Al-Ahsa, Saudi Arabia, e-mail: asmohamed@kfu.edu.sa

Hala Ahmed Dafaalla KARAR 

Quantitative Methods Department, Applied College, King Faisal University, Al-Ahsa, Saudi Arabia, e-mail: hkarar@kfu.edu.sa

Elham Farouq Ali MOHAMMED 

Education Fundamentals Department, Applied College, King Faisal University, Al-Ahsa, Saudi Arabia, e-mail: elfarouq@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: KEltabbakkh@at.urfu.ru

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Abstract: We aim to shed light on this issue by reviewing the roots and development of the locus of control theory. Moreover, we will introduce how we can use this development, in theory, to provide a new research direction in the tourism service field. A theory-based review was conducted to investigate the locus of control theory roots and its potential implications in the tourism industry using the Australian Business Deans Council (ABDC) list to explore the current literature. We followed the PRISMA methodology to collect the data from the Scopus database as well as Google Scholar and ResearchGate. The study found that the locus of control theory has its roots in social psychology and has been developed over the years to explain individual differences in behavior and decision-making. In the tourism service field, we found that understanding the locus of control can help service providers tailor their services to meet the needs and expectations of different types of tourists. This will contribute to attribution literature in psychological aspects and tourism literature with a deep understanding of how tourists behave and interpret differently.

Key words: locus of control, attribution theory, tourist attribution, tourist behavior, tourism destination

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INTRODUCTION

Attribution theory suggests that psychological interference and interpretations are the mirrors of the physical one (Saleh, 2022a). When it comes to the founders of attribution theory (Anderson, 1983; Heider, 1944; Kelley and Michela, 1980) they highlighted that people tend to judge events after they begin to search behind these events' causes. Besides, they ask about the relationship between the cause-and-effect process (Jackson, 2019). Individuals internally judge someone or an event with dispositional attribution, they ascribe people's behaviors, or event causes to peoples' intentions or event

* Corresponding author

organizers (e.g., desires) (Hampson et al., 2021; Weiner, 1980). While people who externally judge someone or an event with situational attribution, they ascribe people's behaviors or event causes to external circumstances (e.g., bad weather) (Gilbert and Malone, 1995; Hampson et al., 2021; Heider, 1944). Dispositional and situational attribution are not related; they are different; changing situational attribution is not obligatory to be accompanied by changes in situational attribution (Saleh, 2022a; Solomon, 1978). Thus, these different judgments significantly shape individual behavior (Gilbert and Malone, 1995; Jackson, 2019). Hence, attribution can be defined as what people recognize as the reason behind their attitudes toward events (Bitner, 1990; Hampson et al., 2021).

Indeed, understanding attribution theory can help organizations and policymakers design more effective programs and initiatives that address the underlying factors that influence people's beliefs and perceptions about sustainability and development projects (Bungau et al., 2022; Craiut et al., 2022). Attribution theory proposes that customers make judgments about cause-and-effect relationships that influence their consequent emotions, mindsets, and behaviors based on three dimensions of causal attributions: (a) locus: who is responsible for actions (internal causes vs. external causes); (b) controllability: here people ask themselves a question whether the responsible person for that action can control it or not.; (c) stability: here, the cause is ascribed as if it is likely to recur. All previous dimensions influence behavioral responses to services or brands (e.g., tourism brands) (Anderson, 1983; Jiang et al., 2020; Weiner, 1980).

The locus of control (LOC) dimension significantly impacts behavioral regulation (Rothbaum et al., 1982; Saleh, 2022b) because it influences retrospective beliefs (e.g., prior beliefs, experiences, traditions, etc.). This gives LOC theory the privilege to prioritize the behavioral interpretations of brands (Choi and Cai, 2016; Jansri et al., 2020; Monga and John, 2010). Although LOC theory has been investigated in many social science directions, there is a prominent gap in reviewing the theory's roots and providing directions in tourism marketing, especially toward destination brand attachment and commitment. Therefore, the current study aims to apply the locus of control theory to understand tourist behavior will be effective because LOC theory is one of the crucial theories that treat human behavior (Anderson, 1983; Jackson, 2019; Weiner, 1980). The following section focuses on the locus of control theory roots and theory development to find the gap and potential research directions in tourism.

MATERIALS AND METHODS

We conducted the LOC' theory roots and future direction by a theory-based review in various fields (psychology, marketing, and tourism). Theory based review focuses on analyzing the role of a critical theory in a specific area (Lim et al., 2021). Thus, the based review theory has a real opportunity to strengthen and clarify the gap in specific theories and provide future directions. To achieve this purpose of the current study, we introduce a well-comprehensive theoretical viewpoint to investigate the locus of control theory roots and its potential implications in the tourism industry. We used the Australian Business Deans Council (ABDC) list to explore the current literature; the reason behind the choice of ABDCs is that the ABDC list is more inclusive than other journals' ranking lists (e.g., the Association of Business Schools (ABS), and Social Science Citation Index (SSCI) (Hao et al., 2019; Lim et al., 2021).

We conducted (44) papers to form a conceptual review that were included in the list of ABDC's influential journals. We collected these papers based on four steps, first: we selected the references protocol using the Scopus database. In addition, we used Google Scholar and research gate as additional academic platforms to find articles that are difficult to reach. Second: we searched by following keywords to find these articles: "attribution theories*," "attribution theory*," "locus theory*," "tourist locus," "destination brands attribution*," "tourist attachment and attribution*," "brand attachment and attribution*"

and "tourism locus." Third: we used the PRISMA methodology to collect the data. The PRISMA is a vital tool for recording conceptual reviews (Figure 1) (Liberati et al., 2009). We followed the PRISMA as follows: searched for the abovementioned keywords, and the search returned 2,300 documents containing any of these terms within the keywords. We then used advanced search to avoid duplicate titles. Afterward, we got 876 articles after we removed duplicated articles. Fourth, we screened the abstracts and found 132 articles with identical scopes. Then, we chose 76 articles for a

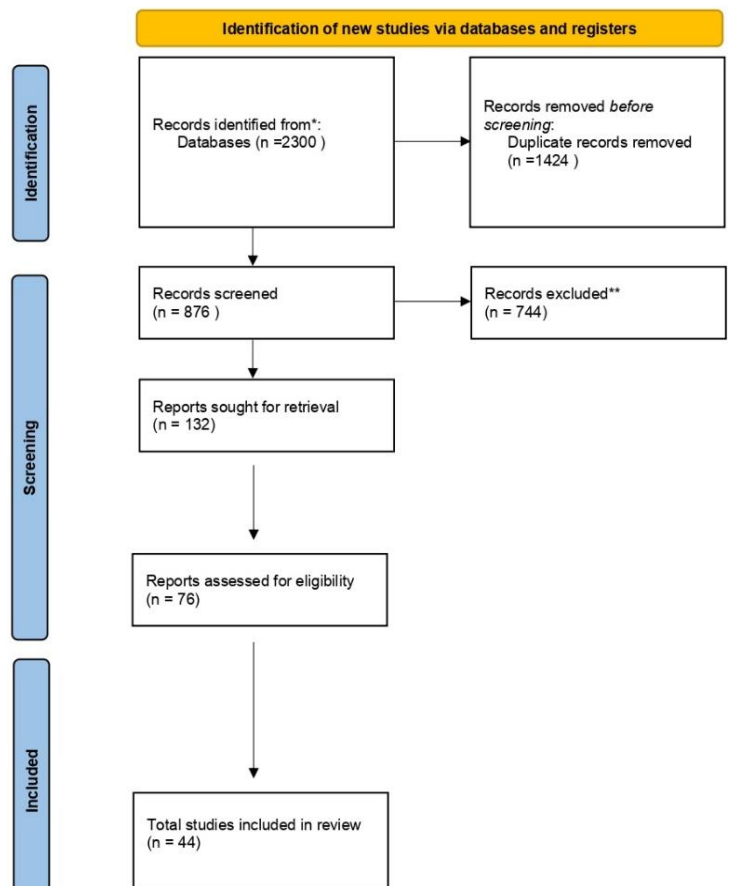


Figure 1. PRISMA method of theoretical data of the study

full-text article assessed for eligibility. Then, with journals' ranking reasons (A * and A journals in the ABDS list) and the mostly cited papers in the related theory, only 44 articles were included.

The Locus of control theory roots, history, and the theory development

1. Theory roots and history

In the 1980's, Kelley and Michela began to respond to Heider's (1944) recommendation to study the causality of events, so they investigated the locus of control theory as one of the most crucial dimensions of attribution theory. They mentioned that LOC began as an experiment in the fourth decade of the 20th century; the investigation was to ask someone to help another in different situations. The authors want to detect whether the person will help others through internal desires or the pressure the subject puts on him. The results revealed that persons had two LOC types; internal LOC, which refers to a person's inner psychological need and desire to help another. In contrast, external LOC relates to people who ascribe their help to another to something outside their needs, such as other power, luck, and chances.

Thus, this stage's LOC concept was discussed as a small attribution theory dimension rather than a strong independent element. As a result, Kelley and Michela (1980) connected LOC with attribution antecedents such as information, knowledge, and motivation to examine LOC's behavioral consequences. This was the start run to highlight the relationship between LOC causes and LOC effects. However, their literature lacked experiments that could be more precise when investigating LOC theory, especially how does LOC form? And in which specific events could we use LOC theory to understand consumer behavior? But within the same year, in 1980, Weiner (1980) began testing LOC theory with six experiments to ascertain the relationship between people's LOC and reactions when asking someone for help; The results showed that attribution to uncontrollable (vs. controllable) factors was expected to generate (vs. not) a positive effect (empathy) (vs. negative) and lead to approach (vs. avoid) behavioral help. Thus, Weiner (Weiner, 1985) assured the previous finding with more than one experiment in this phase. Still, the LOC theory in this phase did not highly develop to link with other science (e.g., marketing, business, tourism, etc.).

Anderson (1983) started empirically testing the relationship between the attribution dimension, stability, controllability, and LOC. The result revealed that there is a strong relationship between all these dimensions. Thus, in general, LOC helps to explain different interpretations and judgments in different situations. Anderson led Folkes (1984) to draw an experiment to develop LOC theory with its relations to another attribution dimension in the service industry, especially for a service failure. The results revealed that; When a product failure reports to the service providers (external LOC), the consumer can get a refund and an apology from the service provider. While the service failure is consumer-related (internal LOC), the consumer does not deserve to recover. Also, he drew an experiment to test the relationship between stability and locus stability. The results revealed the same findings as Anderson (1983); there was a strong relationship between all attribution dimensions. However, many arguments in the service industry still have not been investigated yet in LOC theory, such as gender differentiation and behavioral traits (e.g., anger, pity, despair, etc.). Therefore, on the one hand, Duttweiler (1984) has examined, with an empirical study, a new measurement scale for LOC theory from the demographic perspective. He found that gender, age, and education are different at the LOC level. Also, he provided a new booklet to precisely measure the level of LOC.

On the other hand, Weiner (1985) has started to broaden the locus of causality and linked it with motivation and emotions. Also, he highlighted that attribution dimensions of causation affect every day emotional experiences, including gratitude, anger, guilt, pity, despair, pride, and shame. Thus, the theory links the thinking structure to the dynamics of feeling and behavioral traits. However, these results were not certation because they could be just assumptions that LOC could affect human reactions. The inquiry of certain beliefs to use LOC theory to treat human behavior then consumer behavior led McCanne and Lotsof (1987) to provide a prominent experiment that LOC affects human behavior by examining the heartbeats differences in many situations and experimented with the relationship between the heartbeats and individuals' LOC; whether internal or external.

So, internal LOC did not manifest prominent heartbeats changes than external; external had a high heartbeats level maybe because of fear or need for extra information to feel safe when deciding. This experiment added to LOC by pioneering the investigation that internal LOC is more stable than external LOC with a famous experiment. However, there is still a lack of connection between LOC theory and other scientific branches like marketing and business .

After these experiments to ensure that scholars could use LOC theory to trait consumer behavior, Chebat et al. (1995) linked locus of control theory with a marketing perspective to test how service quality can be affected by consumers' interpretations. They found that locus, as an attribution dimension, played a crucial role when interpreting service quality and pleasure. So, they added a new variable, "pleasure," to develop the LOC theory. But depending on natural assumptions, that pleasure could not happen without persuasion. This led Avtgis (1998) to use a meta-analysis study to investigate and ascertain the LOC theory's influence on human behavior. He found an essential relationship between LOC and social norms persuasion. People who reported an external LOC to direct control were more influenced, persuasive, and more compatible than those who said an internal LOC. So, the author developed the theory with a certain that LOC influences human behavior and the decision-making process.

Thus, wiener (2000) started to hint at using locus of control as an essential dimension when blaming service providers for service failure. So, he used locus as an indicator to ascribe whether the cause remains within or outside the service provider without deeply clarifying the locus of control concept. However, the wiener had not indicated the antecedents of blaming or the consequences of individuals' LOC. This led Swanson and Kelley (2001) to add a new

variable due to individuals' LOC. Thus, the authors developed the LOC theory with a vital marketing variable, word of mouth. Consequently, they examined the effect of service recoveries attributes on word-of-mouth WOM. The results showed that the locus of causation played an essential role as a positive mediator between positive WOM and service recovery in case of service failure. This adds to Folkes's (1984) literature about individuals' LOC during service recoveries with a new WOM variable. Poon et al. (2004) have globalized the LOC theory concept as a theory that could compare two samples from different nationalities. They have tried to take the same path as Weiner (1980) when studying the locus of causality relation with the service providers. Here, they focused on globally testing this relationship between two nationalities: Canadian and Chinese people. Surprisingly, the results were the same: when people feel they are under control with low LOC, they negatively attribute to service providers. So, the LOC theory development stage here was not in the LOC theory itself but in the development of the study's sample.

2. Theory development

To that date (2004), LOC theory provided prominent evidence that it could be one of the most theories that can treat consumer behavior. Therefore, Klein and Dawar (2004) developed LOC theory in business research, examining individuals' LOC impact on corporate social responsibility CSR. The results revealed a strong relationship between CSR and LOC. Service providers who engage in CSR activities enhance consumers' positive LOC. Thus, locus of control theory has been developed in many aspects of psychology, marketing, and business. However, no prior study had clarified the relationship between the type of LOC theory itself (internal LOC vs. external LOC), which led Twenge et al. (2004) to investigate the variation of LOC types deeply. They empirically examined whether internal LOC or external LOC is most common among individuals in the community. The result revealed that most scholars agreed that external LOC is the most common.

They assumed that external LOC is most common because people always justify their faults to the service providers. Here, these finds were not sufficiently prominent because there was a lack of convergent validity. Thus, it will be hard to generalize these findings without testing them in different science branches. So, Cleveland et al. (2012) developed the LOC theory with a novel construct called the environmental locus of control.

They examined how LOC played a crucial role in sustainability, and the results revealed that behavior relationships changed considerably across behavioral contexts. This indicates that people do not consistently perform in a pro-environmental manner and depend on the LOC level. However, LOC theory still lacks coherence in which internal or external LOC is the most common and why. Also, the LOC antecedent's relationship with their findings had not been investigated, and whether the environmental locus of control is different from the original LOC.

Moreover, how consumers behave with their LOC toward the environment lacks stability and controllability from the destination itself, or the service providers had not also investigated. This gap had also noted when Varela-Neira et al. (2014) studied the application of LOC theory applications. They mentioned that individuals have negative external LOC in case of service failure, so individuals do not like to ascribe the service failure to themselves. Hence, they have an external locus of control with negative WOM. These were significant results to assure LOC theory could treat consumer behavior, but it had not added a new LOC theory to that date in 2014. Surprisingly, Yuan et al. (2016) have tried to add a new methodology to test new constructs within the LOC theory, so they have provided "Horizontal LOC versus vertical LOC." Here, the theory with an experiment referred to that the combination of internal and external LOC can affect human choice behavior and interpretation methodology; This is called "horizontal LOC." At the same time, internal versus external LOC can affect individual behaviors and interpretation separately; This is called "horizontal LOC" toward brand attitude behavior.

This was an important indicator to use this theory from a different perspective in social sciences. For instance, Karkoulilian et al. (2016) added to the LOC theory by developing the new term work LOC (WLOC). So, they have decided to highlight the impact of LOC in the work environment. They have found that individual LOC affects the work environment from a different gender perspective. They mentioned that males have strong internal LOC than females because females are more emotional than males. However, the antecedents and consequences of forming individuals' LOC control in the work environments are still not clearly understood until now. Thus, Scholars have continued to work on this theory to discover different perspectives and try to fill the gap of previous scholars who worked on LOC theory. For instance, Hwang et al. (2020) have ensured with a large sample of the Cleveland et al. (2012) findings that individual LOC could influence environmental behavior. Hampson et al. (2021) and Jiang et al. (2020) also illustrated that LOC could moderate consumer behavior on self-confidence. However, there has been no adequate study about LOC in the service industry until now because no analysis has tried to precisely study the antecedents of LOC and its consequences and find the solution to raise individuals' positive LOC in the service industry concerning gender distinctions.

Therefore, this study aims to shed light on the potential direction to help understand how individuals in the service industry form LOC with its consequences more precisely. To address this issue, this study uses the tourism industry as the research scope because the tourism industry is a great umbrella to notice all human behavioral stages from thinking to events' interpretation. We chose the tourism industry because it has various perspectives; it could be a business industry because of many tourisms stakeholders' competition. It could also be environmental because it mainly depends on the destination environment. Moreover, it could be psychological because it depends primarily on the interaction between the service provider and the tourist. Also, it could be a marketing perspective because it requires marketing studies to know how to attract tourists to destinations. All these perspectives will help understand and fathom the essence behind tourist LOC by studying how tourist form LOC and how it could be helpful to destination managers to know tourists' LOC antecedents and consequences to attract several tourists and gain revenues (UNWTO, 2019).

3. Theory enrichments

The locus of control theory provides conceptual and empirical evidence of how consumers manifest their behaviors toward people or events around them (see table 1: locus of control definitions). For instance, people with an internal locus of control see their ability and efforts as an outcome of their behavior and self-confidence (Anderson, 1983; Rothbaum et al., 1982). While people with an external locus of control see external factors that affect their behaviors, such as social circumstances, powerful others, bad staff behavior, and chances (Duttweiler, 1984; Twenge et al., 2004).

Table 1. List of LOC definitions arranged by year

Author	Definition
Kelley and Michela (1980)	"Internal-external (LOCUS) Most work on the affective consequences of attributions has involved the internal-external dimension, which parallels the general person-environment distinction" (p.487)
Weiner (1980)	"LOC occurs when an individual is believed to be responsible for doing an action" (p.187)
Anderson (1983)	"Locus of control may be internal or external it describes individuals believes that they can control their actions" (p.186)
Folkes (1984)	"LOC Is the cause located in the consumer or in the seller or manufacturer? The primary distinction here is whether the cause of failure has something to do with the consumer or is located somewhere in the production or distribution of the product" (p.399)
Duttweiler (1984)	"Locus of control is a personality trait that appears to influence human behavior across a wide spectrum of situations related to learning and achievement" (p.209)
Weiner (1985)	"Locus of control is the individuals believes that they can control their actions" (p.551)
Mccanne and Lotsof (1987)	"People with an Internal in their locus of control actively seek environmental input, while subjects who are External in the locus of control appear to be more passive". (p.41)
Chebat et al. (1995)	"Locus of Causality: "Who is responsible for the waiting time?"; the cause is either internal (e.g., the employee at the bank's teller), or external (e.g., the high number of clients in the bank)". (p.192)
Avtgis (1998)	"LOC is the average expectation of 'obtaining internal control rather than external reinforcement control. An internal locus of control is the belief that a person has control over outcomes in life. On the other hand, the external scorer attributes result to luck, fate, or others powerful". (p.900)
Swanson and Kelley (2001)	"The locus of causation is the consumer's perception of where the responsibility for the accident lies. Does the customer bear (the internal location) or a factor outside the customer such as the environment or the service employee (the external place)?" (p.196)
Poon et al. (2004)	"Control is widely accepted as a key human driving force and is often defined as the need to demonstrate one's competence, superiority, and mastery over the environment" (p.1528)
Klein and Dawar (2004)	"The locus of the behavior (the event that triggers the crisis), which can be internal or external to the actor (in our case, the firm); If the locus is internal, and the behavior is stable and controllable, observers (in our case, consumers) tend to attribute responsibility to the actor, and subsequent consumer behavior such as blame or anger, is directed toward the actor. If on the other hand, the locus is external, and the behavior is temporary and uncontrollable, attributions will tend to be made to external factors" (p.205)
Twenge et al. (2004)	"People who believe they are in control of their destinies have an internal locus of control ("internals"). Those who believe that luck and powerful others determine their fate have an external locus of control (externals)". (p.308)
Cleveland et al. (2012)	"Individuals who have an internal locus of control were more likely to have reported engaging in responsible environmental behavior than are individuals exhibiting a more external locus of control" (p.297)
Varela-Neira et al.(2014)	"Due to the limited variability of locus of causality, this dimension of attribution was discarded from this study. For the customer to attribute the origin of the failure to him/herself is very unusual" (p.906)
Yuan et al.(2016)	"In the horizontal locus of attribution, internal attribution refers to that the reasons for certain behaviors or outcomes are due to the people themselves, while external attribution suggests that the reasons for one's behavior are found in his/her environment" (p.282)
Karkoulilian et al.(2016)	"The term work locus of control (WLOC). WLOC mainly determines the extent of one's personal view regarding the level of control in a given work setting. A person that feels that job success depends on their own hard work has an internal locus of control, while a person that feels that many externalities are responsible for their success has an external locus of control. More recent studies focus on the link between these individual views and work conflict".(p.2)
Jackson(2019)	"Locus of control has been conceptualized as either internal (tourist outcomes attributed to ability or effort) or external (tourist outcomes attributed to task ease/difficulty or luck)" (p.2)
Hwang et al.(2020)	"Locus of control refers to the extent to which people believe that they can affect outcomes through their actions. People who have an internal locus of control tend to perceive themselves to hold control over their future and believe the outcomes depending on their input. In contrast, the latter dimension, external locus of control, describes individuals who believe that they are incompetent and have relatively little influence over outcomes that are beyond their control "(p.49)
Jiang et al.(2020)	"LOC refers to the extent to which people believe that they can control their own lives" (p.2)
Hampson et al.(2021)	"Locus of control, an individual difference construct that reflects individuals' beliefs about the degree to which they can control the outcomes of events in their lives" (p.2)

Thus, as an output of all these definitions, scholars classified the locus of control into two models. Firstly, the independence model assumes that the internal locus of control has become more acceptable over the past 40 years because of people's ability to control their causes now than they did before (e.g., travel is reasonably available for all social categories and technology presents endless choices for services, varieties of communication and entertainment) (McCanne and Lotsof, 1987) as well as people have the freedom to manage their lives and make their own decisions. That is because of the lack of restricted social rules and etiquette as before (Jiang et al., 2020). All these assumptions

imply that people have become more biased to an internal locus of control in their beliefs over time, contributing to widespread positive feelings (or positive word of mouth) (Twenge et al., 2004).

In contrast, the alienation model assumes that the external locus of control has become more applicable over time because of the tendency to blame one's troubles or (failures) on external powers (Twenge et al., 2004). This model reflects the distrust and alienation of modern generations, maybe because of the negative social trends that have been conducted by increased media coverage news. Consequently, if negative results occur, people will ascribe these events to negative social trends, contributing to widespread negative feelings (or negative word of mouth) (Twenge et al., 2004). The alienation model has two types of external locus of control. Firstly, change control, whereby people do not have any power to influence it (e.g., luck, weather, and fate). Secondly, powerful control whereby people can affect it (Hampson et al., 2021). Both models' and scholars' arguments about the locus of control theory reflect that individual LOC is the degree of individuals' satisfaction (Chebat et al., 1995).

4. Theory lack in tourism field

Locus of control theory in the tourism context has a notable shortage of investigation for its impact on brand attachment and revisit intention in tourism destinations brands. The current tourism literature about attribution theory and locus of control is limited. For instance, Jackson (2019) has investigated attribution theory in explaining various tourist experiences in different situations. However, she did not investigate the impact of these experiences on destination brand attachment as the attachment considers a crucial outcome to gaining revenues (Tsai, 2016). Or how tourists form a locus of control before visiting the destination (locus of control antecedents). Additionally, she did not consider gender differentiation to develop tourists' locus of control.

Moreover, Orth et al. (2012) have also tried to study attribution theory in tourism destination brands. However, they have only focused on wine-oriented tourist attractions without investigating the locus of control to build destination attachment. Furthermore, they did not examine tourists' locus of control in case of service failure because experiencing perfect services all the time is not inevitable (Swanson and Kelley, 2001). Su et al. (2020) have also studied the attribution theory's role in examining how tourists' intentions are affected by destination social responsibility. However, their study had lower validity due to using a fictitious destination, not a real one. They did not consider the locus of control's role in building attachment or revisiting intention to destinations (locus of control consequences). Recent studies (Saleh, 2021, 2022a, 2022b, 2022c) focuses on tourists' locus of causality in understanding it as an attribution-shifting mechanism and its impacts on tourists' interpretations.

Although the previous studies have its privilege to understand tourist's locus as an attribution theory dimension. However, these research does not examine tourist LOC on destination branding, destination attachment or destination commitment. Tourists have always had priorities to attach to tourism destinations, Hwang et al. (2005) and Liu et al. (2018) clarified that Place attachment had become a common concept in tourism and marketing research; place branding is an extended concept from the brand theory and place identity (Sadeque et al., 2020) this identity remarked as symbols or marks, slogans, names, words and/or phrases used by companies to distinguish their products from other products. Motivations of people drive them to make decisions about buying products or using services. It depends on how choices are made when outcomes are specific or uncertain (Healey et al., 2015).

The Locus of control theory future direction in the tourism field

The attribution is the cause of behavior (Li and Murphy, 2013) and individuals assign the causes of behaviors to two types, an internal characteristic called "Dispositional Attribution: internal LOC" may be a process of setting the cause of judging the people or a place for external factors and that called "situational attribution: external LOC" those attribution theories are essential in an individual's need to understand events and actions.

Consumers with a situational attribution style are more likely to infer corporate behavior in terms of context-specific factors such as reputation and social role (Lim et al., 2018); this physiological analysis motivates persons to make choices and actions toward the use services or destinations (Choi and Cai, 2016; Poon et al., 2004). Still, there is no research in the tourism literature on how physiological analysis motivates tourists to make choices and actions toward destination brands considering both internal and external LOC. Therefore, we recommend future research to consider internal and external LOC to understand tourists' behavior toward destination brand attachment.

Moreover, commitment plays a significant role in attributing destinations with its three types; Normative Commitment (NC) is a sense of being obliged to the organization or place (Messner, 2017), and it happens when the person feels an obligation to stay (Fullerton, 2014), or emotionally as Luo (2018) referred that affective commitment (AC) is considered to be attitudes and psychological emotions towards the places, while Brent (2017) inspected that the commitment may occur because of alternative lacks entitled the Continuance Commitment (CC). It happens when people tend to stay in a place because of the cost associated with losing retirement or friends; positive commitment encourages marketers to build a confident relationship with marketers and customers (Sahadev, 2008). People attribute the service or product to their commitment (Alba and Slongo, 2020), which is the path of the relationship between commitment and attribution. Smith and Hunt (1978) clarified that consumers who monitor trademarks or a place attribute actual feelings or behaviors.

Sometimes, they attribute this to external environmental factors based on their commitment to those places. In this vein, understanding how tourists' commitment toward destinations could be affected by the locus of control theory (Internal vs. external) would significantly contribute to future research). Therefore, the future research in tourism

commitment should study internal and external locus of control, with the three types of commitment to have better results regarding tourist behavior. Further, people can combine behavior with situational information to conclusions, although these conclusions are incomplete till incorporating information about behavioral commitment, which provides a complete picture of how people form attribution (Krull et al., 2008); also, commitment-based satisfaction is highly positive has an essential and positive effect on brand love (Hsu and Chen, 2018). Therefore, future research should address the role of LOC in incorporating information about behavioral commitment to destination brands. Likewise, Members' obligation is determined by personal and social influences (Zhou et al., 2020). If the tourists have a negative experience or responsibility, the consumers attribute word-of-mouth negativity to the brand; however, if recipients attribute the negative to the caller, the brand rating increases (Laczniak et al., 2001).

In contrast, Positive feelings generated from strong commitment and certainty of influence were significantly related to the positive attribution with the host community for tourism (Chien et al., 2012; Zheng, 2020) about place attachment which strongly correlated with place commitment. Therefore, future research directions could investigate tourists' locus of control antecedents (information and knowledge) and consequences (brand attachment and revisit intention) toward tourism destination brands. Moreover, the future research should study gender differentiation in shaping destination brands' tourist locus of control. To sum up, the current research contributes new insights into tracking the locus of control theory roots and development (see figure 2) and provides new arguments about its new application in tourism. The research has several limitations in theory roots as we investigated one dimension of attribution theory - LOC- but future research needs to examine the roots of other attribution theory dimensions, namely controllability and stability.

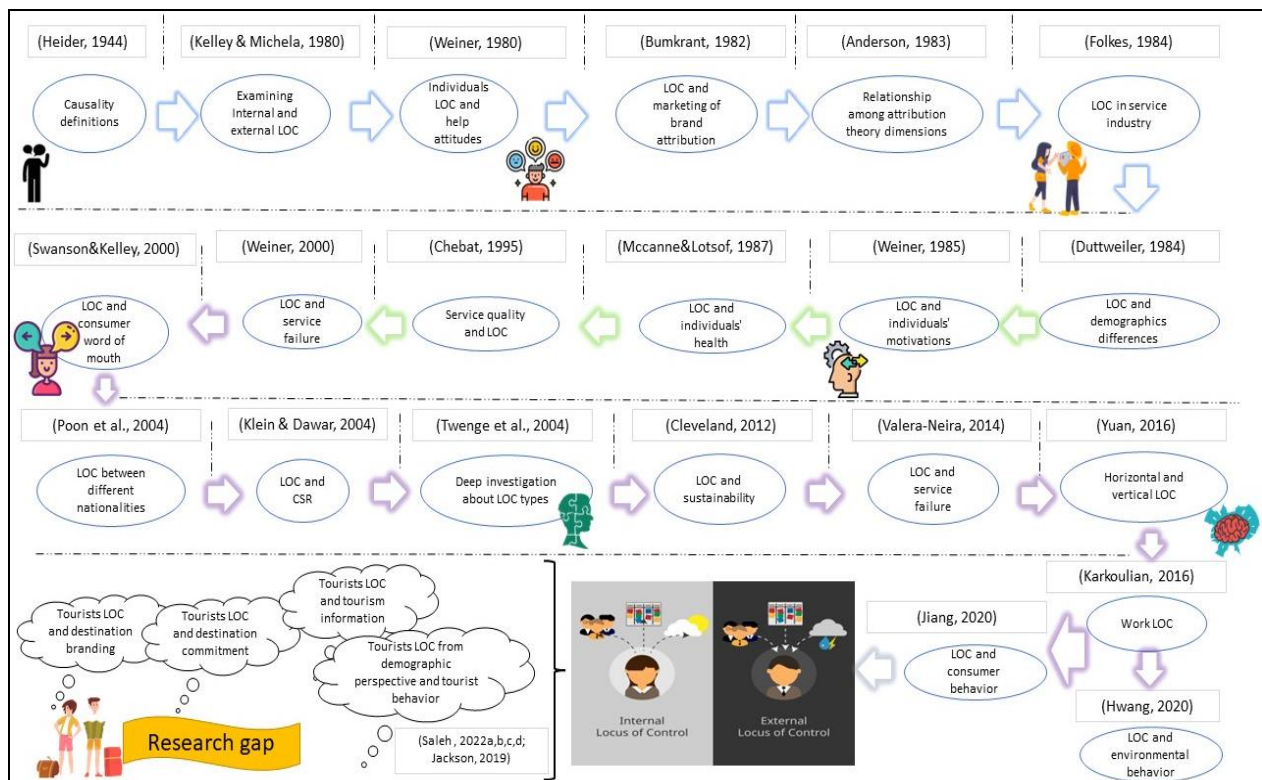


Figure 2. Figure summary of LOC theory's roots, development, and gap in tourism research

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INTENTION TO USE VIRTUAL REALITY IN SARAWAK TOURISM DESTINATIONS: A TEST OF STIMULUS-ORGANISM-RESPONSE (S-O-R) MODEL

Chee-Hua CHIN* 

University of Technology Sarawak, School of Business and Management, Sarawak, Malaysia, e-mail: chincheehua@uts.edu.my

Winnie Poh-Ming WONG 

University of Technology Sarawak, School of Business and Management, Sarawak, Malaysia, e-mail: winniewong@uts.edu.my

Anson Lian Hong KIU 

University of Technology Sarawak, School of Business and Management, Sarawak, Malaysia, e-mail: bbm20090006@student.uts.edu.my

Jun-Zhou THONG 

Universiti Malaysia Sarawak, Faculty of Economics and Business, Sarawak, Malaysia, e-mail: junzhou_9@hotmail.com

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Abstract: The industry of tourism in Malaysia is highly recognized for its contribution to the national economy and employment opportunities. However, following the strike of global epidemic due to COVID-19, the number of visitations by tourists has plunged and Malaysia is currently in its stage of revitalizing the industry post-COVID-19. To rejuvenate the tourism industry of Sarawak, Malaysia, the understanding of motivators to boost favourable tourists' behaviours is crucial, given the ever-changing situation in the tourism market. This study explored the relationship between dimensions of Stimulus-Organism-Response (S-O-R) model, particularly in tourism destinations of Sarawak with the adoption of Virtual Reality (VR) technology. The survey was participated by 250 tourists and the proposed model was evaluated using WarpPLS 8.0. The statistical findings revealed the significant positive relationships between all tested constructs (i.e., media richness, presence, utilitarian and hedonic value, behavioural and visit intention). The implications of these findings are further discussed.

Key words: virtual reality, behavioral intention, tourists, S-O-R Model, Malaysia

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INTRODUCTION

Tourism can be defined as a series of activities chosen at random and performed outside of one's immediate surroundings (Camilleri, 2018) and is regarded as one of the most significant economic drivers of growth and development as well as a source of revenue and cultural wealth for a nation is the tourism industry (Loss, 2019). The United Nations World Tourism Organization (UNWTO) has estimated that there were only 25 million tourists worldwide in 1950 and the number of overseas arrivals of the tourists has risen to 1.4 billion every year after 68 years. Apart from that, according to statistics by Malaysia Tourism Promotion Board (MTPB), a total of 26.1 million tourist have arrived in Malaysia in year of 2019 prior to the outbreak of COVID-19 pandemic (Tourism Malaysia, 2021). Indeed, this tremendous number of arrivals indicates a decent sign for the nation's tourism industry. Likewise, Sarawak, a state located in Malaysia has also witnessed remarkable arrival of tourists amounting 4,662,419 individuals in 2019 (Jaythaleela, 2021). Thus, it indicates that Sarawak is capable of welcoming huge number of tourists into the state.

However, due to the pandemic's disastrous outbreak in 2020, Malaysia was forced to enact the Movement Control Order which also known as MCO, in order to stop the country's rising COVID-19 cases. This action was resulted in travel restrictions and closed borders which had an impact on the nation's tourism industry. As a result, the industry of tourism in Sarawak has encountered knockbacks in terms of tourist arrivals, which was reduced by 74%, from 4,666,419 as aforementioned to only 1,199,872 in 2020 and a loss of RM 8.69 billion in tourism revenue (Idris, 2021; Jee, 2022). Indeed, the recovery of tourism industry can be aided by new technologies, well-planned and invested technological innovations are not only vital in building safe destinations, but also in addressing current difficulties in the region's tourism economy (Mohamad, 2023). Additionally, digital solutions help to provide contactless and digital transactions, mapping, and helping to successfully resume tourism operations during a pandemic. Virtual Reality (VR) and Augmented Reality (AR) are two instances of digital technologies that are frequently presented in daily lives (Lamberti et al., 2020). Over the years, VR and AR have been widely applied in the ever-changing tourism industry (Guerra et al., 2015). Generally, VR uses real-world visual experience in wholly false computer-generated settings, lowering the barrier of distance for potential visitors who attempt to obtain more information and comprehend a destination prior to decision-making (Bickford et al., 2018).

* Corresponding author

On the other hand, customer experience is one of the key factors that will affect how tourists feel during their trips. Presently, it is one of the emerging trends in the current tourism sector (Bergstrom, 2021). Moreover, customer experience is also one of the crucial factors that leads to individuals' loyalty on certain subjects (Lundaeva, 2019). Customer experience is one of the key factors in determining tourists' tendencies to recommend the acknowledged tourism packages that have been introduced to them. Aside from that, the implementation of tourism services and organisational performance is also a crucial motivator for customer experience. As a result, it is critical to comprehend the significant role of digital technologies (i.e., VR and AR) in tourism services as well as the experiential value among tourists (Opote et al., 2020). Nevertheless, due to the poor quality of the technology employed, some tourism experiences following activities offered using VR may not be perceived as genuine as hands-on experiences in the physical environment (Guttentag, 2010; Suhaidi, 2023).

In, numerous VR studies in the past have focused on presence, which is the subjective feeling of being in a location, while having physical presence elsewhere (Witmer and Singer, 1998). Despite the importance of focusing on the determinants of presence, this approach has been ineffective in tourism, leading demands for future researchers to investigate the determinants of presence specifically (Tussyadiah et al., 2018). The present study synthesises the findings of a thorough assessment of literature in regard to tourism, specifically with the emphasis on the behavioural intention to partake VR tourism, while challenges faced during the adoption of VR as well as the extent of these behaviours that may lead to the visit intention to the actual site were highlighted. All in all, this study attempts to explore tourists' perceptions on the significance of media richness of VR, presence in virtual environment (VE), perceived utilitarian and hedonic value towards behavioural intention to use VR alongside intention to visit the actual destination.

LITERATURE REVIEW

Virtual Reality

Virtual Reality (VR) is commonly divided into two categories: immersive VR and non-immersive VR. As the name suggest, immersive VR happens when a user is enveloped in virtual environments (VEs) by wearing head-mounted display (HMD) technology that delivers a full 3D experience in the immersive world, while non-immersive VR enables users to view a VE through a 2-dimensional (2D) screen. To simplify, the interface of immersive VR has high extent of realism, and it provides a multimodal information channel, whereas these are absent in non-immersive VR interface. One recent study has emphasized the use of this new technology since the sense of reality produced by immersive VR is superior, thus its wide application in tourism industry (Lee and Kim, 2021; Hanaa and Abdul, 2023).

Generally, VR tourism is a virtual simulation of an actual site, destination, or visitor experience that intend to serve as a motivator for users' visitations or to expand on past consumer experiences. Subsequently, this new form of tourism encourages efforts to help the obtaining of a greater appreciation of environment for its substitution for actual visitation (Guttentag, 2010), especially for environmentally sensitive sites such as totally protected areas (TPAs).

Moreover, VR tourism can also be utilized as a management tool to educate consumers and promote environment conservations. For instance, Marriott Hotels located in London and Hawaii have used VR technology to market available tour packages to couples around the globe (Bethesda, 2015). Virtual tours allowed potential customers to experience staying in the hotels, seeing the city's landmarks, and travelling the surrounding using the VR headsets. Besides, these gears are also made available in Qantas cabins where they enable travellers on the selected flights to view the Great Barrier Reef virtually. Moreover, Thomas Cook Holidays, a well-known travel service provider uses VR tools to provide virtual helicopter ride, enabling consumers in Manhattan to enjoy a virtual city tour that commences on the roof of the Santorini Hotel (Mandalbaum, 2015). In conjunction with the growing size of VR tourism market and requirements for information management, a better understanding of VR's functionality and its application would be significant to the tourism management as well as marketing (Myung and Hall, 2019; Thong et al., 2020; Chin et al., 2022). Additionally, particularly in Malaysia, several destinations have adopted VR technologies as a part of their strategic implementations, namely RIFT and VAR LIVE which are located in Mid Valley Megamall My Town Shopping Centre, Kuala Lumpur accordingly, where 3D features are incorporated in existing theme parks and museums (Malaysia Investment Development Opportunity, 2020). Following that, destination in Sarawak has also placed VR technologies into practice, specifically D-Virtual Park which is located in the division of Kota Samarahan. The respective facility was the first theme park in Borneo to integrate VR technologies, its operation was initiated since 17 July 2020, founded as part of state's determined attempt to revolutionise and improve the digital entertainment landscape for both locals and visitors (Chua, 2020; Wen et al., 2023).

Stimulus-Organism-Response (S-O-R) Model

According to Mehrabian and Russell (1974), the fundamentals of S-O-R model, namely Stimulus, which is the major subset that leads to Organism (emotional response), eventually leads to the fostering of Response (behavioural reaction; Zhu and Deng, 2020). Moreover, this model depicts how an organismic component connects stimulation to human behaviour (i.e., response and action). Generally, the respective component consists of both biological (i.e., sensory organs, neurological system and muscular system) and psychological (i.e., Learning, perception, emotion, motivation and reasoning) structures alongside their processes. Subsequently, mental activity, as a consequence of stimulus, motivation, experience, and knowledge, can be differentiated into mental states (i.e., emotions, imagery, thoughts) and mental processes (i.e., judgement, reasoning, appealing to oneself, asking oneself). Self-regulated interactions with objects, machines, animals, or people are based on perception and mental activity that is based on the activity of brain systems (Buxbaum, 2016). On the other hand, response is the result of an individual's behaviour, which reflects the positivity and negativity of behavioural responses (Famiyeh et al., 2018). Following the S-O-R model, it is also defined as a stimulus that impacts on the individual's internal

organismic state. The organism is usually referred to a mediating process on an individual's stimulus and response interaction, consequently, the reaction aids the measurement of customer satisfaction or avoidance behaviour (Hsu and Tsou, 2011).

In addition, Mehrabian and Russell (1974) have postulated that individuals are capable of making own decisions and respond based on their choices. Indeed, the S-O-R model is regarded as the best option for the present context as it has been widely used in the behavioural studies. In this study, the S-O-R model was applied by considering the viewpoint of tourists, especially regarding media richness and presence as stimuli, followed by utilitarian value and hedonic value as elements for organism, followed by visit intention to actual tourism sites as the indicator for response. Additionally, the S-O-R paradigm was proven to be effective in understanding behavioural differences caused by a variety of marketing stimuli and cognitive processes. The S-O-R framework is simply adaptable (Jacoby, 2002) and it enables researchers to view at a variety of internal factors, exterior and internal stimuli; tangible and immaterial stimuli; experience and non-experiential stimuli, attitude, emotion, perception/feeling, judgement, belief, motivation, and reasoning, as well as several other non-experiential organisms (Sultan et al., 2021). Moreover, the application of this framework is deemed applicable as it has been extensively used to discuss behavioural intention to put VR technology into tourism practice and its impact on the visit intention to actual tourism sites (Kim et al., 2018). Thus, in the present study, the S-O-R model was used to examine tourists' intention to use VR technology towards their intention to visit the actual destinations.

Visit Intention

A tourist's strategy for future travel behaviour becomes cognizable as a "visit intention." In tourism studies, this intention to visit has been broadly examined as an indication of client's degree of loyalty (Thong et al., 2020). As the name suggests, visit intention refers to a tourist's desire to return to a location within a specific time frame (Chen et al., 2014; Handler and Kawaminami, 2023). Visit intention also refers to the likelihood of what tourists experience for a specific period of time in order to form subjective perceptions, which eventually influence their behaviour and ultimate decisions (Whang et al., 2016). Consequently, the present study attempts to establish the definition of travel desire as a source of inspiration or encouragement for travellers to visit the actual tourism site.

Media Richness

During epidemic due to COVID-19 pandemic, the initiation of travel restrictions has caused most tourism activities to be constrained, resulted in inability for travellers to perform travel actions. Nevertheless, to stay competent in the tourism market, travel destinations and travellers have increasingly adopted new technologies such as VR (Law et al., 2019). The travellers will be experiencing the moments and experience of the actual travelling site through the Virtual Reality technology. Therefore, media richness is one of the important elements in influencing and impacting user experience (Li et al., 2012). Moreover, media richness is referred to the relative ability of a communication channel to transmit messages containing rich information (Carlson and Zmud, 1999). Subsequently, the richness in media tends to improve as the number of triggers increase, while reduces message ambiguity, eases consumers' interpretation, and promotes understanding of the message conveyed (Maity et al., 2018; Lee, 2022). Besides, numerous studies have identified the significant impact of product attribute (i.e., media richness) towards one's utilitarian and hedonic value (Voss et al., 2003; Li et al., 2012; Krystof and Richter, 2017). Thus, the following hypotheses are formulated:

H1: Media richness is positively and significantly related to the utilitarian value.

H2: Media richness is positively and significantly related to hedonic value.

Presence

Presence is regarded as one of the most important elements for tourists to experience the feelings of being physically attended the actual tourism destination, specifically through VR technology (Lee, 2004). The absence in regard to the sense of presence while using VR tends to affect travel and users experience. Additionally, presence is often defined as the sense of being in a physical environment, while telepresence refers to the experience of existence in a domain through a communication medium (Lee and Kim, 2021). Accordingly, user's sense of presence is described by their possession of feeling, engagement, perception, and sensation when an activity is performed. Numerous scholars in the past have defined and operationalized presence in various ways, but the most prevalent definition when individuals feel "being there" in a virtual environment (VE; Witmer and Singer, 1998; Runia, 2006). Following that, presence is also referred to "the subjective feeling of being in one place or setting, even though physically located in another" (Witmer and Singer, 1998). Generally, presence requires an individual's ability to shift attention from the physical environment to the VE, as well as the capability to exclude extraneous inputs from the respective user's physical surroundings (Cummings et al., 2012). Ultimately, past studies have indicated that the positive relationship between presence and utilitarian as well as hedonic value (Lee and Kim, 2012; Kardong-Edgren et al., 2019), thus the formulation of the following hypotheses:

H3: Presence is positively and significantly related to the utilitarian value.

H4: Presence is positively and significantly related to hedonic value.

Utilitarian Value

Utilitarian value is commonly referred to the rationale in the process of decision making and usually related to the fulfilment of one's functional demands (Lin et al., 2018). Utilitarian values are primarily functional, instrumental, and cognitive in character, and serves as a means to an end. Subsequently, they are widely associated with logical reasons of time, location, and possession requirements (Chandon et al., 2000). Indeed, the behaviour of consumer is value-driven, where their decisions are often influenced by perceived values (Batra and Athola, 1991). Accordingly, perceived utilitarian

value helps to define tourist’ intention to visit to a tourism destination (Choi et al., 2015), while perceived usefulness influences the inclination to adopt VR technology in planning their trips (Lee and Kim, 2021). Subsequently, previous studies have indicated the positive relationship between the utilitarian value and the behavioural intention (Ryu et al., 2008; Hanzaae and Rezaeyeh, 2013; Kusumawardani et al., 2023). Thus, the following hypothesis is proposed:

H5: Utilitarian value is positively and significantly related to the behavioural intention.

Hedonic Value

In contrast to goal achievement, hedonic value is recognised through enjoyment and pleasure (Hirschman and Holbrook, 1982). Hedonic value refers to the delight and pleasure that customers expect from their purchases as well as their enjoyment (Bakirtas and Divanoglu, 2013). In general, to acquire satisfaction and pleasure from acquisitions, most consumers are influenced by several motivational factors (Sangkoy and Tielung, 2015). Hedonic value would influence the judgement of consumer through an automated process (Lin et al., 2018). Besides, hedonic value is described as "more subjective and personal than its utilitarian equivalent, originating from fun and playfulness than fulfilment (Hirschman and Holbrook, 1982; Hirschman, 1983). Hedonic values are non-instrumental, experiential, and affective in nature, and are frequently linked to intangible retailer or the product features.

Indeed, hedonic value is more subjective and personal in comparison with utilitarian value (Ryu et al., 2010; Yang and Lee, 2010). Consumers quantify subjective experiences of enjoyment, fun, and playfulness that they obtain from using a product or service from a hedonic value perspective (Babin et al., 1994). Consequently, from the hedonic point of view, consumers expect a pleasurable experience during the purchase or use process, which eventually influence their decision-making when they are satisfied with consumption, particular VR in this instance (Pantano and Corvello, 2014). Moreover, numerous studies have identified the positive impact of consumers’ perceived hedonic value on their behavioural intention (Basaran and Buyukyilmaz, 2015; Lee and Kim, 2021; Ma et al., 2023). Thus, the hypothesis is proposed as follows:

H6: Hedonic value is positively and significantly related to the behavioural intention.

Behavioral Intention to Use Virtual Reality

Behavioural intention is the motivating component of a volitional conduct, according to the Theory of Reasoned Action (TRA; Fishbein and Ajzen, 1975), and it is closely associated with one’s behaviour (Liu and Jang, 2009). Likewise, behavioural intention is also known as the degree to which a person is motivated to carry out certain behaviours (Ajzen and Fishbein, 1980). Generally, behavioural intention is deemed significant in its role as a determining factor of behaviour (Vallerand et al., 1992; Soliman and Abou-Shouk, 2015). Additionally, Zeithaml et al. (1996) have mentioned that an organization's behavioural objective can indicate either favourable or unfavourable results. Positive behavioural intentions include positive word-of-mouth (WOM), decent level of loyalty and willingness to spend, while undesirable behavioural intentions comprise negative WOM and switching to competitors (Zeithaml et al., 1996). Additionally, behavioural intention is referred to a consumer's predisposition to behave in a certain way toward a product or service (Atunel and Kocak, 2017). Last but not least, scholars have suggested the significant positive impact of consumers’ behavioural intention on their visit intention to actual tourism destinations (Duong et al., 2022). Thus, the hypothesis is proposed as below:

H7: Behavioural intention is positively and significantly related to the visit intention to actual site.

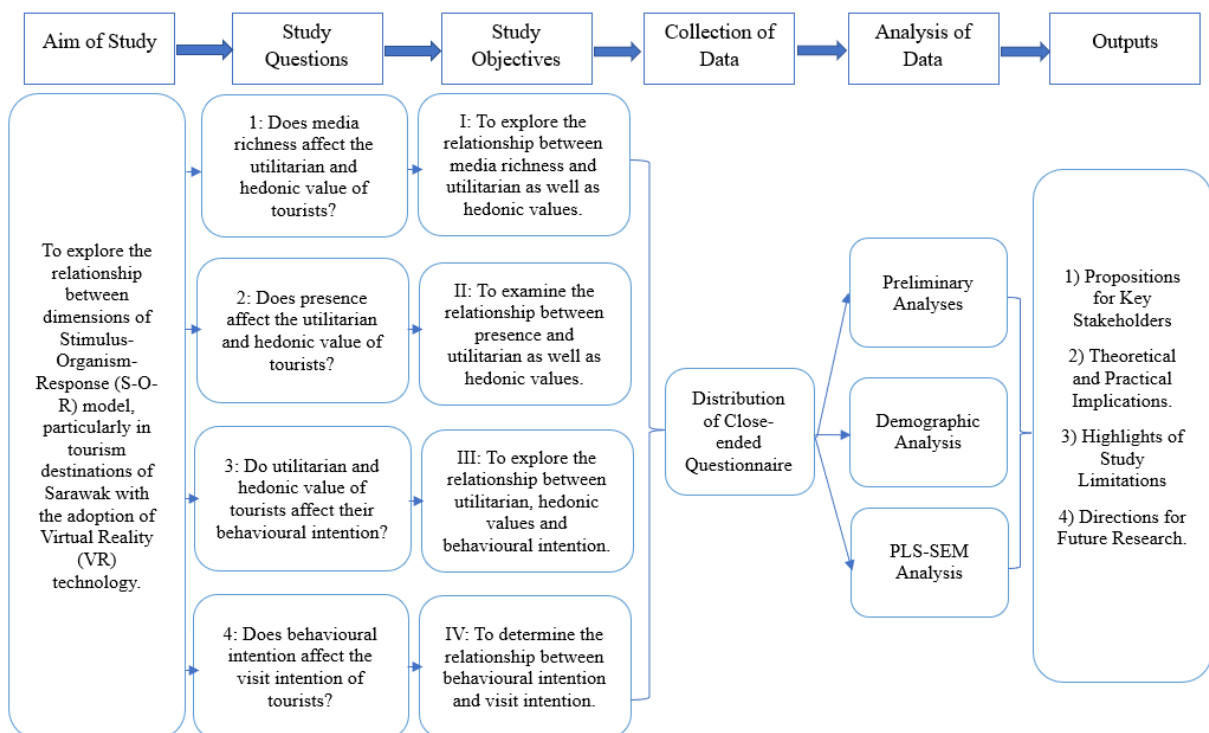


Figure 1. Flowchart of the Study

METHODOLOGY

The present study has taken place at tourism destinations in Sarawak, particularly those that have adopted VR technology. The focus of this study was on East Malaysia VR tourism sites for its emerging number of efforts taken by local government to promote digitalization in economy (Lau and Kong, 2019; Ling, 2022). Subsequently, the data was collected from each part of Sarawak including the major cities in Sarawak such as Kuching, Sibü, Bintulu, Miri as well as smaller towns comprising Limbang, Song, Bintangor, Mukah and Saratok. Indeed, this wide range of selection enables the understanding of different perspectives from all parts of Sarawak, primarily from different geographical and cultural backgrounds. Following that, the process of data collection has commenced from April 2022 to August 2022, for a total duration of 5 months as illustrated in Figure 1. In the present study, the data collection was performed using a quantitative method, particularly through the distribution of questionnaires which was adapted from past studies (El-Said and Aziz, 2021; Lee and Kim, 2021; Li et al., 2021; Schiopu et al., 2021) and tailored to Malaysian setting. In general, the survey questionnaire comprised a total of two sections, the first section, namely Section I, which contains a total of five items, were used to collect the demographic characteristics of the respondents such as their age, origins, and ethnicities. Accordingly, Section II investigated respondent’ perceptions on perceived utilitarian as well as hedonic value in relation to behavioural and visit intention using a total of 35 measurement items. The respondents’ demographic profiles are tabulated in Table 1.

Table 1. Demographic Profile of Respondents

Respondents (N=250)			
Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	114	57.6
	Female	106	42.4
Age	16 to 20 years old	29	11.6
	21 to 25 years old	164	65.6
	26 to 30 years old	13	5.
	31 to 35 years old	14	5.6
	36 to 40 years old	17	6.8
	41 years old and above	13	5.2
Ethnicity	Malay	20	8.0
	Dayak	13	5.2
	Chinese	193	77.2
	Indian	2	0.8
	Others	22	8.8
Monthly Income	RM 1,200 and below	176	70.4
	RM 1,201 – RM 2,400	35	14.0
	RM 2,401 – RM 3,600	11	4.4
	RM 3,601 – RM 4,800	12	4.8
	RM 4,801 – RM 6,000	5	2.0
	RM 6,000 and above	11	4.4
Location	Kuching	71	28.4
	Sibü	117	46.8
	Sarikei	8	3.2
	Bintulu	16	6.4
	Miri	9	3.6
	Limbang	3	1.2
	Song	1	0.4
	Kapit	2	0.8
	Saratok	1	0.4
	Bintangor	1	0.4
	Mukah	2	0.8
	Others	19	7.6

Table 2. Total Variance Explained (Note: Extraction Method Using Principal Component Analysis)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.466	38.474	38.474	13.466	38.474	38.474
2	2.714	7.755	46.229	2.714	7.755	46.229
3	1.709	4.883	51.112	1.709	4.883	51.112
4	1.470	4.200	55.312	1.470	4.200	55.312
5	1.307	3.735	59.047	1.307	3.735	59.047
6	1.086	3.102	62.149	1.086	3.102	62.149
7	1.026	2.931	65.081	1.026	2.931	65.081
8	.907	2.592	67.673			
9	.835	2.386	70.059			
10	.781	2.232	72.291			
11	.752	2.148	74.439			
12	.708	2.022	76.461			
13	.650	1.857	78.318			
14	.591	1.688	80.006			
15	.553	1.579	81.586			
16	.530	1.514	83.100			
17	.501	1.433	84.533			
18	.492	1.407	85.939			
19	.450	1.287	87.226			
20	.436	1.247	88.473			
21	.408	1.166	89.639			
22	.386	1.102	90.741			
23	.356	1.017	91.758			
24	.337	.963	92.721			
25	.330	.944	93.665			
26	.319	.913	94.577			
27	.311	.889	95.466			
28	.268	.766	96.233			
29	.250	.714	96.947			
30	.229	.655	97.602			
31	.218	.622	98.224			
32	.194	.555	98.779			
33	.162	.463	99.242			
34	.149	.426	99.668			
35	.116	.332	100.000			

A seven-point Likert scale was used in this study, specifically range from 1 to 7, where 1 represented strongly disagree while 7 represented strongly agree to the measurement item, according to Dr. Rensis Likert. The respondents participated in this survey were tourists who have visited VR tourism destinations in Sarawak. Next, by using G*Power software (Faul et al., 2007), a minimum sample size of 178 was determined, as shown in Figure 2, primarily computed based on statistical power of 0.80 and presumption value of 0.15 for effect size at 5% significance level.

Subsequently, a non-probability sampling method (Sekaran and Bougie, 2013), namely purposive sampling was used in the selection of respondents, where the minimum age for respondents to be chosen was controlled at 16, presuming better

level of understanding of measurement items, thus generating more reliable outcomes. Moreover, prior to survey participation, the researchers have achieved a consensus with these selected respondents, enabling them to rate each measurement item based on their level of agreement. All in all, out of the 300 distributed questionnaires, 265 sets were returned, indicating a response rate of 88%, thus confirming the absence of response error (Nulty, 2008). The procedure was followed by several preliminary analyses using the Social Sciences Statistical Package (SPSS) 28.0, as a consequence, a total of 15 questionnaires were discarded due to straight-lining response and absence of certain information. Accordingly, a partial least squares-structural equation modeling (PLS-SEM) was conducted using WarpPLS 8.0 (Kock, 2022) to assess the proposed research model as shown in Figure 3, particularly through path modeling and bootstrapping.

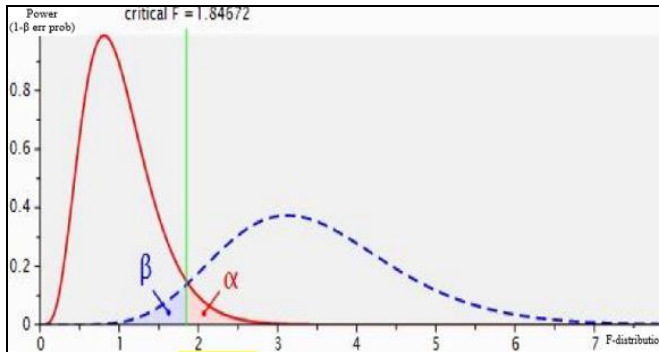


Figure 2. Results of G*Power Analysis

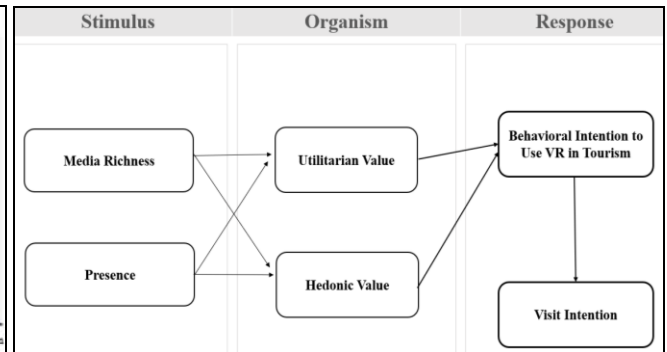


Figure 3. Research Model

Table 3. Results of Measurement Model

Model Construct	Measurement Item	Loading	CR ^a	AVE ^b	Loading	CR ^a	AVE ^b
		First Iteration			Final Iteration		
Media Richness (MR)	MR_1	0.763	0.808	0.584	0.763	0.808	0.584
	MR_2	0.769			0.769		
	MR_3	0.761			0.761		
Presence (PRE)	PRE_1	0.736	0.882	0.455	0.797	0.869	0.624
	PRE_2	0.637			Omitted		
	PRE_3	0.705			0.830		
	PRE_4	0.634			Omitted		
	PRE_5	0.733			0.785		
	PRE_6	0.639			Omitted		
	PRE_7	0.708			0.746		
	PRE_8	0.670			Omitted		
	PRE_9	0.594			Omitted		
Utilitarian Value (UV)	UV_1	0.862	0.891	0.731	0.862	0.891	0.731
	UV_2	0.853			0.853		
	UV_3	0.850			0.850		
Hedonic Value (HV)	HV_1	0.845	0.907	0.765	0.845	0.907	0.765
	HV_2	0.878			0.878		
	HV_3	0.901			0.901		
Behavioural Intention (BI)	BI_1	0.748	0.910	0.591	0.748	0.910	0.591
	BI_2	0.739			0.739		
	BI_3	0.730			0.730		
	BI_4	0.816			0.816		
	BI_5	0.786			0.786		
	BI_6	0.789			0.789		
	BI_7	0.771			0.771		
Visit Intention (VI)	VI_1	0.779	0.945	0.634	0.779	0.945	0.634
	VI_2	0.823			0.823		
	VI_3	0.838			0.838		
	VI_4	0.814			0.814		
	VI_5	0.815			0.815		
	VI_6	0.779			0.779		
	VI_7	0.781			0.781		
	VI_8	0.783			0.783		
	VI_9	0.800			0.800		
	VI_10	0.746			0.746		

FINDINGS

Common Method Variance (CMV)

In this study, the SPSS software version 28.0 (O'Connor, 2000) was used to testify the issue of the common method variance (CMV), specifically through a Harman's single-factor test. The measures studied

Table 4 Discriminant Validity of Constructs

	MR	PRE	UV	HV	BI	VI
MR	0.764					
PRE	0.361	0.790				
UV	0.385	0.404	0.855			
HV	0.387	0.362	0.616	0.875		
BI	0.438	0.398	0.640	0.591	0.769	
VI	0.402	0.351	0.702	0.595	0.675	0.796

Note: MR = Media Richness; HV = Hedonic Value; PRE = Presence; BI = Behavioral Intention; UV = Utilitarian Value; VI = Visitation

Table 5. Results of Cronbach's Alpha

Model Construct	Measurement Item	Cronbach's Alpha	Loading Range	Number of Items
Media Richness (MR)	MR_1	0.644	0.761-0.769	3(3)
	MR_2			
	MR_3			
Presence (PRE)	PRE_1	0.799	0.746-0.830	4(9)
	PRE_3			
	PRE_5			
	PRE_7			
Utilitarian Value (UV)	UV_1	0.816	0.850-0.862	3(3)
	UV_2			
	UV_3			
Hedonic Value (HV)	HV_1	0.846	0.845-0.901	3(3)
	HV_2			
	HV_3			
Behavioural Intention (BI)	BI_1	0.884	0.730-0.816	7(7)
	BI_2			
	BI_3			
	BI_4			
	BI_5			
	BI_6			
	BI_7			
Visit Intention (VI)	VI_1	0.936	0.746-0.838	10(10)
	VI_2			
	VI_3			
	VI_4			
	VI_5			
	VI_6			
	VI_7			
	VI_8			
	VI_9			
	VI_10			

in this study were included in an exploratory factor analysis and all these measurements are included under the presumption that the first factor loading shall not exceed 50% (Aulakh and Gencturk, 2000). As shown in Table 2, the result where the first loading is 38.474% where it did not exceed the 50%, thus indicated that the results were free from the issue of method biases.

Assessment of the Measurement Model

In this study, the proposed model was evaluated using a confirmatory factor analysis (CFA), with the purpose to examine the scales' reliability, convergent validity, and discriminant validity. As demonstrated in Table 3, as a rule of thumb, each item must achieve a minimum loading of 0.70 to be deemed acceptable and to ensure internal consistency (Bagozzi et al., 1991). On top of that, the validity of the construct was evaluated using composite reliability (CR), where the value of CR must meet the minimal cut-off point of 0.70 (Chin, 2010). Likewise, the value of average variance explained (AVE) must be at least 0.50 (Fornell and Larcker, 1981). As a result, the values for both CR and AVE have met the suggested minimum requirements. Table 4 shows the measures' discriminant validity, primarily comprised assessment of inter-correlation among the constructs using square rooted values of AVE, where the correlation values obtained must be higher than each other (Fornell and Larcker, 1981; Chin, 2010). Following evidence on accuracy, convergent and discriminant validity, the present measurement model was deemed appropriate.

Reliability Test

The assessment was subsequently followed by the computation of Cronbach' alpha values to testify the reliability of the instruments (Cronbach, 1951). Generally, scholars in the past have suggested the values of Cronbach's alpha be at least 0.80 to represent an extent that is deemed decent, followed by values between 0.61-0.79 to be regarded as acceptable, while 0.60 and below represents weak level of acceptance. Consequently, as Table 5 shows, the values of Cronbach's alpha for all tested constructs, namely media richness, presence, utilitarian value, hedonic value, behavioural intention and visit intention are at a decent level.

Coefficient of Determination (R²)

In this study, the coefficient of determination (R²) was computed to determine whether the model's existence was either significant, moderate, or weak in forecasting the approximate actual data points (Hair et al., 2017). Subsequently, as tabulated in Table 6, the value of the R² for utilitarian value was 0.261 (moderate), hedonic value was 0.245 (moderate), followed by behavioural intention which was 0.498 (moderate) and visit intention was 0.457 (moderate).

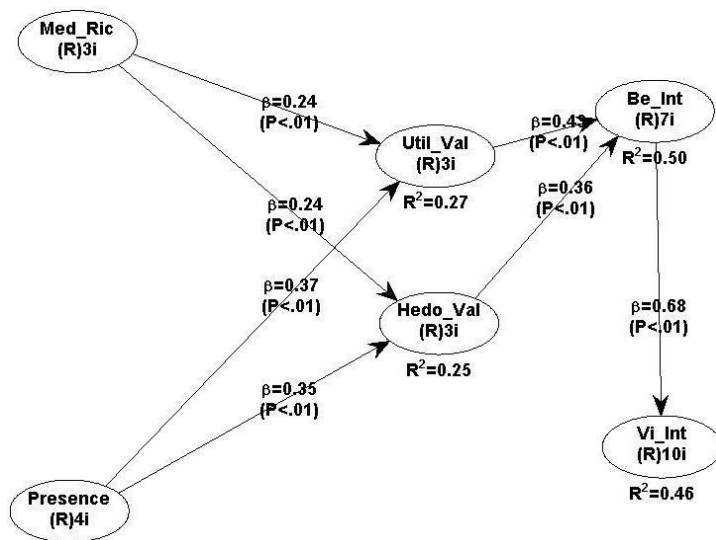


Figure 4. Results of the structural model

Table 6. Results of R-squared values

Constructs(s)	R-squared value
Utilitarian Value	0.261
Hedonic Value	0.245
Behavioural Intention	0.498
Visit Intention	0.457

Table 7. Results of Q-squared values

Constructs(s)	Q-squared value
Utilitarian Value	0.267
Hedonic Value	0.250
Behavioural Intention	0.498
Visit Intention	0.462

Predictive relevance (Q²)

The Q² values were obtained to explain the predictive value of the data. The minimum requirement for Q² value was suggested to be greater than zero value (Hair et al., 2017). As Table 7 shows, all the Q² values have exceeded value of zero.

Table 8. Results of hypotheses testing

Hypotheses	Relationship	Beta	p-Value	t-Value	Decision	f ²	VIF
H1	media richness-utilitarian value	0.239	<0.001	3.947	Supported	0.094	1.345
H2	media richness-hedonic value	0.244	<0.001	4.027	Supported	0.095	1.304
H3	presence-utilitarian value	0.369	<0.001	6.217	Supported	0.173	2.417
H4	presence-hedonic value	0.346	<0.001	5.812	Supported	0.156	1.898
H5	utilitarian value-behavioural intention	0.425	<0.001	7.231	Supported	0.277	2.261
H6	hedonic value-behavioural intention	0.360	<0.001	6.055	Supported	0.226	2.472
H7	behavioural intention-visit intention	0.677	<0.001	12.035	Supported	0.459	1.501

Assessment of the Structural Model

As aforementioned, a total of 7 directional hypotheses were established based on the developed research model. Generally, two out of the seven hypotheses (H1-H2) were formulated to examine the direct relationships between media

richness, presence, utilitarian value and hedonic value, while H3 and H4 investigated the direct relationships between utilitarian value, hedonic value and behavioural intention. Last but not least, the remaining hypothesis (H7) assessed the direct relationship between behavioural intention and visit intention.

To investigate all the said hypotheses, the WarpPLS software was utilized; thus, the results comprising regression weights, bootstrap critical ratios p -value along with R^2 to explain the model's endogenous linkages (O'Cass and Frost, 2002) were demonstrated in Figure 4 and Table 8. Moreover, the effect size (f^2) was also measured and with the purpose to calculate the strength between independent and dependent variables.

DISCUSSION

In the present study, H1 was proposed to examine the relationship between media richness and utilitarian value, particularly in the context of tourism in Malaysia. In line with the preceding study (Li et al., 2012), the statistical findings have indicated that the media richness of virtual reality had a significant impact on one's utilitarian value; thus, H1 was supported. Accordingly, the richness of media can be an emphasis for tourism destinations, with the purpose of encouraging these VR users towards favourable behavioural intention. Subsequently, the relationship between media richness and hedonic value was investigated in H2. Undoubtedly, the outcomes were aligned with previous studies (Li et al., 2012; Maity et al., 2018), indicating the significance of media richness on the respective users' hedonic value, hence H2 was supported. Indeed, an effective communication channel is often accompanied by rich information, enabling transmission of relevant travel particulars such as availability of tourism attractions in desired destinations. Consequently, comprehensive media contents in VR environment may lead to advantageous decision-making among both potential and existing tourists, which eventually contributes to sustainable development of a tourism destination.

Consecutively, in accordance with the study in the past (Lee and Kim, 2012), statistical results from the analyses demonstrated the significant impact of presence on the utilitarian value of VR users, thus supporting H3. Generally, virtual environments (VE) that provide an adequate extent of presence helps to generate more positive behaviour for their users, specifically VR tourists in this case. Additionally, H3 was proposed to examine the relationship between presence and hedonic value. Likewise, the statistical findings have indicated that the users' sense of presence had a significant impact on their hedonic value, thus H4 was supported and in line with previous study (Lee and Kim, 2012). VEs that provide users with great sense of presence tend to be a considerable driver for users to make decisions that are beneficial to tourism destinations, as they find the experience enjoyable and fun, thus creating satisfactory amount of interest among these individuals. Subsequently, the formulation of H5 was to investigate the relationship between users' utilitarian value and their behavioural intention. The results were undoubtedly aligned with previous studies (Hanzaee and Rezaeyeh, 2013; Choi et al., 2015), indicating that utilitarian value had significant impact on one's behavioural intention; thus H5 was supported. Generally, almost every consumer in the market is driven by value, which eventually influence their behaviours, especially during the process of decision-making (Ryu et al., 2008; Lee and Kim, 2021).

Moreover, in consistent with past studies (Pantano and Corvello, 2014; Basaran and Buyukyilmaz, 2015), the significance of users' hedonic value was also discovered, thus supporting H6. To simplify, hedonic value provides substantial impact on users' judgement and enjoyment, specifically on the features of a product being utilized. Thus, hedonic value perceived by consumers are likely to lead to promising behavioural intentions of consumers. Last but not least, H7 was formulated to assess the relationship between behavioural intention and visit intention. In line with preceding studies (Choi et al., 2015; Atunel and Kocak, 2017), the present results indicated that users' behavioural intention had significant impact on their intention to visit a destination. In general, tourists or travellers' intention to plan for a trip is usually implied by their behavioural intention, particularly favourable intention, which determines the behaviour of these individuals to consider placing a tourism destination at the top of the list.

CONCLUSION, IMPLICATIONS AND LIMITATIONS

In sum, the present study has investigated the relationship between the elements of the S-O-R (Stimulus, Organism and Response) model, which include media richness, presence, utilitarian and hedonic value as well as behavioural and visit intention to several tourism destinations in Sarawak, Malaysia. Subsequently, this study has provided empirical evidence that indicated the positive correlation between consumers' behavioural intention and their perceived utilitarian as well as hedonic value. Moreover, statistical findings have revealed that consumers' behavioural intention leads to intention to visit to a tourism destination, thus highlighting the importance to ensure favourable utilitarian and hedonic value as perceived by consumers to enhance the profitability and development of a tourism destination in the long run.

Moreover, a number of dimensions contributing to constructive utilitarian and hedonic value and their relationships with behavioural intention was examined, primarily based on tourists' perspectives who visited tourism destinations that offer VR technology. Accordingly, media richness of VR and users' sense of presence were found to be significant contributor to their behavioural intention, thus suggesting the necessity to provide consistent enhancements on the said elements for the assurance of beneficial users' behavioural intention.

Despite the fact that users' behavioural and visit intention to Sarawak have been repeatedly examined by several research in the past, there was no known study was conducted through the adoption of these studied variables, primarily comprised media richness, presence, utilitarian value, hedonic value, behavioural intention and visit intention, particularly in the context of VR tourism. Hence, the present study attempted to provide contributions to the existing literature of VR tourism destinations in Malaysia. Besides, this study is foreseen to contribute to the emblazoning of S-O-R model through its adequate amount of empirical evidence and differentiated contexts. Additionally, based on the

perspective of tourists in Sarawak, the present study reinforces the expansion of knowledge regarding contributing factors of consumers' utilitarian and hedonic value and their impacts on behavioural and visit intention, therefore serves as a potential reference for future research in similar contexts.

In terms of practical implications, the findings offer crucial fundamentals to policy makers and stakeholders in the tourism industry, particularly on the significance of ensuring the employed VR technology enables its users to gain both utilitarian value and hedonic value, which eventually lead to intention to visit the actual tourism destination. Besides, this study makes an effort to comprehend the factors that affect the consumers' perceived values when VR technology is adopted. These findings are valuable and helpful for the local policy planners and business operators regarding the effective implementation of the VR technology at the tourism destination as well as be informed of the potential enhancements on existing implementations.

Furthermore, the present study provides meaningful insights to key tourism industry players, specifically local policy makers, by suggesting the need to consider perceivable values by users when VR technology is adopted, primarily include media richness and presence as discovered by the statistical findings. Indeed, users' perceived utilitarian and hedonic value were found to be significant factors towards favourable behavioural and visit intention. Thus, it is recommended that the respective industry players to place great emphasis on tourists' enjoyment during their visitations, for instance offering discount vouchers and informative brochures to encourage their intentions to revisit.

Nonetheless, this study is not without its limitations. Firstly, the present study only sampled from tourism destinations in Sarawak, specifically those that have applied VR technology, whereas the situations in other contexts remain unaddressed. Thus, the results and conclusions of this geographically restricted survey could be varied. Besides, there are some of the viewpoints that may alter depending on the study location such as sociocultural, the economic as well as the environmental as the study was carried out at only one geographical location.

Therefore, the findings of this study might not be extrapolated to other tourism destination that have applied the VR technology in West Malaysia as well as in other countries. Moreover, stakeholders in a tourism destination in fact comprised more than just visitors or tourists; individuals from the line of local communities and other relevant stakeholders are also included, thus indicating limitations in terms of sampling.

Ultimately, VR tourists' perceived values (i.e., utilitarian and hedonic) are significant contributors to their behavioural and visit intention, nevertheless, these values have high dependency on the media richness and these individuals' sense of presence while using VR. Henceforth, the significance of various stimuli and organisms on users' responses, particularly in terms of behavioural intention and intention to visit to actual tourism destinations was identified. Therefore, it is wise for these stimuli (i.e., media richness and presence) and organisms (i.e., utilitarian value and hedonic value) as well as users' responses (behavioural intention and visit intention) to undergo more thorough investigation in different settings related to tourism context. Last but not least, most of the samples were dispersed in cities of Sarawak, thus witnessed an inadequacy in this distribution. Thus, it is recommended for wider range of perspectives and concepts to be integrated along with the inclusion of respondents such as stakeholders from the supply-side and communities to obtain results that are more indiscriminate.

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ASSESSMENT OF THE NATURAL RESOURCE POTENTIAL OF THE IMPORTANT BIRD AREAS OF THE NORTH KAZAKHSTAN REGION FOR THE DEVELOPMENT OF ORNITHOLOGICAL TOURISM

Pavel S. DMITRIYEV 

North Kazakhstan Kozybayev University, Department of Geography and Ecology,
Petropavlovsk, Republic of Kazakhstan, e-mail: dmitriev_pavel@mail.ru

Ivan A. ZUBAN* 

North Kazakhstan Kozybayev University, Department of Biology,
Petropavlovsk, Republic of Kazakhstan, e-mail: zuban_ia@mail.ru

Ivan A. FOMIN 

North Kazakhstan Kozybayev University, Department of Geography and Ecology,
Petropavlovsk, Republic of Kazakhstan, e-mail: iafomin@mail.ru

Jan A. WENDT 

University of Gdańsk, Faculty of Social Sciences, Institute of Socio-Economic
Geography and Spatial Management, Gdańsk, Poland, e-mail: jan.wendt@ug.edu.pl

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Abstract: To assess the potential of the allocated Important Bird Areas (IBA) of the North Kazakhstan region for the development of ecological tourism in the region. The work uses the materials of field research of domestic and international ornithological expeditions, cartographic method, statistical and mathematical processing of the data obtained. The territory of the North Kazakhstan region is of interest for the development of ornithological tourism. This is facilitated by the natural resource potential of the allocated promising IBA. The borders of these territories coincide with lake ecosystems located in the forest-steppe and steppe zones of the region. The selected ornithological areas are confined to lake ecosystems that are on the way of migrations and nesting of birds. IBA are characterized by floristic and faunal diversity, insignificant human development. The habitation of rare and endangered species has been noted. The presence of roads ensures accessibility to the studied territories of tourists and wildlife lovers from Kazakhstan, near and far abroad. The allocated territories may be used not only for ornithological, but also for recreational and educational tourism, as well as amateur fishing. The results of the resource potential assessment confirm the prospects for the development of ornithological tourism in the territory of the North Kazakhstan region in the implementation of environmental measures aimed at preserving the uniqueness of ecosystems. The selected IBA have significant natural resource potential and uniqueness. Key territories associated with lake ecosystems can serve for the development of ornithological and recreational tourism. The comprehensive assessment made it possible to identify the weighting coefficient of the studied properties of the territories. This confirms the fact about the prospects of their use as unique natural objects for scientific research, amateur fishing, various types of tourism on the territory of the North Kazakhstan region.

Key words: Important Bird Areas, birds, the Red Book of Kazakhstan, the IUCN Red Book, lakes, ecosystems, ecological tourism, ornithological tourism, tourism industry, natural resource

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INTRODUCTION

Birds are a unique and integral component of almost all ecosystems, indicators of species diversity in the habitat, and are also used as an indicator of habitat quality (Pereira et al., 2006; Gregory and van Strien, 2010; Kordowska, 2017; Fraixedas et al., 2020;). Thanks to the ability to fly and the peculiarities of adaptation, birds have mastered various habitats, including both natural and man-made landscapes (Hinsley et al., 1995; Fernández-Juricic and Jokimäki, 2001; Ewers et al., 2007; Puhakka et al., 2011). However, despite the high ecological plasticity, as well as the ability to adapt to various environmental changes, birds continue to prefer natural landscapes. Birds concentrate on areas minimally affected by human activity (Sharps et al., 2023). One of these sites are Important Birds Areas (IBA). They were created and described as unique bird habitats based on criteria set by the International Union for Conservation of Nature (Sklyarenko et al., 2008; Carr et al., 2023). In addition to scientific significance, IBA have natural and recreational potential, which includes not only ecological, but also scientific and cognitive aspects. One of the unique aspects of these territories is their placement in places as close as possible to natural landscapes, with their floral and faunal diversity. Under the influence of anthropogenic factors, there is a decrease in the species diversity and number of birds in the already existing IBA. In this regard, there is a

* Corresponding author

need for regular monitoring studies to assess the resource potential of IBA. This is confirmed by the studies of a number of authors (Bonzi et al., 2021; Stemmer et al., 2022). Monitoring studies can help to prioritize conservation of the natural resource potential for the IBA (Donald et al., 2019). The study of these territories is not only of scientific interest, but is also of great importance for the formation of environmental education and can be used to develop the tourism industry (Callaghan et al., 2018; Conradie and Van Zyl, 2021; Schwoerer and Dawson, 2022).

One of the modern directions of the tourism industry is ornithological tourism (Nicolaidis, 2014; Steven and Jones, 2015; Ocampo-Peñuela and Winton, 2017). Ornithological tourism has been known for many years and developed in many regions of the world, constituting an important segment of sustainable tourism (Sekercioglu, 2002; Ma et al., 2013; Kronenberg, 2016; Liu et al., 2021). The development potential of ornithological tourism in Northern Kazakhstan is quite high due to the high species diversity of birds of various ecological groups (Vilkov, 2010; Tarasov, 2010; Solovyev et al., 2011).

Ornithological tourism is one of the most widespread, developing and profitable forms of eco-tourism and ranks second in the world in popularity after hiking (Biggs et al., 2011, Szczepańska et al., 2014; Steven et al., 2014; Goncharova et al., 2020; Afanasyev et al., 2021; Ren et al., 2022). Countries with a high level of development of ornithological tourism include the USA, Canada, Great Britain, Scandinavian countries, France, Germany, Japan. There is a slightly smaller scale of enthusiasm for this type of tourism in other European countries (Popov et al., 2017).

In recent years, ornithological tourism in Kazakhstan has also been developed. The diversity of birds, numbering more than 500 species, determines the high interest and prospects of ecological tourism (Ryabitsev et al., 2014). Natural zones have identified potential regions of the republic for ornithology. The most popular region visited by ornithological tourists is the Almaty region. In spring, up to 260 species of birds can be found in this region in a short period of observation (Ryabitsev et al., 2014). However, other regions of Kazakhstan are no less attractive. Northern Kazakhstan can be singled out, there is a powerful Central Asian migration route. Every year millions of birds visit this territory during spring and autumn migrations (Yerokhov, 2013; Cresswell et al., 1999; Zuban et al., 2020; Jones et al., 2022; Kamp et al., 2015). At the same time, the development of ornithological tourism in the northern regions of Kazakhstan is hindered by the weak study of promising territories for the organization of ornithological tourism. There is no marketing research. There is no tourist infrastructure equipped with communications in accordance with the requirements of international standards (Istomina et al., 2016; Ovalles-Pabon et al., 2022). The North Kazakhstan region is the territory of nesting and migration of many species of birds.

This is facilitated by unique forest, forest-steppe and steppe landscapes. In addition, numerous lakes contribute to the formation of unique ecosystems and recreational facilities. There are 2328 lakes with an area of more than 10 hectares on the territory of the region, which differ in morphometric, hydrological, hydrobiological, and mineral indicators (Fomin et al., 2020). These aspects determine the floral and faunal diversity of reservoirs, form unique aquatic and near-aquatic ecosystems. The natural resource potential of the lakes attracts wetland bird species, as well as near-water representatives. The conducted research allowed us to identify key ornithological territories within the borders of the North Kazakhstan region. These territories may be used as objects for ornithological tourism. Together, this provides a unique resource potential for the development of the tourism industry in the Northern region (Smykova, 2015; Dmitriyev et al., 2021b; Dmitriyev et al., 2022).

MATERIALS AND METHODS

In order to study the possibility of developing ecological tourism in the region, an assessment of the resource potential allocated by the IBA of the North Kazakhstan region was given. At the first stage of the work, the results of many years of field research conducted by the authors on the territory of the North Kazakhstan region in 2008-2022 were summarized. Field studies included the study of the species composition and abundance of birds at the projected IBAs, their description and further monitoring. For this, generally accepted faunistic methods were used, including visual observations and direct counting with the help of optical instruments (binoculars and spyglasses). At the second stage, the potential of each of the IBAs was assessed by determining the main properties of the object that are important for the organization of ornithological tourism. The evaluation properties (criteria) themselves, as well as the significance of each criterion, are determined using sociological data collected by questioning representatives of the ornithological community. The assessment of the IBA potential was carried out using a complex quality indicator, which was calculated using the weighted average calculation method.

$$k = \sum k_i \sum a_i \quad (1) \quad \text{(Fomin et al., 2020:89)} \quad \text{where } (k_i) - \text{ is an indicator of the } i\text{-th property of the object, points; } (a_i) - \text{ is the weighting coefficient of the indicators } (k_i), \text{ a fraction of one } (\sum a_i = 1)$$

Based on the available scientific data, the weighting coefficient of each IBA was calculated. This allowed us to evaluate the properties characteristic of the allocated territories of the North Kazakhstan region. On this basis, the IBA tourism potential significance coefficient was calculated. At the third stage, an assessment of a set of properties of the studied territories was carried out, which made it possible to rank and identify the most promising ecosystems for ornithological tourism within the boundaries of the region under study (Semochkina, 2012; Stoyashcheva and Golovin, 2020; Dmitriyev et al., 2021b).

To systematize and evaluate the obtained data, methods of mathematical and statistical analysis, geoinformation systems were used, which made it possible to assess the resource potential of ornithological territories (Dirin et al., 2017).

To visualize the selected ornithological territories, a map has been prepared, confirming their compact location, reflecting their association with lakes and administrative regions, as well as the presence of a transport network, which is the basis for the development of ornithological tourism in the region.

RESULTS AND DISCUSSION

IBA are unique sites of global importance for the conservation of bird populations identified based on a set of

criteria. The criteria were defined in 1979 at the international level within the framework of the IBA creation concept developed by BirdLife International (Donald et al., 2019; Steven et al., 2015). Based on the proposed criteria, 121 IBA in Kazakhstan were described and confirmed by the BirdLife secretariat by 2008. The materials of scientific expeditions were published in the summary catalog "Important Bird Areas of Kazakhstan" (Sklyarenko et al., 2008). 10 IBA of the North Kazakhstan region were included in this catalog, combining a number of wetlands most important for birds with adjacent areas (Table 1). Each of the territories has a name corresponding to the name of the lake (or group of lakes). A universal international IBA code is proposed that emphasizes the uniqueness and belonging of the territory to the studied region of Kazakhstan (Sklyarenko et al., 2008). The IBA of the North Kazakhstan region are located within the administrative boundaries of 7 districts of the region (Timiryazev, Zhambyl, Shal Akyn, Yesil, Akkayyn, Tayynshin and Ualikhanov) within the subzones of the southern forest-steppe and moderately arid steppe.

Table 1. Important Bird Areas of the North Kazakhstan region (Source: the authors' own calculations)

IBA Code	Name of the territory	Area (ha)	Distance from the regional center (km)	Number of species from the Red Book of Kazakhstan, individual	Number of globally threatened species, individual	Share of the total number of birds in the region, %
KZ025	Sorbalyk-Maybalyk group of lakes	3400	201	11	8	18.5
KZ028	Lake Bol'shoyKak	11500	269	13	5	9.3
KZ029	Lake Aksuat	4589	244	12	8	20.0
KZ030	Lake Zhaltyr	2594	195	9	10	29.6
KZ031	Lake Maly Kak	9721	220	7	8	27.8
KZ045	Lake Terenkol`	835	58	5	7	9.3
KZ046	Lake Zhylandy	3410	89	4	6	20.4
KZ047	Lake Balykty	4138	90	8	10	31.5
KZ048	Lake Shaglyteniz	34750	123	10	7	31.5
KZ080	Lake Teke	70310	383	5	6	6.3

They differ in area, their landscape and floral component and are unique in species composition. Moreover, the species composition is represented by numerous faunal diversity. There are rare bird species from the Red Book of Kazakhstan, as well as globally threatened species from the red list of the International Union for Conservation of Nature (IUCN). A feature of the ecosystems of the studied lakes and adjacent territories is their insignificant anthropogenic transformation. This is confirmed not only by biological diversity, but also by the weak infrastructure development of adjacent territories and the lack of high-quality highways. The combination of these factors makes it possible to conclude that the allocated territories can be used as objects for ecological, including ornithological tourism. A number of these lakes are used by the local population and visitors for amateur fishing. The resource potential of IBA is insufficiently studied, there are no modern comprehensive studies. A necessary element of the scientific substantiation of the possibility of using these natural complexes for tourism is the assessment of their natural resource potential. Below we present a brief description of the IBA region.

Sorbalyk-Maybalyk group of lakes. The territory is located on the territory of a slightly undulating plain in the Zhambyl district and has a total area of 3,400 hectares. The distance to the regional center of Petropavlovsk is 201 km. It includes a group of 9 big and small lakes alternating with grain fields, steppe areas and small birch-aspen stakes. The largest reservoirs on the site are lakes Maybalyk (190 ha.) and Sorbalyk (360 ha.). Some of the reservoirs are suitable for amateur fishing, as well as recreation and swimming in the summer. About 60 (18.5% of the species diversity of the region) bird species are found on the site, including 11 species from the Red Book of Kazakhstan. Among them, Steppe Eagle *Aquila nipalensis*, Eastern Imperial Eagle *Aquila heliaca*, White-tailed Sea-Eagle *Haliaeetus albicilla*, Peregrine Falcon *Falco peregrinus*, Whooper Swan *Cygnus cygnus*, Tundra swan *Cygnus bewickii*, Red-breasted Goose *Branta ruficollis*, Lesser White-fronted Goose *Anser erythropus*, Common Crane *Grus grus*, Demoiselle Crane *Anthropoides virgo*, Tittle Bustard *Tetrax tetrax*. A globally threatened mammal species, Bobak marmot *Marmota bobak*, is found in undeveloped steppe areas.

Lake Bol'shoy Kak. The territory is located within the subzone of the moderately arid steppe within the administrative boundaries of the Timiryazev district and has a total area of 11,500 hectares. The distance to the regional center of Petropavlovsk is 269 km. The territory is represented by a large brackish lake, as well as adjacent open areas of preserved steppes, as well as agricultural land. The reservoir is used for growing commercial fish species (*Carassius gibelio*, *Esox lucius*, *Perca fluviatilis*). There are about 30 species of birds - 27.8% of the species diversity of the region, including 13 species from the Red Book of Kazakhstan. For example, Steppe Eagle *Aquila nipalensis*, Eastern Imperial Eagle *Aquila heliaca*, White-tailed Sea-Eagle *Haliaeetus albicilla*, Peregrine Falcon *Falco peregrinu*, Whooper Swan *Cygnus cygnus*, Tundra swan *Cygnus bewickii*, Red-breasted Goose *Branta ruficollis*, Lesser White-fronted Goose *Anser erythropus*, Common Crane *Grus grus*, Demoiselle Crane *Anthropoides virgo*, Tittle Bustard *Tetrax tetrax*, Dalmatian Pelican *Pelecanus crispus*, Pallas's Gull *Larus ichthyaeu*.

Lake Maly Kak. The territory is located in a shape area, with a slightly undulating relief within the administrative boundaries of the Timiryazev district. It has an area of 9721 hectares. The distance to the regional center of Petropavlovsk is 220 km. The territory is represented by a large brackish lake, as well as open areas adjacent to it. The natural vegetation around the lake is almost destroyed because most of the land is played and used for agriculture. In different seasons of the year, about 70 species of birds are found here - 27.8% of the species diversity of the region,

including 7 species from the Red Book of Kazakhstan. These species are White-tailed Sea-Eagle *Haliaeetus albicilla*, Whooper Swan *Cygnus cygnus*, Tundra swan *Cygnus bewickii*, Red-breasted Goose *Branta ruficollis*, Lesser White-fronted Goose *Anser erythropus*, Common Crane *Grus grus*, Tittle Bustard *Tetrax tetrax*. Steppe areas on the western side of the lake are inhabited by – Bobak marmot *Marmota bobak*.

Aksuat Lake. The territory is located on a steppe site, within the administrative boundaries of the Timiryazev district. It has an area of 4589 hectares. The distance to the regional center of Petropavlovsk is 244 km. The wetlands of the territory are represented by the fresh lake Aksuat and occupy about 40% of the total area of the site. The remaining 60% of the territory is occupied by grassy areas and crops of grain crops. Reed thickets and areas adjacent to the reservoir are a nesting site and a place of migratory aggregations of more than 50 bird species – 20.0% of the species diversity of the region. Of the species listed in the Red Book of Kazakhstan, there are: White-headed Duck *Oxyura leucocephala*, Steppe Eagle *Aquila nipalensis*, Eastern Imperial Eagle *Aquila heliaca*, White-tailed Sea-Eagle *Haliaeetus albicilla*, Peregrine Falcon *Falco peregrinus*, Whooper Swan *Cygnus cygnus*, Tundra swan *Cygnus bewickii*, Red-breasted Goose *Branta ruficollis*, Lesser White-fronted Goose *Anser erythropus*, Common Crane *Grus grus*, Dalmatian Pelican *Pelecanus crispus*, Pallas's Gull *Larus ichthyaetus*. Steppe areas on the eastern and southern sides of the lake are inhabited by – Bobak marmot *Marmota bobak*.

Lake Terenkolʼ. The territory covers an area of 835 hectares and is located within the kolochnaya forest-steppe within the administrative boundaries of the Akkajyn district. The distance to the regional center of Petropavlovsk is 58 km. There is an artificial freshwater lake with an unstable hydrological regime on the site. Reed-cattail thickets are well developed on the lake. The areas adjacent to the lake are occupied by grazing and sowing fields. Vegetation on the northern side of the meadows adjacent to the lake is represented by steppe associations. The woody and shrubby vegetation of the adjacent territories is represented by birch-aspen spikes with an undergrowth of rose hips and willows. The avifauna of the site is represented by 25 species of nesting and flying birds - 9.3% of the species diversity of the region. Rare species include White-tailed Sea-Eagle *Haliaeetus albicilla*, Whooper Swan *Cygnus cygnus*, Red-breasted Goose *Branta ruficollis*, Dalmatian Pelican *Pelecanus crispus*, Pallas's Gull *Larus ichthyaetus*.

Lake Zhaltyr. The territory covers an area of 2594 hectares and is located within the kolochnaya forest-steppe within the administrative boundaries of the Shal Akyn district. The distance to the regional center of Petropavlovsk is 195 km. About 50% of the territory is occupied by Lake Zhaltyr. The western and southern shores of the reservoir are swampy, there are extensive shoals. The area around the lake is represented by a plain. The lands adjacent to the lake are partially plowed and used for agriculture. Steppe mesophilic vegetation grows in the preserved natural areas. In the western part of the site, at a distance of about 2 km there are birch-aspen spikes. The avifauna of the territories is quite typical for wetlands of the forest-steppe zone. In different seasons of the year, about 80 species of birds are found here during nesting, molting and migrations - 29.6% of the species diversity of the region, including 9 species from the Red Book of Kazakhstan. These include White-headed Duck *Oxyura leucocephala*, White-tailed Sea-Eagle *Haliaeetus albicilla*, Peregrine Falcon *Falco peregrinus*, Whooper Swan *Cygnus cygnus*, Tundra swan *Cygnus bewickii*, Red-breasted Goose *Branta ruficollis*, Common Crane *Grus grus*, Dalmatian Pelican *Pelecanus crispus*, Pallas's Gull *Larus ichthyaetus*.

Lake Zhylandy. The reservoir with adjacent territories is located in the forest-steppe zone, within the administrative boundaries of Akkajyn district and has an area of 3410 hectares. The distance to the regional center of Petropavlovsk is 89 km. The lake is shallow of a monstrous type of overgrowth. The territories adjacent to the reservoir are swampy and covered with meadow vegetation, there are also agricultural fields. The territory is a place of nesting and migration aggregations of about 55 species of waterfowl and near-water birds - 20.4% of the species diversity of the region, including those listed in the Red Book of Kazakhstan (White-tailed Sea-Eagle *Haliaeetus albicilla*, Common Crane *Grus grus*, Red-breasted Goose *Branta ruficollis*, Whooper Swan *Cygnus cygnus*).

Lake Balykty. This territory has an area of 4138 hectares. The distance to the regional center of Petropavlovsk is 90 km. It includes Lake Balykty and adjacent areas of forest-steppe, with fields of grain crops alternating with grazing. It is located within the administrative boundaries of the Akkajyn district. The lake is open, there is a border of reeds and cattails along the banks. Woody vegetation within the territory is represented by birch-aspen forests with rosehip undergrowth. Lake Balykty is a nesting place for mass aggregations of more than 80 species of waterfowl and near-water birds - 31.5% of the species diversity of the region, including 8 species from the Red Book of Kazakhstan (White-headed Duck *Oxyura leucocephala*, White-tailed Sea-Eagle *Haliaeetus albicilla*, Peregrine Falcon *Falco peregrinus*, Whooper Swan *Cygnus cygnus*, Tundra swan *Cygnus bewickii*, Red-breasted Goose *Branta ruficollis*, Lesser White-fronted Goose *Anser erythropus*, Common Crane *Grus grus*, Dalmatian Pelican *Pelecanus crispus*).

Lake Shaglyteniz. The territory is located within the administrative boundaries of the Akkajyn and Tajynshin districts, covers the water area of the lake, adjacent floodplain meadows and covers an area of 34750 hectares. The distance to the regional center of Petropavlovsk is 123 km. The shoreline of the reservoir, heavily overgrown with an array of reeds and cattails. The open areas adjacent to the lake on the eastern side are occupied for the cultivation of agricultural crops. The territory is a place of nesting and migration aggregations of about 85 species of waterfowl and near-water birds - 31.5% of the species diversity of the region. In some years, the number of which can reach more than

150,000 individuals. Among the species listed in the Red Book of Kazakhstan, there are regularly found: Steppe Eagle *Aquila nipalensis*, White-tailed Sea-Eagle *Haliaeetus albicilla*, Peregrine Falcon *Falco peregrinus*, Whooper Swan *Cygnus cygnus*, Tundra swan *Cygnus bewickii*, Red-breasted Goose *Branta ruficollis*, Lesser White-fronted Goose *Anser erythropus*, Common Crane *Grus grus*, Dalmatian Pelican *Pelecanus crispus*, Pallas's Gull *Larus ichthyaetus*.

Lake Teke. The territory includes Lake Teke with adjacent fields, has a total area of 70370 hectares and is located within the steppe zone within the administrative boundaries of the Ualikhanov district. The distance to the regional center of Petropavlovsk is 383 km. Teke is a drainless bitter-salty lake with several streams flowing into it that temporarily dry up in summer. On all sides, the lake is surrounded by salt lakes and salt marshes. The natural steppe areas adjacent to the lake are plowed for the cultivation of agricultural crops. The bird species diversity of the territory is not high, there are about 20 species of steppe and aquatic birds - 6.3% of the species diversity of the region. The lake is a place of migratory accumulations in the autumn of Common Crane *Grus grus* and Demoiselle Crane *Anthropoides virgo*. The number of these species in some years can reach more than 10,000 individuals. Other rare bird species are also recorded here during migrations: Red-breasted Goose *Branta ruficollis*, Steppe Eagle *Aquila nipalensis*, Common Crane *Cygnus cygnus*.

Thus, 10 key ornithological territories have been allocated within the borders of the North Kazakhstan region. As a result of the research and analysis of the available materials, an assessment of the level of tourist potential of each IBA is given, based on a modified complex quality indicator obtained by weighted average calculation, according to 10 criteria, according to a 5-point system. This made it possible to present the studied material in the form of a table (Table 2).

The properties of Important Bird Area are determined by 10 criteria, which are assigned numbers. I – The development of the transport network. II – Anthropogenic load on IBA III – Environmental status. IV - Species diversity of birds. V –Bird Cluster. VI – Globally threatened bird species from the list (IUCN). VII - Species listed in the Red Book of Kazakhstan. VIII – Availability of observations. IX - Aesthetics and diversity of landscapes. X - The degree of improvement.

Table 2. Evaluation of the properties of Important Bird Areas (Source: the authors' own calculations)

IBA Property	Quantitative characteristic of the parameter of the object property indicator (ki), score					The weighting coefficient of the indicator (ai)
	1	2	3	4	5	
I	Distance from paved roads – more than 20 km	Distance from paved roads – 10 – 20 km	Distance from paved roads – 5-10 km	Distance from paved roads – 3 – 5 km	Distance from paved roads - 1-3 km	0.07
II	Availability of industrial facilities	Dense network of rural settlements, the presence of landfills	A large area of land allocated for agriculture	The predominance of natural landscapes over those used in agriculture	A large number of natural landscapes of natural territories	0.08
III	This territory does not have a conservation status	This territory is part of a nature reserve of regional significance	This territory is part of the state nature reserve	This territory is part of the state reserve	This territory is included in the UNESCO World Natural Heritage List	0.05
IV	Less than 5% of the total number of species in the region occurs	It occurs from 5 to 10% of the total number of species in the region	It occurs from 10 to 20 % of the total number of species in the region	It occurs from 20 to 50 % of the total number of species in the region	There are more than 50 % of the total number of species in the region	0.23
V	There are no large concentrations of waterfowl and near-water birds on this territory	Large accumulations of waterfowl and near-water birds from 500 to 1000 individuals are regularly found on this territory	Large accumulations of waterfowl and near-water birds from 1000 to 5000 individuals are regularly found on this territory	Large accumulations of waterfowl and near-water birds from 5,000 to 10,000 individuals are regularly found on this territory	Large accumulations of waterfowl and near-water birds more than 10,000 individuals are regularly found on this territory	0.1
VI	There are no globally threatened species in this territory	From 1 to 3 species are regularly found on this territory	From 4 to 6 species are regularly found on this territory	From 7 to 10 species are regularly found on this territory	More than 10 species are regularly found on this territory	0.1
VII	There are no species from the Red Book on this territory	From 1 to 3 species are regularly found on this territory	From 4 to 6 species are regularly found on this territory	From 7 to 10 species are regularly found on this territory	More than 10 species are regularly found on this territory	0.1
VIII	Most of the shoreline of the lake is covered with vegetation, there are no elevated places for observation	Most of the shoreline of the lake is covered with vegetation, there are elevated places	The shoreline of the lake is open for observation at 25-50 %	The shoreline of the lake is open for observation at 50 – 75 %	The shoreline of the lake is open for observation at 75 - 100%	0.15
IX	Weak expressiveness of the relief	Monotonous landscape	Expressive landscape	Picturesque views of the landscape	Bright multifaceted picturesque views of the landscape	0.07
X	Minor landscaping	Additional improvement of beaches	Additional food items	Places to stay overnight	Capital structures	0.05

The assessment of the Important Bird Area made it possible to identify the properties that are of the greatest importance. The greatest value has a property that directly determines the basis of ornithological tourism, this is the species diversity of birds. Its value is 0.23. Further down the ranking, it takes the availability of observations, with a coefficient of 0.15. It determines the availability of optimally accessible places for placement and observation. The coefficient of 0.1 is characterized by three properties that determine the number and species diversity, this is a cluster of birds, globally threatened bird species, as well as species listed in the Red Book of Kazakhstan.

Less than 1.0 of the weighting coefficient obtained properties characterizing the anthropogenic load – 0.08. The diversity of landscapes and the development of the transport network has a coefficient of 0.07. The coefficient of 0.05 have properties that emphasize the degree of improvement and the environmental status of the studied territories. Analyzing the values of the coefficients obtained, it becomes possible to assume that for the organization of ornithological tourism, the properties characterizing the degree of landscaping and development of the territory are not decisive. On the contrary, the coefficients characterizing species diversity, the presence of rare and endangered birds, which have received maximum values, allow us to talk about the need for a minimum degree of human development of the territory. A comprehensive assessment of the tourism potential of key ornithological territories revealed the most promising natural objects within the borders of the North Kazakhstan region for further research and development of ecological tourism (Table 3).

Table 3. Comprehensive assessment of the tourism potential of the IBA of the North Kazakhstan region (Source: the authors' own calculations)

IBA	I	II	III	IV	V	VI	VII	VIII	IX	X	Total	Total
												k, taking into account (ai)
Sorbalyk-Maybalyk Group of lakes	3	3	1	3	3	4	5	2	4	1	29	3.02
Lake Bol'shoy Kak	4	3	1	2	3	6	5	5	2	1	32	3.37
Lake Aksuat	5	4	2	3	3	4	5	2	2	1	31	3.15
Lake Zhaltyr	3	3	1	3	5	4	4	3	2	1	29	3.13
Lake Maly Kak	4	4	2	3	5	4	4	5	2	1	34	3.63
Lake Terenkul	5	3	3	2	3	4	3	4	3	1	31	3.06
Lake Zhylandy	2	3	3	3	3	3	3	1	2	1	24	2.46
Lake Balykty	2	3	3	3	5	4	4	4	3	1	32	3.38
Lake Shaglyteniz	5	3	1	3	5	4	4	1	2	1	29	2.97
Lake Teke	5	2	1	2	5	3	3	5	1	1	28	2.99

A comprehensive assessment of the allocated territories revealed a high coefficient of tourist potential. The average value is above 3. The minimum value is Lake Zhylandy (Akkajyn district) - 2.46. Natural territories with coefficients from 3 to 3.5 prevail - these are the lakes Sorbalyk-Maybalyk group of lakes (Zhambyl district), Lake Terenkul (Akkajyn district), Lake Zhaltyr (Shal Akyn district), Lake Aksuat (Timiryazev district), Lake Bol'shoy Kak (Timiryazev district), Lake Balykty (Akkajyn district). The largest coefficient of the obtained belongs to Lake Maly Kak (Timiryazevsky district) - 3.63. Almost all of the selected ecosystems are known as objects for eco-tourism.

The analysis of the obtained coefficients of the integrated assessment made it possible to construct a graph visually reflecting the significance of the level of tourist potential and the ranking of IBA (Figure 1). The identified tourist potential of key ornithological territories is quite high and this makes it possible to form and develop routes for the organization of ornithological tourism in the North Kazakhstan region.

On the one hand, the development of the transport network, the border position, the compactness of the location of most of the studied natural ornithological objects in the region determines their logistical features. The uniqueness of the ecosystem complex with its unique faunal and floral diversity, the presence of rare and endangered species, and the relative undevelopment by humans, on the other hand, makes these territories attractive for wildlife lovers. The location of IBA in forest-steppe and steppe natural zones is characterized by unique landscapes, which also bring aesthetic pleasure. The proximity of IBA to lakes makes it possible to use them not only for ornithological, but also for recreational tourism, as well as fishing. The presence of roads makes it possible to travel in all directions from Petropavlovsk, which is the regional center and transport hub, which is the main tourist center (Dmitriyev et al., 2021b; Dmitriyev et al., 2022).

The comprehensive studies carried out made it possible to visualize the results obtained in the form of a cartographic diagram (Figure 2). The placement of the selected ornithological territories confirms their compact placement, their proximity to lakes, and their location in a number of administrative districts. The map chart reflects the well-developed

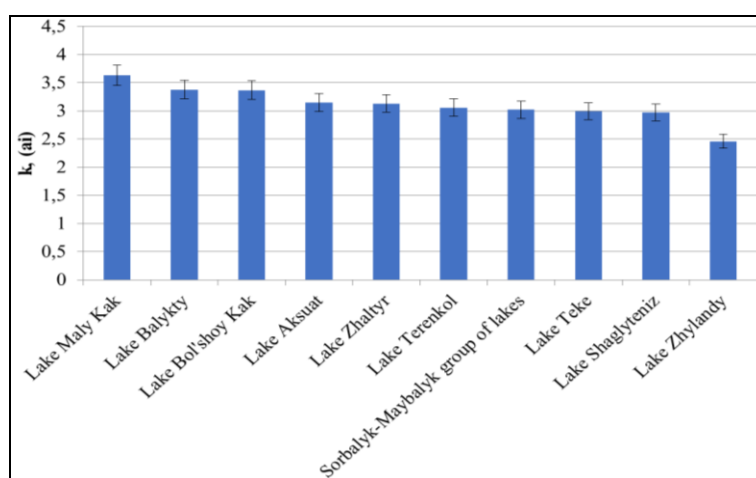


Figure 1. The level of tourist potential of the selected ornithological territories of the North Kazakhstan region (k), taking into account the margin of error with relative errors (Source: based on the authors' calculations)

road network of the studied region. Although it should be noted that most of the highways directed directly to the IBA do not have a good asphalt surface, they belong to unpaved and field roads (Dmitriyev et al., 2021a).

This fact is explained by the insignificant degree of development of the territory, which at the same time contributes to the preservation of unique ecosystems. Analyzing the spatial placement of IBAS, we came to the conclusion about their uneven placement in the North Kazakhstan region. The main part of the lakes is located within the boundaries of the administrative districts of Timiryazev, Esil and Akkajyn. In a number of districts, such as Gabit Musrepov, Ajyrtau, Kyzylzhar, Akzhar, Mamlyut and Magzhan Zhumabaev, there are no designated natural ornithological objects.

This can be explained by the fact that the species diversity of ornithological territories is confined to the migration and nesting routes of birds. This makes it necessary to conduct annual monitoring studies of the territory of the studied region in order to identify and develop possible routes for ornithological tourism.

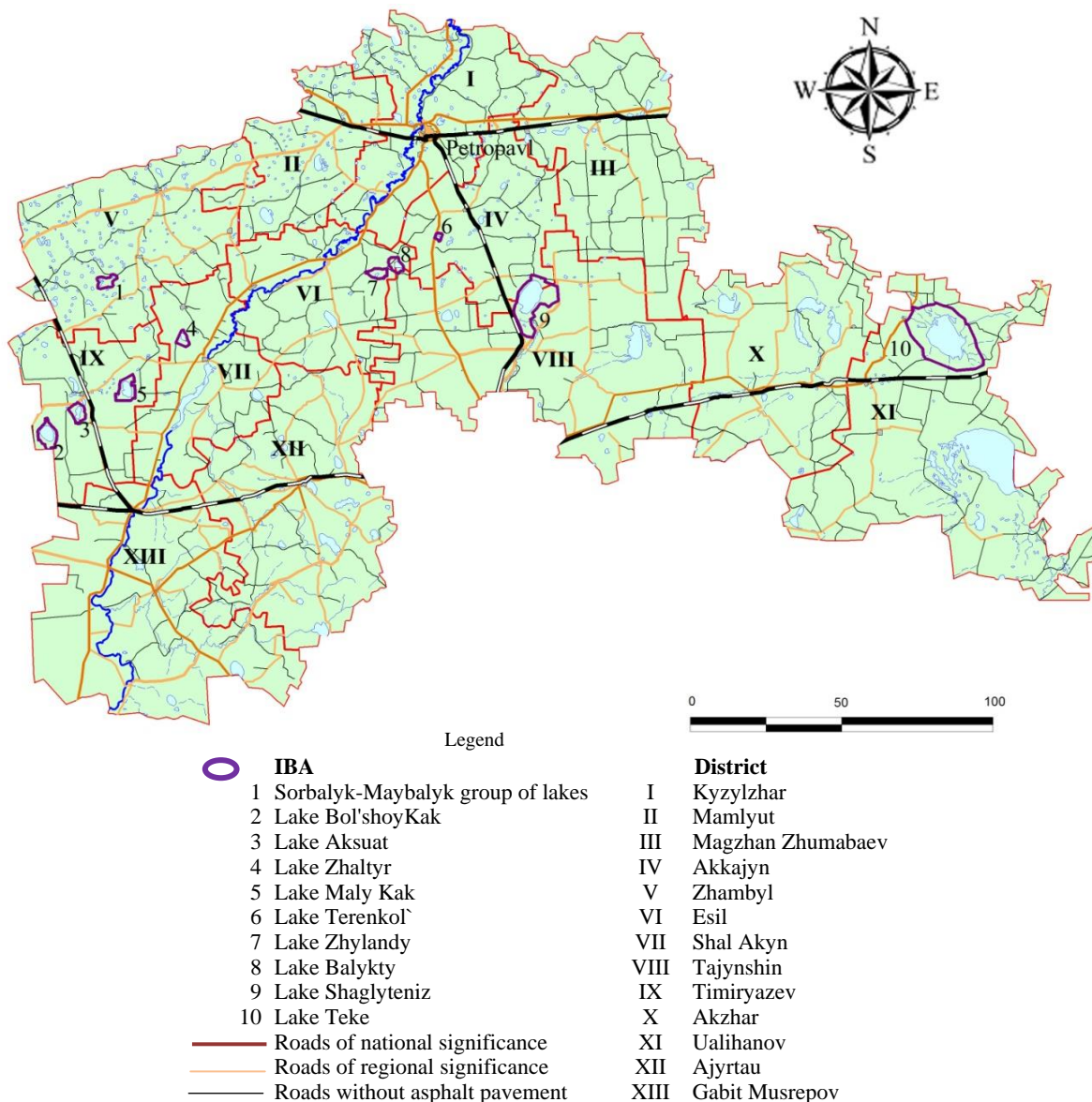


Figure 2. Layout of the IBA within the boundaries of the region (Source: own elaboration)

CONCLUSION

As a result of long-term domestic and international ornithological studies based on generally accepted methods, IBA have been identified within the administrative boundaries of the North Kazakhstan region. The selected IBA are confined to lake ecosystems that are on the way of migrations and nesting of birds. The uniqueness of the allocated territories is confirmed by the faunal and floral diversity provided by the landscapes of the forest-steppe and steppe zones of the studied region. The development of the road network provides possible access for ornithologists and tourists to ecosystems not only from Kazakhstan, but also from border regions and far abroad. The possibility of using the allocated territories not only for ornithological, but also for recreational and educational tourism, as well as amateur fishing is noted.

The results of the resource potential assessment confirm its high level, the need for modern comprehensive research. To do this, it is important to conduct annual monitoring of the IBA. Along with the development of the tourism industry, it is necessary to implement environmental measures aimed at preserving the uniqueness of ecosystems (Dmitriyev et

al., 2021b; Dmitriyev et al., 2022). The assessment of the IBA tourism potential carried out during the study revealed their level and prospects. Most ecosystems are located on the territory of the Timiryazevsky, Yesilsky and Akkayinsky districts. It is necessary to study in detail their natural resource and recreational potential, conduct monitoring studies, make a forecast of the development of routes. The development of promising areas of the tourism industry will attract interest from the state and private investors, which will lead to the development of the region's economy (Zhidkoblinova, 2013; Akbar et al., 2020; Wendt, 2020; Syzdykova et al., 2022). Compliance with environmental legislation will contribute to the preservation of floral and faunal diversity, natural landscapes. All this is aimed at sustainable development of territories will lead to the formation of ecological and recreational tourism, will interest wildlife lovers, tourists from the republic, as well as from near and far abroad. Thus, the allocated IBAS of the North Kazakhstan region are natural objects for scientific research and use as objects for ecological tourism.

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ANTECEDENTS OF TOURISTS' LOYALTY: THE ROLE AND INFLUENCE OF TOURISM PRODUCTS, DESTINATION IMAGE IN HOIAN WORLD CULTURAL HERITAGE SITE

Toan Duc LE 

Socio-Economic Research Institute, Duy Tan University, Da Nang City, Vietnam, e-mail: leductoan2002@duytan.edu.vn

Tuan Anh LE* 

Faculty of Accounting, Duy Tan University, Da Nang City, Vietnam, e-mail: latuan0507@gmail.com

Hai Thanh VO 

Vice Provost, Faculty of Business Administration, Da Nang City, Vietnam, e-mail: haiduytan@duytan.edu.vn

Vu Tuan HO 

Faculty of Accounting, Duy Tan University, Da Nang City, Vietnam, e-mail: hotuanvu2007@gmail.com

Son Xuan PHAM 

Faculty of Business Administration, Duy Tan University, Da Nang City, Vietnam, e-mail: phamxuanson82@gmail.com

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Abstract: The study's aim is to examine the antecedents of destination loyalty, and considers the role and influence of tourism products and destination image to international tourists' loyalty in case of HoiAn World Cultural Heritage Site. The study suggested an integrated approach to understand tourists' loyalty model and investigate the empirical evidence about the relationship among tourism products, destination image, risk perception, tourist experience, destination satisfaction and tourists' loyalty. This study also mentions important questions concerning how tourism products, destination image, tourist experience, risk perception, and tourists' satisfaction affect tourists' loyalty. Smart PLS3 is used to estimate and test the relationships in the research model. Mediation analysis and importance performance matrix analysis are also used to consider clearly the relationship between the constructs of research model. The study's results indicate that tourism products, destination image, tourism experience, risk perception, and satisfaction are antecedents of international tourists' loyalty in Hoi An World Cultural Heritage Site. And in them, tourism products affect significantly positively to destination image and satisfaction, beside destination image and satisfaction hold the role of mediator in this relationship. Implementing IPMA to identify the predecessors that have relatively high importance for loyalty but also a relatively low performance. The results pointed out that the constructs as satisfaction, tourism product, risk perception and image have a high importance for the tourist loyalty. The study added the antecedent of tourism products and risk perception to the model and could enrich the literature, pointing to be possibility of a destination loyalty model that can be applied to various contexts, especially after COVID- 19 pandemic. The study also discussed theoretical and managerial implications for marketing tourism.

Key words: antecedents of tourists' loyalty, destination image, tourism products, satisfaction, mediation

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INTRODUCTION

In the tourist sector, destination loyalty remains an important indicator of successful destination operation. Many previous studies mentioned the antecedents of tourists' loyalty, including destination image, motivation, trip quality, perceived value and satisfaction, in different context such as islands, city, states, and country (Bigne et al., 2001; Chen and Tsai, 2007; Chi and Qu, 2008; Huang and Hsu, 2009; Prayag, 2009; Huang et al., 2017; Pai et al., 2020). Several recent researches use personal involvement and place attachment as predictors of destination loyalty (Hwang et al., 2005; Yuksel and Yuksel 200; Huang et al., 2017; Pai et al., 2020). While Yoon and Uysal (2005); Alhemoud and Armstrong (1996) stated that perceived value and destination image are two important antecedents affected to destination choice behavior of tourists.

Hoi An City located in Quang Nam province, in the central Vietnam. Hoi An, or Faifo, was a famous port town of the Vietnam in the sixteenth and seventeenth centuries, which had trade relations with Japan and China in the North, with European countries such as Portugal, Holland, France and England. Hoi An was also a center of extensive cultural interaction, which was reflected in the unique outlook and cultural mosaic on the town. Hoi An ranked is 7th in the World's Top 15 cities list of the Travel & Leisure magazine with the total score of 90.31. Hoi An now still retains much of its Asian authentic architecture as well as its nostalgic ambience. In this UNESCO World Heritage Site, there are various constructions of different Asian cultures still standing, among which are the Japanese Pagoda Bridge and Chinese Phuc

* Corresponding author

Kien Assembly Hall and these are the most outstanding. Hoi An's handicrafts and tailor-ship are renowned worldwide. Aside from all of these sightseeing and shopping experience, the rural area surrounding Hoi An is ideal for bicycle, beach and boat-cruise trips. Besides, tourists can take part many activities as visiting Cham Island and My Son Sanctuary, swimming and fishing at Ha My beach, enjoying International Kite Festival, etc... In year 2019, Hoi An welcomed over 5.3 million visitors, an average growth rate of over 27% per year in the period 2017 -2019, in which there were 4.1 million international tourists and 1.35 million domestic tourists. But, in the period 2020-2021, HoiAn tourism was affected by COVID-19, total tourists to this city have been decreased more 80 %. Hoi An City has a beautiful natural environment and several heritage destinations in addition to its cultural diversity, which gives it a competitive edge in the global tourism industry. Therefore, it is necessary to have improvements in service quality in order to compete with the other global tourist destinations.

Faullant et al. (2001) studied about "The impact of satisfaction and image on loyalty: the case of Alpine ski resorts". The authors report a research of ski resorts where they established a causal model of customer satisfaction and image predicting customer loyalty, and then map of the scores in a four fields-grid. This study's results show that those ski resorts with the highest satisfaction ratings and the highest image ratings have the highest loyal scores. Among first time - visitors overall satisfaction is more important than image, with increasing number of repeat visits the importance of overall satisfaction declines and that of image relatively augments

Prayag and Ryan (2012) studied about "Antecedents of tourists' loyalty to Mauritius: The role and influence of Destination image, Place attachments, Personal involvement, and Satisfaction". They introduced a theoretical model based on relationships among constructs, namely, destination image, satisfaction, personal involvement, and tourists' place attachment as antecedents of tourists' loyalty. Their paper's results indicate that destination image, place attachment and personal involvement are antecedents of tourists' loyalty but this relationship is mediated by satisfaction level, and this paper also offer important implications for tourism theory and practice.

Wu (2015) studied destination loyalty model of the global tourism to examine the antecedents of destination loyalty and its relation to destination image, tourist experience and destination satisfaction in the tourism context. The author set questions regarding with how destination image, tourist experience and destination satisfaction affect destination loyalty. The conceptual model investigates the relevant relationships among the research constructs by using personal interviewing data from 475 foreign tourists and structural equation modeling (SEM) approach.

Akroush et al. (2016) examines the relationship between tourism service quality and destination loyalty through investigating the mediation effect of destination image in the Dead Sea tourism destination, Jordan, from international tourists' perspectives. The paper also investigates the tourism service quality dimensions from international tourists' viewpoints. The empirical findings indicate that tourism service quality is, in fact, a four-dimensional (4D) construct as opposed to five as proposed by the original hypothesized model. The 4D model consists of four facets: assurance-responsiveness, tangible facilities-empathy, reliability and reliability-quality of directions. Also, the results indicate that brand image loaded onto two dimensions named as "physical environment" and "people characteristics". The structural findings indicate that the four dimensions of tourism service quality have positively and significantly affected destination image. Further, brand image has positively and significantly affected destination loyalty. Finally, destination image fully mediates the relationship between tourism service quality and destination loyalty. The paper highlights the strategic importance of brand image on the relationship between tourism service quality and destination loyalty. Tourism service quality acts as an antecedent to brand image and the later is essential to destination loyalty.

Hung and Khoa (2022) proposed the research framework about interrelationships among destination, electronic word – of – mouth communication, attitude toward the destination, travel intention, satisfaction toward tourist complaints, and loyalty in the tourism industry. The study considered 12 hypotheses, and tested through meta-analysis. The results from this study suggest that: e-Word- of- Mouth communication positively influences the destination image, tourist attitude toward the destination, and travel intention; tourist satisfaction is positively influenced by the destination image, tourist attitude toward the destination, and travel intention; tourism satisfaction positively influence tourist complaints and loyalty.

The tourists' loyalty to a destination is reflected in their intentions to revisit the destination and in their recommendations to others. Thus, information about tourists' loyalty or researching about antecedents of tourists' loyalty is important to destination marketers and managers. But the relationship among some of these antecedent constructs remains unclear and inconclusive in the tourism fields, they are not yet fully understood for different types of attractions, sites, and destinations (Bastida and Huan, 2014; Yoon and Uysal, 2005).

In the last decades, tourism or leisure researchers have incorporated the concept of consumer loyalty into tourism products, destinations or recreation activities (Baloglu, 2001; Iwasaki and Havits, 1998; Mazanec, 2000; Yoon and Uysal, 2005), and loyalty has been measured in one of the following ways: the attitudinal approach; the behavioral approach; the composite approach. On the other hand, there were many studies in explaining aspects of consumer behavior, but very few articles have been written on the role of antecedents in influencing tourist loyalty. Especially in Vietnam, until now there did not research about the antecedents of tourist's loyalty at the HoiAn World Cultural Heritage Site. Based on the previous researches, the study uses the composite approach and integrates the two new determinants that are tourism product and risk perception to simultaneously consider the relationship between tourism experience, destination image, tourism products, risk perception and satisfaction as antecedents of destination loyalty at the HoiAn World Cultural Heritage Site. This paper is organized in six sections.

Section 2 provides relevant literature upon which the hypotheses are proposed. In section 3, the research model is suggested and the research methodology is presented. Results are displayed in section 4. Section 5 presents discussion. Finally, that are the conclusion and the study limitations as well as possible future research are highlighted.

LITERATURE REVIEW AND RESEARCH HYPOTHESES

Destination loyalty

Loyal customers are defined as those who re-buy a brand (Newman and Werbel, 1973) or a repeating purchasing frequency (Tellis, 1988). Consumer loyalty is usually known as repeat purchases or recommendations to other people in order to they can buy goods or services in the marketing literature. To obtain competitive advantages in business activities, companies have to create and maintain lasting relation with customers, and customers' loyalty has significant future value for company profits and community (Reichheld and Sasser, 1990; Velázquez et al., 2011). Customer loyalty is one of the most variables in studying consumer's behavior and it also is one of the critical indicators used to assess the success of marketing strategy (Yoon et al., 2001; Flavian et al., 2001; Tellis, 1998). In the tourism sector, travel destinations can be considered as places, products or services that may revisit or introduce destinations to other people such as colleagues, friends or relatives. Most of the last research on tourist satisfaction and loyalty has concentrated on testing relationships in the types of tourism (e.g. urban, thermal, sport, cultural) (Frain et al., 2006; Barroso et al., 2007; Petrick, 2005), the specific context of tourism companies (Macintosh, 1997; Patterson, 2007; San Martin et al., 2008) and the individual phases of tourist experience, such as tourist's shopping, backpacker hostel, ski, seeing landscape... And many recent studies add variables other than tourist satisfaction to improve understanding of loyalty such as service quality, perceived value, consumer experience, commitment and other moderator determinants which help to know clearly the nature of loyalty construct in the tourism subject (Chi and Qu, 2008; Velazque et al., 2011; Wu, 2015). However, the subject about destination loyalty has been remained the academic debate with opinions for its measurement (Baker and Crompton, 2000; Velázquez et al., 2011; Wu, 2015). For example, the behavioral approach (Bowen and Shoemaker, 1998) is related to the characteristics as repeated purchase, ratio of patronage, but this approach can not explain why and how tourists are ready to revisit or recommend to others (Prayag, 2008; Yoon et al., 2001). With the attitudinal approach (Berne, 1997; Zeithaml et al., 1996; Zins, 2001), based on future actions, destination loyalty (LOYAL) is known as intention to buy services or revisit the destination, and tourists may have a favorable and willing attitude toward destination or particular service.

Tourist experience

Experience derives from complex interactions between the customer and a company's product supplying (Addis and Holbrook, 2001). Many scholars agree that consumer experience need to evaluate multi-dimensionally (Gentile et al., 2007; Hsu et al., 2009). There are many studies that supply the comprehend knowledge about consumer experiences (Addis and Holbrook, 2001; Gentile et al., 2007; Hsu et al., 2009; Nikolova and Hassan, 2013; Oh et al., 2007; Quan and Wang, 2004). Some other researches stated about tourist experience (EXPER) with the different aspects. For example, tourists' experiences are created from high-risk adventure and leisure activities (Arnould and Price, 1993; Celci et al., 1993; Hsu et al., 2009), tourists' experiences connected with natural and heritage environments (Beeho and Prentice, 1997; Schanzel and McIntosh, 2000), tourists highly satisfied with their experience have intention to revisit and recommend the tourism destination to others (Chi and Qu, 2008; Severt et al., 2007; Tian-Cole et al., 2002). Meanwhile, Mittal et al., (1999), Schreyer et al. (1984) agreed that past travel experiences influence satisfaction and loyalty, and with repurchase and consumption of a tourism product or service, tourist consumers are able to evaluate the product or service, which affect destination satisfaction. Pai et al (2020) conducted a survey on 527 tourists excluding China traveling to Macau. The results show that most of them are satisfied with tourist destinations through experiencing technology to find information. Satisfaction about the experience of smart tourism technology also significantly affects the happiness and intention of tourists to return. Base on previous studies, hypotheses are suggested as:

H₁: Previous experience (EXPER) positively influences destination satisfaction (SATIS)

H₂: Previous experience (EXPER) positively effects destination loyalty (LOYAL)

Tourism Products

The tourist products should be distinguished from the destination, from the inclusive tours or package tours, and a destination usually offers several products to its visitors with each distinct travel experience constituting a tourist product. Tourism products (PROD) or services have the distinctive feature and affect to feelings, thoughts, opinions of tourists, and form tourists' perception about destination image (Költringer and Dickinger, 2015; Tasci and Gartner, 2007).

H₃: Tourism products (PROD) influence positively to destination image (IMAGE)

Paul Hermann (1977) stated that tourist products are the means to satisfy tourist needs. What do tourists consume during their trips? Marketing literature has focused on this issue since the early 1970s as part of the discussion regarding tourist products. According to Jovičić (1988), tourist needs are those that are "satisfied when movement is performed (travel and sojourn) outside the place of residence". The tourist product should not be seen from the point of view of the individual producer (such as the hotelier or the transportation company) but from the point of view of the consumer. Kassai et al. (2016) suggested that the characteristics of famous food products of each country will contribute to promoting the image of that country. The hypothesis is suggested as:

H₄: Tourism products (PROD) influence positively tourists' destination satisfaction (SATIS)

Destination image

Image is a perceptual phenomenon that relates to the ability to become aware of something through the senses. This perceptual phenomenon is constituted through consumers' emotional interpretation with cognitive and affective components (Dobni and Zinkhan, 1990). Most definitions of the destination image (IMAG) relate to group or individual perceptions of a place (Crompton, 1979; Jenkins, 1999; Min et al., 2013; Zeugner-Roth and Žabkar, 2015).

Some recent studies stated that destination image is an interactive system of feelings, visualizations, thoughts, opinions, and intentions toward a destination (Költringer and Dickinger, 2015; Tasci and Gartner, 2007). Tourism products or services have the distinctive feature such as intangibility and multidimensionality (Fakeye and Crompton, 1991; Gartner, 1989; Zeugner-Roth and Žabkar, 2015) which cause complexity in measuring destination image structure. However, there are still debatable matters about the relationship between destination image and behavior intentions. In several instances, the validity and reliability of scales used were not established, casting doubt on measurement about destination image perceptions (Beerli and Martin, 2004). A good image can influence repeat patronage (Dick and Basu, 1985). Zhang et al. (2014) suggests attribute holistic, functionale psychological, and common unique as the three continuums of image. Kandampully and Suhartanto (2000) give that hotel image with the performance of housekeeping, reception, food and beverage has a positive effect on customer loyalty. Destination image affects to tourists in selecting a destination and revisiting the destination in the future (Hosany and Prayag, 2013; Zeugner-Roth and Žabkar, 2015). Following the earlier discussions:

H₅: Destination image (IMAGE) positively influences destination satisfaction (SATIS)

H₆: Destination image (IMAGE) has a positive effect on tourists' loyalty (LOYAL)

Risk perception

Consumers' subjective perception of risk may significantly influence their behavior (Mitchell, 1999). They prefer to minimize risk rather than maximize utility, this problem is particularly important in the intention of adoption new product or travelling to tourism destination. They also try to reduce the risk associated with a particular decision or behavior. Huang et al. (2017) argue that the use of smart devices for planning will bring risks of personal information being stolen and information security such as bank accounts. Over the past years, terrorism has been on the rise and many geopolitical tensions have occurred in several areas as the South East Asia, the Middle East and Ukraine. On the other hand, the COVID-19 pandemic has occurred since December 31, 2019 in Wuhan, China and it is a highly infectious disease and to rapidly develop worldwide. With very limited testing in many countries, also due to the unavailability of tests and do not fully have vaccine to treat, so by the end of year 2021, more than 5.4 million people have died in the world. All the aforementioned reasons have affected to whole world, and particularly in tourism sector total arrivals in year 2021 decreased 90% as compared to 2019.

Vietnam is a relatively safe and stable country, the people are friendly and hospitable, and it has many unique tourism resources and is also a tourist destination for many international tourists. About the activities of anti - COVID 19, from the end of year 2021, Vietnam has basically injected for its citizens and the number of died people from COVID has decreased rapidly. To December 30, 2021, the total number of doses of the vaccine injected is 150,935,915 doses, of which the 1st dose is 77,555,511 doses, the 2nd dose is 68,435,813 doses, the 3rd dose is 4,944,591 doses, and the coverage rate of 2 doses of anti-covid-19 vaccine is over 80% of populations. From March 15, 2022, Vietnam announced resuming international tourism and implementing many solutions to serve tourists safety. As previously mentioned, the risk perception significantly affects tourists' satisfaction and loyalty, and the following two hypotheses are suggested:

H₇: Risk perception (RISK) influences tourists' satisfaction (SATIS)

H₈: Risk perception (RISK) effects tourists' loyalty (LOYAL)

Satisfaction

With the expectation – disconfirmation model, Oliver (1980) states that consumers develop expectations about a product before purchasing. Satisfaction is considered as a judgment that a product or service provides to consumer in consumption. If the actual performance is better than their expectations, this leads to positive disconfirmation and consumers are highly satisfied and they will be more pleased to buy the product again. Satisfaction has been playing an important role in making tourism- business planning, and the level of satisfaction can be a basic indicator that is used to evaluate the performance of destination products and services (Noe and Uysal, 1997; Yoon et al., 2001).

Consumer satisfaction in tourism sector usually links with the different context and tourism scope such as satisfaction with restaurants (Dube et al., 1994), with specific destinations (Kozak and Rimmington, 2000; Hultman et al., 2015; Pizam and Milman, 1993), with tourists' overall satisfaction (Severt et al., 2007; Kozak, 2001). Many authors state that satisfaction closely relates to intention of selecting destination and decision to revisit (Bigne et al., 2005; Kozak and Rimmington, 2000; Hultman et al., 2015). Tourist's satisfaction influences the choice of destination, the consumption of product or services, and the decision to return (Chen and Gursoy, 2001; Toan et al., 2020; Yoon and Uysal, 2005), and tourist's satisfaction is also considered as one of the important predictors of tourist loyalty (Ozdemir et al., 2012).

Tourist's satisfaction (SATIS) is the result of a comparison between his previous images of the destination and what he actually sees, feels and achieves at the destination (Chon, 1989); tourists can compare current destination with other place that they visited in the past (Sirgy, 1984; Francken and Van Raaij, 1981). To measure tourist's satisfaction, there are many approaches. For example, Heskett et al., (1997) opined that price, benefits, time, and effort are major factors in determining satisfaction. Tse and Wilton (1988), with the perceived performance model, thinks that tourists' evaluation of their satisfaction with travel experiences is considered, regardless of their expectations, and according to the model of Tse and Wilton (1988), the initial expectation and actual performance should be evaluated independently, rather than comparing performance with past experience. Tourists can have varying motivations for visiting particular destination, therefore they can get different satisfaction level and standards. In other words, as mentioned in the above parts, the evaluation of tourist satisfaction needs to be measured in multiple dimensions. Hypothesis is suggested:

H₉: Tourists' satisfaction (SATIS) positively influences to tourists' loyalty (LOYAL)

METHODOLOGY

With knowledge gains from revising the tourism literature and the necessary of studying antecedents of tourists' loyalty in HoiAn World Cultural Heritage Site in the context of post - Covid 19 pandemic. The study's aim is to examine the antecedents of destination loyalty, and considers the role and influence of tourism products and destination image to international tourists' loyalty in case of HoiAn World Cultural Heritage Site. The research model comprises six constructs, namely, image, tourism products, experience, risk perception, satisfaction and loyalty as Figure 1. The indicators of this study are shown in Appendix 1. For data collection, the convenience sampling method was used as supported by Hair et al. (2014) because this method allows the researcher to receive responses in a cost-effective way (Martins, 2014). For this purpose, primary and secondary data sources have been collected for the study. Primary data is gained through the personal interview method. The primary sources include a questionnaire survey comprising both open and closed-ended questions and which includes interviews with foreign tourists and managers of the tourism companies in HoiAn City in order to get detailed understanding of various opinions of the antecedents of destination loyalty in HoiAn World Cultural Heritage Site. After that, we improve the questionnaire and conducted face-to-face interviews with foreign tourists who are travelling in HoiAn City from April, 07 to June 17, 2022 with 400 respondents, in them, there were 21 surveys unfit for analysis and leaving 379 samples suitable for assess. The study uses five-point Likert scale in the questionnaire (SD - strongly disagree, D - disagree, N - neutral, A - agree, SA - strongly agree). SmartPLS 3 is used to evaluate and test the hypotheses.

The demographic characteristics of the sample are presented in Table 1.

Table 1. Descriptive statistics of samples (Source: The authors collected)

	Number	Frequency (%)		Number	Frequency (%)
Age Group			Gender		
From 18 to 24 years old	82	21.7	Male	196	51.7
From 25 to 50 years old	255	67.3	Female	183	48.3
Above 50 years old	42	11.0			
Region			Position		
Northeast Asia	184	48.5	Having stability income	278	73.3
Europe	99	26.2	Finding Job	101	26.7
Other	96	25.3			



Figure 1. The suggested research model (Source: The authors collected)

RESULTS

The paper used the SmartPLS 3 software to identify the relationships that exit between 6 constructs and test the significance levels of coefficients by using a bootstrap procedure (Davison and Hinkley, 1997).

Outer loadings

The study tests the outer loading of the indicators and evaluate the convergent validity of the model. The outer loadings of all indicators should be above 0.70 and should be statistically significant (Hair et al., 2017). There were 6 indicators (IMAGE 3, SATIS5, SATIS6, SATIS7, RISK1, RISK2) were eliminated out the model because their outer loadings were smaller than 0.70 (Table 2), therefore, the 22 observed variables were reliable and were used in the next analysis.

R² value

The R² value of LOYAL is 0.872, it means that about 87.2% of the variance in LOYAL was explained by the research model, this result gained the substantial level. The R² values of IMAGE and SATIS are 0.281 and 0.748, respectively. PLS-SEM results as Figure 2.

Composite Reliability and Convergent Validity

Composite reliability (CR) used to measure the internal consistency reliability and Hair et al., (2005) stated a minimum threshold of 0.70 to be acceptable. To measure the convergent validity of the construct, average variance extracted (AVE) was used, and an AVE value of 0.50 or greater was acceptable for the indicators (Hair et al., 2017). In the model, all of the CR value were greater than 0.70 and all of the AVE value were greater than 0.50, therefore the research model obtained composite reliability and convergent validity (Table 4).

Table 2. Outer Loading (Source: The authors collected)

	EXPER	IMAGE	LOYAL	PROD	RISK	SATIS
EXPER1	0.805					
EXPER2	0.760					
EXPER3	0.816					
EXPER4	0.779					
IMAGE1		0.704				
IMAGE2		0.741				
IMAGE4		0.719				
IMAGE5		0.726				
LOYAL1			0.760			
LOYAL2			0.913			
LOYAL3			0.896			
LOYAL4			0.810			
PROD1				0.850		
PROD2				0.717		
PROD3				0.859		
PROD4				0.865		
RISK3					0.902	
RISK4					0.891	
SATIS1						0.904
SATIS2						0.871
SATIS3						0.730
SATIS4						0.714

Table 3. R² value (Source: The authors collected)

	R Square	R Square Adjusted
IMAGE	0.281	0.279
LOYAL	0.872	0.871
SATIS	0.748	0.745

Table 4. Construct Reliability and Validity (Source: The authors collected)

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
EXPER	0.803	0.869	0.625
IMAGE	0.750	0.814	0.522
LOYAL	0.869	0.911	0.720
PROD	0.842	0.894	0.681
RISK	0.756	0.891	0.804
SATIS	0.823	0.882	0.655

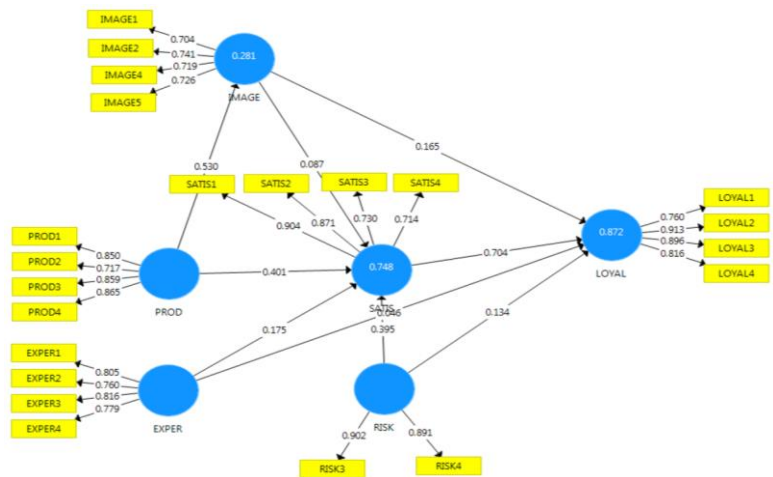


Figure 2. PLS-SEM Results (Source: The authors collected)

Discriminant Validity

It considers whether a construct is unique in the research model. Fornell and Lacker (1981) suggested that the square root of AVE in each latent variable can be used to evaluate discriminant validity, if this value is larger than other correlation values among the latent variables. These results give the evidence that the research model has discriminant validity (Table 5).

Table 5. Fornell- Larcker Criterion (Source: The authors collected)

	EXPER	IMAGE	LOYAL	PROD	RISK	SATIS
EXPER	0.790					
IMAGE	0.353	0.723				
LOYAL	0.545	0.613	0.849			
PROD	0.423	0.530	0.738	0.825		
RISK	0.430	0.433	0.756	0.618	0.897	
SATIS	0.546	0.533	0.917	0.766	0.756	0.809

Table 6. f square (Source: The authors collected)

	EXPER	IMAGE	LOYAL	PROD	RISK	RISK
PROD		0.391				0.332
IMAGE			0.158			0.031
EXPER			0.011			0.093
LOYAL						
RISK			0.060			0.356
SATIS			1.300			

Collinearity Statistics: To inspect collinearity phenomenon between variables, the study uses VIF criteria. All VIF value are uniformly below the threshold value of 5, therefore the model doesn't have the collinearity phenomenon (Appendix 2).

f² effect

To consider whether the omitted construct has a substantive impact on the endogenous constructs, the f² effect size is used. Guidelines for assessing f² are that values of 0.02, 0.15 and 0.35, respectively, represent small, medium and large effects of the exogenous latent variable (Cohen, 1998). The results in Table 6 point out that construct PROD effects greatly to SATIS, and IMAGE also effects to SATIS and LOYAL.

Hypothesis Testing

The bootstrapping procedure was made to investigate the significance and relevance of the structural model relationships. Hair et al., (2017) confirmed that the commonly- used critical values for two-tailed tests are 1.65 (significance level =10%), 1.96 (significance level =5%), and 2.57 (significance level =1%). The relationship between IMAGE and SATIS is accepted according to H₅ (t=2.038, p<0.05), H₆ hypothesis about the relationship between IMAGE and LOYAL is accepted. Similarly, hypotheses as H₁, H₃, H₄, H₇, H₈, H₉ are accepted. And at significance level of 10%, H₂ is accepted (Table 7).

Table 7. Path Coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Hypothesis and validity
EXPER → SATIS	0.175	0.175	0.055	3.204	0.001	H ₁ . Accepted
EXPER → LOYAL	0.046	0.046	0.024	1.924	0.054	H₂. Accepted
PROD → IMAGE	0.550	0.533	0.036	14.343	0.000	H ₃ . Accepted
PROD → SATIS	0.401	0.400	0.064	6.278	0.000	H ₄ . Accepted
IMAGE → SATIS	0.087	0.085	0.033	2.647	0.000	H ₅ . Accepted
IMAGE → LOYAL	0.165	0.166	0.027	6.045	0.000	H ₆ . Accepted
RISK → SATIS	0.395	0.399	0.082	4.809	0.000	H ₇ . Accepted
RISK → LOYAL	0.134	0.142	0.063	2.133	0.034	H ₈ . Accepted
SATIS → LOYAL	0.704	0.694	0.066	10.686	0.000	H ₉ . Accepted

Mediation Analysis

Hair et al., (2017) stated that mediation will occur when a third variable intervenes between two other related constructs, and where the mediator variable governs the nature of the relationship between two constructs. In the model, SATIS served as mediator variable in the relationship between IMAGE and LOYAL at the significant level of 5%, and SATIS also served as mediator variable in the relationship between PROD and LOYAL at the significant level of 5% (Table 8).

Table 8. Specific Indirect Effects (Source: The authors collected)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T - Statistics	P Value
IMAGE → SATIS → LOYAL	0.052	0.050	0.023	2.296	0.022
PROD → SATIS → LOYAL	0.284	0.282	0.058	4.975	0.000
RISK → SATIS → LOYAL	0.277	0.274	0.050	5.554	0.000
EXPER → SATIS → LOYAL	0.324	0.123	0.043	2.921	0.004
PROD → IMAGE → LOYAL	0.098	0.099	0.016	5.937	0.000
PROD → IMAGE → SATIS	0.040	0.040	0.018	2.258	0.024
PROD → IMAGE → SATIS → LOYAL	0.028	0.027	0.013	2.246	0.025

Q² value

To evaluate the magnitude of the R² value as a criterion of predictive accuracy, the study uses Stone –Geisser’s Q² value (Geisser, 1974; Stone, 1974). Q² value of 0.35, 0.15 and 0.02 indicate an exogenous construct has a large, medium and small predictive relevance for an endogenous latent variable, respectively (Hair et al., 2017)

Table 9. Construct Crossvalidated Redundancy (Source: The authors collected)

	SSO	SSE	Q ² = (1-SSE/SSO)
EXPER	1516.000	1516.000	
IMAGE	1516.000	1364.762	0.100
LOYAL	1516.000	587.400	0.612
PROD	1516.000	1516.000	
RISK	758.000	758.000	
SATIS	1516.000	805.963	0.458

Table 10. Summary of the IPMA Data (Source: The authors collected)

Predecessor construct	Importance	Performance
EXPER	0.219	48.645
IMAGE	0.258	55.418
RISK	0.399	75.827
PROD	0.418	64.757
SATIS	0.726	78.076

As Table 9, the Q² value of all three endogenous constructs are considerably above zero. In them, LOYAL has the highest Q² value (0.612), followed by SATIS (0.458) and IMAGE (0.100). These results give evidence for the model’s predictive relevance regarding the endogenous latent variables

Importance Performance Matrix Analysis (IPMA)

The IPMA compares the structural model’s total effects on a specific target construct (Loyalty) with the average latent variable scores of this construct’s predecessors (Tourism Product, Image, Satisfaction, Experience, Risk perception). The goal is to identify the predecessors that have relatively high importance for Loyalty but also a relatively low performance. The important performance map is shown in Figure 3, in which: The x-axis represents the (unstandardized) total effects of Tourism Product, Image, Satisfaction, Experience, Risk perception on the target construct (Loyalty); The y-axis depicts the average rescaled (unstandardized) latent variable scores of Tourism Product, Image, Satisfaction, Experience, Risk perception. As can be seen in Figure 3 and Table 9, the constructs as SATIS, PROD, RISK and IMAGE have a high importance for the LOYAL.

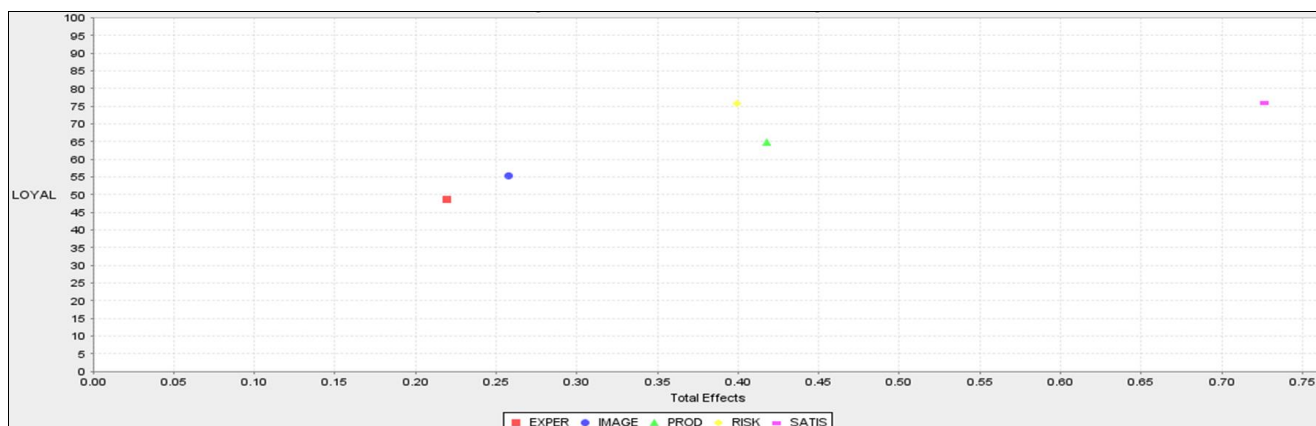


Figure 3. Importance- Performance Map for the Target Construct LOYALTY (Source: The authors collected)

DISCUSSION

Based on the behavioral components of loyalty which groups the main antecedents found in the literature: destination image, tourist experience, risk perception and satisfaction. The study suggested an integrated approach to understand tourists’ loyalty model and investigate the empirical evidence about the relationship among tourism products, destination image, risk perception, tourist experience, destination satisfaction and tourists’ loyalty. In the competitive context of attracting tourists between tourism destination is increasing, therefore, obtaining a better understanding of why tourists are loyalty to a destination and what drives tourists’ loyalty is very important. The tourists’ needs are diverse and they may be at risks of COVID -19 pandemic, so the proposed model integrated two new constructs that are tourism products and risk

perception in researching loyalty. This thing provides a broad basic for marketing strategy model and the empirical evidences that tourism products, image, tourist experience, risk perception, and satisfaction are antecedents and positively influence foreign tourists' loyalty in case of HoiAn world cultural heritage. Analyzing the antecedents of loyalty as tourism products, image, experience, risk perception and satisfaction may provide insight in the process of creating tourists' loyalty at both constructs and indicator level. The study's results could help tourism marketers to better understand the antecedents affecting to satisfaction and loyalty so that they can suitably plan with tourism products and services that could meet tourists' needs. The study also has practical suggestions for destination managers in making marketing strategy after COVID-19. As the study's results show that risk perception and tourist experience constructs can directly influence the loyalty of foreign tourists. Compared to before COVID-19, foreign tourists were more concerned with the healthy - safe and security experience, therefore local authorities have to get set a target to safety and flexibly adapting to and effectively controlling Covid-19 in order to attract more foreign tourists after the pandemic. Satisfaction with tour activities, dinning, lodging, shopping, climate attractions, tour environment and sightseeing are the object in operating destination. Destination managers need to focus on meeting a high tourist satisfaction level to gain positive re-purchase tourist behavior and raise destination competitiveness

This study also uses importance performance map analysis (IPMA) to compare the structural model's total effects on a specific target construct (LOYAL) with the average latent variable scores of this construct's antecedents. The study's results find that the constructs as SATIS, PROD have a high importance for the LOYAL. PROD is particularly important for explaining the target construct LOYAL. In a ceteris paribus situation, a one-unit increase in the performance of PROD increases the performance of LOYAL by the value of the total effect, which is 0.726; and a one-unit increase in the performance of IMAGE increases the performance of LOYAL by the value of the total effect, which is 0.258 (Table 9). The local authorities must control investment activities and quality standards of accommodations and services in HoiAn destination, and ensure security, food safety and environmental sanitation for all tourists.

CONCLUSION

The study's results indicate that tourism products, destination image, tourism experience, risk perception, and satisfaction are antecedents of international tourists' loyalty in HoiAn World Cultural Heritage Site. The study added the antecedent of tourism product and risk perception to the model and could enrich the literature, pointing to be possibility of a destination loyalty model that can be applied to various contexts, especially after COVID- 19 pandemic.

And in them, tourism products affect significantly positively to destination imagine and satisfaction, beside destination image and satisfaction hold the role of mediator in this relationship. In the competitive context of attracting tourists between tourism destination is increasing, therefore, obtaining a better understanding of why tourists are loyalty to a destination and what drives tourists' loyalty is very important.

The study also suggested that destination image is a determinant of satisfaction and tourists' loyalty, in which satisfaction is the mediation construct in the relationship between destination image and tourists' loyalty, and between tourism products and loyalty. Destination image relates to the perception that a setting possesses unique quality, therefore, local tourism authorities need to reinforce and up-grade the current historical – culture positions of HoiAn City, and invest types of tourism and new tourism products to create richness, variety and difference with other destinations. On the other hand, it is necessary to consider the new favorite tourism products after COVID-19 and adjust or build new tourism packages to fit the new normal as green tourism, MICE tourism, sea tourism. Destination managers must also have many different solutions and tools to renew this image as investing new tourism infrastructure, promotion messages, adjust advertising, and advertising to international travel agents and tour operators for attracting international tourists and making the successful destination development. This will create an impression of HoiAn destination and the foreign tourists will likely stay longer and spend more

This research develops understanding about international tourists' loyalty to HoiAn destination in the new context after Covid -19. The study also discussed theoretical and managerial implications for marketing tourism. Destination image relates to the perception that a setting possesses unique quality, therefore, local tourism authorities need to reinforce and up-grade the current historical – culture positions of HoiAn city, and invest types of tourism and new tourism products to create richness, variety and difference with other destinations. There are consistent with the previous findings that tourist experience, image and satisfaction are important antecedents of success in tourism markets (Oppermann, 2000; Prayag, 2008; Rajesh, 2013; Wu, 2015). The study's findings also confirm the applicability of the tourism product and image for tourist destination, and the destination satisfaction has positive and significant effect on loyalty (Chen and Tsai, 2007; Chi and Qu, 2008; Wu, 2015; Toan et al., 2020). A destination with good destination image and many quality tourism products is in the best position in making the marketing strategy.

The higher the satisfaction of foreign tourists are, the higher foreign tourists return and recommend. The study also implements mediation analysis. The study's result shows that satisfaction (SATIS) was the mediation construct in the relationships between PROD (tourism product) and LOYAL (loyalty), between IMAGE (destination image) and LOYAL. At the same time, IPMA is used to compare the structural model's total effects on target construct (LOYAL) and the study's results point out that SATIS, PROD have a high importance for the LOYAL.

The study has several limitations as: *First*, only foreign tourists visiting to HoiAn city have conducted the survey; *Second*, the sample size of survey is still small, it is necessary to survey with larger size. Therefore, further researches should extend sample size and need to consider fully the possibility of the globalization in tourism sector that it may moderate the relationship among research construct.

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WHAT FACTORS INFLUENCE TOURISTS' DECISION TO VISIT ECOTOURISM DESTINATIONS IN BANGLADESH?

Mohammad Moshir RAHMAN* 

Department of Business Administration, Kulliyah of Economics and Management Sciences,
International Islamic University Malaysia, Kuala Lumpur, Malaysia, e-mail: shohag_83@yahoo.com

Ahasanul HAQUE 

Department of Business Administration, Kulliyah of Economics and Management Sciences,
International Islamic University Malaysia, Kuala Lumpur, Malaysia, e-mail: ahasanul@iium.edu.my

Fatin Husna SUIB 

Department of Business Administration, Kulliyah of Economics and Management Sciences,
International Islamic University Malaysia, Kuala Lumpur, Malaysia, e-mail: fatinhusnasuib@iium.edu.my

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Abstract: Ecotourism has been recommended for multiple outcomes that foster environmental protection in developing nations. Tourism studies have revealed that ecotourism has several setbacks in Bangladesh, resulting in environmental difficulties, security issues and tourists' unwillingness to visit destinations. Therefore, this paper examines the factors of destination image, perceived risk, and travel motivation to foresee tourists' selection of ecotourism destinations in Bangladesh. The framework of this study is built upon the "Stimulus-Response Model of Buyer Behaviour" to address the knowledge gap. A total of 364 usable responses were collected from the tourists. The data were examined using SPSS for primary analysis and SEM-AMOS for hypothesis testing. The findings suggest that a proper image and motivation would encourage tourists to visit ecotourism destinations.

Key words: Destination Image, Perceived Risk, Travel Motivation, Environmental Protection, Sustainable Development

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INTRODUCTION

Ecotourism originated in the 1980s as a constituent of alternative tourism owing to the belief that traditional mass tourism was detrimental in some aspects to the destinations (Mondino and Beery, 2018). Tourism researchers have described ecotourism differently, resulting in multiple definitions in the literature. As a pioneering work in ecotourism, Ceballos-Lascurain's (1987, p-7) definition is widely known as the earliest as "ecotourism implies travelling to relatively undisturbed or uncontaminated natural areas with the specific object of studying, admiring and enjoying the scenery". Early research by Jacobson and Robles (1992) accentuated that ecotourism involves prime natural resources such as landscapes, rivers, forests, and wildlife to gratify clients. Sustainable development and biodiversity preservation are also eminent applications of ecotourism (Hassan and Burns, 2014). As Buckley (2016) identified ecotourism definitions as ambiguous, the current research employs essential components of ecotourism destination selection relevant to this investigation.

Researchers have asserted that Bangladesh is renowned for its natural attractions, culture, hospitality, and archaeological destinations (Afroz and Mahmud, 2017; Alauddin et al., 2021). Ahsan (2008) alluded to Bangladesh as a "land of opportunity" for her unparalleled bio-diversified natural habitats and ancient. Therefore, tourists who visit Bangladesh's ecotourism destinations may experience a sense of nature coexisting with heritage. Nevertheless, it is essential to have demanding policymaking, appropriate planning, monitoring, and assessment of the implemented strategies. As the arguments continue to be the deciding elements for tourists to choose and engage in Bangladesh's ecotourism progress, therefore, these discussions confirm that ecotourism has the potential to become a significant sort of tourism business to make a robust economy in Bangladesh (Jaafar and Maideen, 2012; Khondkar and Anis, 2016; Roy and Chowdhury, 2021).

In some instances, tourists have little understanding of a new tourist location they have not visited before (Morrison, 2019). Researchers argued that the destination largely depends on the choice of tourists and embodies a desire to fulfil specific needs and wishes (Ghaderi et al., 2018). As time advanced, the destination image and its dimensions became essential in the selection process. Morrison (2019) further insisted that a destination's appealing elements and cultural and natural perspectives persuade a tourist to visit and stay, which could be a city, state, or scenic area. On a separate note, destination image may sometimes lead to the apprehension and non-realisation of expectations. Likewise, risk domains distract tourists from selecting destinations despite their experiences and emotions (Caber et al., 2020).

However, much effort has been invested as selecting a destination relies on the destination's brand, image, and tourists' tolerance of risk elements and is considered the crucial components for destination marketers to look at (Stylidis et al.,

* Corresponding author

2017; Lenggogeni et al., 2019). The researchers contend that the current modus of assessing risk involving travel activities is inadequate and should be modified to contemplate the corpus of currently available knowledge (Samdin et al., 2021). As discussed, travel is an essential desire among tourists worldwide; it also requires psychological needs that provoke, direct and integrate tourists' motivation (Pearce, 2013). Yolal et al. (2015) study uncovered that travel motivation is a factor that equally influences the decision-making process of tourists. Alauddin et al. (2021) stated that Bangladesh has many alluring ecotourism destinations that must fulfil tourists' demands. It appears to be a significant opportunity for the ecotourism business in Bangladesh, especially its connection with the said modules and its influence on the environment. In light of the preceding, the current research responds to this demand by examining factors that may impact tourists' decision to visit an ecotourism destination in Bangladesh. This study is organised in the following manner; The literature review briefly discusses ecotourism and hypotheses related to ecotourism destination selection. The methodology section describes the approach and procedures. The data analysis segment defines the outputs of the collected data, hypotheses, and general discussion. The consequences, limits, and future research are discussed in the conclusion section.

LITERATURE REVIEW

Ecotourism Destination Selection

Ecotourism development is primarily concerned with mitigating adverse environmental impacts and safeguarding natural resources from deterioration (Bhuiyan et al., 2015). The researchers asserted that selecting an ecotourism destination required extensive information to decide and involved activities that tourists fascinatingly perform during the visit, pre-visit or post-visit (Croy and Wheeler, 2007; Djeri and Plavsa, 2007). However, the success of tourism organisations is heavily dependent on tourists' preferences that are presently luring academics' attention.

This view indicates that efficient destination management and a clearly defined tourism policy are essential for performing competently (Neger, 2021). Similarly, the natural environment, tourists' desires and modern tourists are the main facets of a supportive and environment-friendly tourism system (Ghimire and Dhakal, 2021). An early Belk and Costa (1995) study added that external and internal influences and judgement also direct tourists to a destination, such as motivation, personality, attitude, expense, accessibility, and destination image. Nonetheless, much effort has been expended, as destination selection is significantly impacted by brand, image, risk considerations, and other essential elements (Stylidis et al., 2017). The consequence of tourists' preferences in destination selection is critical for tourism marketing since they generate demand and assist visitors in making decisions (Alegre and Cladera, 2009; Ahmed and Azam, 2010). Since Bangladesh has a striking uniqueness in attracting visitors, there is a need for adequate knowledge and insight about the components influencing tourists to choose ecotourism destinations. Under this viewpoint, destination image, perceived risk and travel motivation are comprehensively explored in this current study.

The Stimulus-Response Model of Buyer Behaviour

Consumers' purchasing decisions are strongly influenced by economic, cultural and social preferences (Panwar et al., 2019). From a theoretical perspective, the researcher stated that the "Stimulus-Response Model of Buyer Behaviour" is a process that systematically understands how a consumer acts when travelling (Middleton and Clarke, 2001).

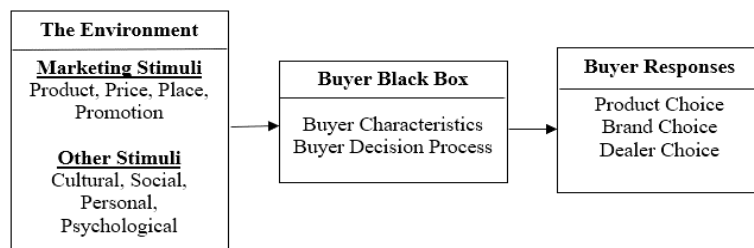


Figure 1. The Stimulus-Response Model of Buyer Behaviour

This concept is analogous to the black box theory of behaviourism, which focuses on the underlying relationship between inputs and subsequent outcomes (Kotler and Keller, 2016). Therefore, this theory has been adapted for this research. In line with such theoretical consensus, the components of the destination image are portrayed as marketing stimuli, as they pertain to brand image within the 4p. Other stimuli reflect perceived risk in the ecotourism segment, whereas travel motivation is the tourist's black box, and to the end, destination selection represents the consumer's response. Under this approach, Blackwell et al. (2003) argued that purchasing a product containing risk might obtain psychological discomfort. With the amelioration, the consumer sometimes paid more for security and risk avoidance. Likewise, Lepp and Gibson (2003) mentioned that risks repeatedly influence consumers to perceive over time. However, an early study suggested that perceived risk impacts every stage of consumer decision-making and compelled marketers to use this knowledge to gain a competitive advantage (Mitchell, 1992). Since it is relevant to the model, perceived risk is classified with other stimuli in psychological factors. To a greater extent, the researchers have asserted that the adapted model emphasises the importance of communication between the tourism business and the consumer.

Destination Image and Selection of Ecotourism Destination

Most scholars believe a destination image combines views, concepts, aspirations and emotional thoughts (Kim and Richardson, 2003; Beerli and Martin, 2004; Assaker, 2014; Molinillo et al., 2018). It also relies on its climate, landscape, and culture as internal resources (Chiutsi et al., 2011; Coria and Calfucura, 2012). Kaur et al. (2016) study indicated that destination image had been a primary focus of theoretical and empirical tourism studies over the past three decades. However, it is recognised all around since it focuses on the tourist's observation, behaviour, and choice (Gallarza et al., 2002; Echtner and Ritchie, 2003). Scholars have mentioned that the destination image has been divided into two key categories: internal and exterior (Lai and Li, 2015). Numerous findings demonstrated that the destination

image is the crucial component influencing the destination selection activity (Hallmann et al., 2015; Karl et al., 2015; Ojo and Yusof, 2019). The travel decision-making, travel-related activities and potential travel plans, and destination image as an intangible component unquestionably influence tourists' expectations on selecting a destination (Echtner and Ritchie, 1993; Byon and Zhang, 2010; Xiong et al., 2015; Molinillo et al., 2018). It has been identified that the least number of studies based on destination image attributes were undertaken in Bangladesh's ecotourism context. Based on the above-discussed relationship, the below hypothesis has suggested:

H₁: Destination image significantly impacts the selection of ecotourism destinations.

Perceived Risk and Selection of Ecotourism Destination

People have been disquieted about travel safety and paying attention to related risks. Tourism risk awareness is a quantifiable indicator that directly affects tourists' decisions. Cui et al. (2016) discovered that tourists' risk is typically between five and seven dimensions. Therefore, this study has used six dimensions of perceived risk to support this notion. Williams and Balaz's (2012) study further added that destination-related risks had gained much attention to increasing the safety and security of a destination. Thus, destination-specific risks need to be resolved for tourism advancement.

On a separate note, destination selections are affected by risk elements and are sometimes not judged by specific information sources. It may include terrorist attacks, criminal activity, national disasters, and the spread of disease (Chen et al., 2009; Fuchs and Reichel, 2011). There have been a few attempts to determine tourists' travel risks beyond health and safety concerns. It, therefore, needs to explore the link on the overhead view. On this note, Kani et al. (2018) argued that perceived risk analysis is essential given the significant destination calamities afflict a country's image. The recent pandemic of COVID-19 has created alarm among tourists worldwide. As a result, safety has emerged as a critical factor affecting the travel plans for tourists who visit Bangladeshi ecotourism destinations. People will not travel if they feel uncomfortable and visit safer locations they consider. Consequently, ensuring safety in diverse ecotourism destinations is essential to sustain tourism interest and acceptability. Thus, the above discussion has concluded the below hypothesis:

H₂: Perceived risk significantly affects the selection of ecotourism destinations.

Travel Motivation and Selection of Tour Destination

In conjunction with need-based tourist incentives, a long-discussed theoretical background impacted travel behaviour and destination selection (Yoo et al., 2018). In tourism trends, psychology and inspiration are intertwined (Skavronskaya et al., 2017). Therefore, in several tourism-related research, Maslow's (1954) five-stage need theory has been addressed, providing a comprehensive guide to tourist motivation. Nonetheless, the "need theory" proposed by Maslow (1954) is in progressive order of expanding motivational significance (Kenrick et al., 2010). As indicated by the researcher, the variables of physiological, safety, social, esteem and self-actualisation motivate the individuals to make two distinct choices on two unique occasions, for example, "regardless of whether to go" and "where to go" (Baniya and Paudel, 2016).

Motivation and destination selection are inextricably linked in the selection process, which could be complex and influenced by several instances (Jeong et al., 2018). Lee et al. (2014) found a correlation between travel motivation and tourist behaviour, which may be influenced directly and indirectly to meet visitors' demands. Tourism researchers similarly acknowledged travel motivation as essential for destination success (Prebensen et al., 2012). As previously said, motivation is defined as the driving force; it also encompasses tourist attitudes in significant aspects of action, such as commitment, interpretation, and satisfaction (Gnoth, 1997). Furthermore, travellers' motivation represents their intention, which deems them competent to make any decision (Jang et al., 2009). However, the tourists' motivation and destination choices are relatively unknown to many growing tourists because limited studies are available in this setting (Mehtaj, 2017; Nafi and Ahmed, 2018). Consequently, based on the preceding reasoning and discussion, the researchers postulate that travel motivation compels visitors to choose destinations and engage in ecotourism activities. The following hypothesis is meant to reflect this assumption:

H₃: Travel motivation has a significant positive impact on selecting ecotourism destinations.

Destination Image and Travel Motivation

More than two decades of tourism studies have demonstrated that destination image is essential in selecting tourism destinations (Chetthamrongchai, 2017). In such a journey, motivation is a factor in determining the prediction process of destination choice, and a positive image motivates travellers to call on and revisit (Pratminingsih et al., 2014). Previous studies explored destination image and travel motivation, depicting destination image as an influential element (Stabler, 1995; Baloglu and McCleary, 1999; Shi et al., 2012; Kim and Chen, 2016; Khan et al., 2017). Literature found that motivation is a socio-psychological component influencing a visitor to participate in leisure activities. Therefore, travel motivation is believed to be associated with successful destination image construction (Dann, 1996; Baloglu, 2001).

San Martin and Del Bosque (2008) highlighted from several viewpoints how cultural values and travel motives influence a tourist's decision to visit a specific location. Li et al. (2010) study also discussed the dimension of motivation (cognitive and affective) that has considerably moulded them. In line with this view, travel motivation as one of the antecedents is featured in many destination image design models (Josiassen et al., 2016; Kim and Chen, 2016; Jani, 2018). However, in Bangladesh, tourists have a sophisticated understanding of destination image and travel motivation in ecotourism destinations choice. Thus, it is necessary to examine how tourist travel motivation shapes destination image to attract inbound and foreign tourists. Moreover, these interrelationships have not previously been considered in a single study. Thus, the hypothesis below is intended:

H₄: Destination image has a significant positive impact on travel motivation.

Perceived Risk and Travel Motivation

Research has indicated that risk elements influence travel behaviour in the tourism segment and considers a critical construct for explaining tourists' behaviour (Rid et al., 2014; Khan et al., 2019). Thus, the risk factors are critical in identifying the travel motivation of a tourist (Beh and Bruyere, 2007; Li et al., 2010). In previous research, risk perception has significantly impacted tourists' motivation in decision-making and destination choice (Lin and Chen, 2009; Prayag and Jankee, 2013; Da Silva Lopes et al., 2021). Scholars have assumed that the decline in holiday plans involves past incidents around the world, and visitors are concerned about security issues while visiting a destination (Chiu and Lin, 2011; Chen and Noriega, 2004; Floyd et al., 2004; Kingsbury and Brunn, 2004; Fuchs and Reichel, 2011; Yazid et al., 2018). In addition, the perceived risk is associated with various psychological characteristics, including beliefs, attitudes and other behaviour (Sirakaya and Woodside, 2005; Seabra et al., 2014; Adeloje and Brown, 2017). Subsequently, risk elements, including crime, political unrest, disease, and natural disaster, are exposed negatively and radically affect destination selection and leisure activities (Fuchs and Reichel, 2011). Therefore, the present study aims to assess travel motivation and risk perception when choosing ecotourism destinations in Bangladesh. As a result of the above discussion, the following assumption was postulated:

H₅: Perceived risk has a significant negative impact on travel motivation.

METHODOLOGY

Research Design

The current study is initiated with a wide-ranging literature review of ecotourism destination selection associated with relevant theory and empirical data. A quantitative method is an organised method with precise empirical interpretations. This method is consistent with the positivism paradigm since numerical results are often accepted as unbiased and independent of the researcher's values and opinions (Oswald, 2015). Therefore, the current study endorsed quantitative analysis with a deductive approach to the suggested study framework and related hypotheses.

Study Population and Sampling Method

A study population is a distinct group of individuals or entities with similar characteristics (Sekaran and Bougie, 2014). This study's data were obtained from several ecotourism destinations by approaching tourists. The target population comprised visitors who visited several ecotourism locations in Bangladesh. It has set a total of 400 individual tourists to determine the sample size considering earlier studies, and the unit of analysis was an individual tourist (Fick and Ritchie, 1991; Tasci and Gartner, 2007; Hultsman et al., 2015). According to Hair et al. (2015), a sample size between 200 to 400 is adequate, associated with different parameters. In many cases, the 5:1 ratio has been used in multivariate analysis. The sampling method usually depends on the nature of the pertained study.

However, this study followed the non-probability purposive sampling technique, which explains specific assumptions, expectations and experiences to determine sample size (Hair et al., 2015). Since the approach was much more flexible, Jaafar and Maideen's (2012) study also used this sampling method to define the sample size for engaging tourists. In supporting the above statement, Muhamad et al. (2012) similarly utilised purposive sampling to collect data to determine the destination image, describing it as a more practical and cost-effective method.

Measurement Scale Development

The "questionnaire" is generally used to gather data from several respondents. Also, a valid questionnaire allows valuable and reliable information or data to be transmitted from the respondent to the researcher (Krosnick, 2018). The "Likert Scale" is the most popular of several measurement tools (Leung, 2011; Newman, 2014). The current study used a "5-point" Likert scale, which the researchers stated is the most used scale for statistical analysis (Hair et al., 2019). A total no. of 74 questions were included in the questionnaire (except demographic), and items were adapted from previous studies (Echtner and Ritchie, 1993; Stone and Grønhaug, 1993; Ryan, 1995; Baloglu and McCleary, 1999; Laroche et al., 2004; Chen and Tsai, 2007; Fuchs and Reichel, 2011).

Data Analysis

Structural equation modelling (SEM) is a frequently used technique for measuring dynamic connections (Hair et al., 2019). However, the sample size is also an essential factor to consider. In this study, hypotheses were evaluated using SPSS-AMOS.

RESULTS AND DISCUSSIONS

Profile of the Respondents

71.7 % of the total sample size of 364 were male, while 28.3 % were female. Regarding age, most participants were between 26 and 35 (36.5%), followed by the youngest age ranging from 18 to 25 (25%). The lowest responses came from the 56 and above age segment (3.3%). The local/foreigner ratio of the total population was a sizable variation, as 335 (92.0%) responses came from the local people. This finding of lower response from foreign tourists was due to the global pandemic (COVID-19). Concerning the respondents' qualifications, 42.3% had a master's degree. 37.1% of them engaged in bachelor's degrees. This result suggested that most respondents have a high level of educational background.

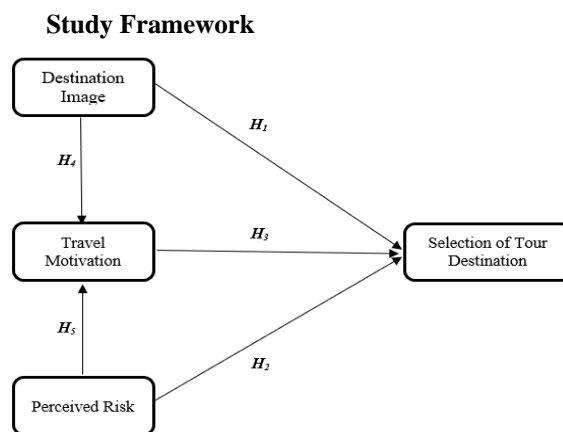


Figure 2. The Framework of the Study

Most participants reported being married (57.1%), and 41.5% identified themselves as single. While respondents were questioned about their occupations, five distinct categories were included in the range. 40.4 % were employed, while 28.3 % were students, and the class of these respondents comprised different education levels.

As an ordinal variable, 19.8% of respondents had a total income ranging from BDT50001-100000 and were deemed mid-level income in Bangladesh. In response to the frequency of travel towards ecotourism destinations, more than half of the respondents (52.5%) answered that they generally travel annually. However, 26.6% of the respondents travelled to ecotourism destinations every quarter. As represented in Table 1 relating to visiting type, the category “Family Trip” comprised the most significant percentage (49.70%) of answers. 63.2% of 364 respondents declared themselves as self-sponsored tourists. Other than that, 17.6% of respondents reported being sponsored by their parents.

Table 1. Respondents’ Demographics Profile

Items	Category	Frequency	Percentage
Gender	Male	261	71.7
	Female	103	28.3
Age	18-25	91	25.0
	26-35	133	36.5
	36-45	103	28.3
	46-55	25	6.9
	56 and above	12	3.3
Nationality	Local	335	92.0
	Foreigner	29	8.0
Education	HSC	35	9.6
	Diploma	20	5.5
	Bachelor	135	37.1
	Masters	154	42.3
	Others	20	5.5
Marital Status	Married	208	57.1
	Unmarried	151	41.5
	Others	5	1.4
Occupation	Service	147	40.4
	Business	63	17.3
	Student	103	28.3
	Housewife	20	5.5
	Others	31	8.5
Monthly Income	Less than BDT 25000	69	19.0
	BDT 25001-50000	77	21.2
	BDT 50001-100000	72	19.8
	Above BDT 100000	54	14.8
	Others	92	25.2
Frequency of Travel	Monthly	24	6.6
	Quarterly	97	26.6
	Yearly	191	52.5
	Others	52	14.3
Type of Visit	Individual Trip	71	19.5
	Family Trip	181	49.7
	Individual Trip	71	19.5
	Business Trip	15	4.1
	Others	97	26.6
Financial Sources	Self-Sponsored	230	63.2
	Parents	64	17.6
	Company Sponsored	6	1.6
	Loan	4	1.1
	Others	60	16.5

Descriptive Statistics

Descriptive analysis is essential because it describes the basic features of the data in a study. The result revealed that one of the dimensions of the perceived risk indicator coded as “PHY6” has the highest mean average of 4.26, where a standard deviation of .756. The highest mean average of all indicators, “DAH4”, achieved 4.36. However, a lower average mean value in the perceived risk items was “PHY3” (3.72).

Measurement Model

All items were initially analysed using exploratory factor analysis (EFA). Factors loadings with 0.50> were included for further interpretation of the data. The common method bias was also checked and found not present in this study. It ensured that the instrument’s index remained constant and within that range. Cronbach’s alpha coefficient is computed for the scale’s internal accuracy. However, according to Hair et al. (2015), a reliability level of 0.70 or more is acceptable.

Cross-loadings, Fornell-Larcker criteria, and the Heterotrait-Monotrait (HTMT) ratio have all been advocated as tools for measuring discriminant validity where cross-loadings observe the discriminant validity at the indicator level, while Fornell-Larcker criteria evaluate it at the construct level (Henseler et al., 2015; Hair et al., 2015). HTMT values are often interpreted as measures of inter-construct correlations, and the matrix is computed using the absolute values of the correlations (Henseler et al., 2015). Discriminant validity between the two reflective constructs has been shown when the HTMT value is less than 0.90.

All values in the HTMT matrix are significantly below 0.90, indicating good discriminant validity for this research (Table 4). However, all items load substantially on their respective factor ($p < 0.001$), ranging from 0.551 to 0.943.

These factors have composite reliability greater than the threshold of 0.70 (ranging from 0.738 to 0.919) (Hair et al., 2019).

Convergent validity is also apparent since the standardised loading for each item and the average variance extracted (AVE) surpass the specified criterion of 0.5. Table 2 also demonstrates discriminant validity where the AVE square root was more significant than the square root of any other construct.

Structural Model

This study analysed the data and tested the research hypotheses using SPSS (AMOS) software. The structural model was evaluated to determine the R^2 coefficients for endogenous factors and the relevance of path coefficients.

Meanwhile, Chin’s (1998) study suggested that R^2 values of 0.67, 0.33 and 0.19 can be considered substantial, moderate and weak, respectively. In this research, the R^2 coefficients for Destination Image (DI) (0.43), Perceived Risk (PR) (0.39), Travel Motivation (TVM) (0.59), and Selection of Tour Destination (STD) (0.63) suggest the model’s constructs were well predicted (Chin et al., 2008; Hair et al., 2019). However, the structural model analysis measures the significance of the coefficients of the estimated paths, which are the basis for accepting or rejecting the intended relationships between latent variables in the hypothesised model.

For the assessment of the structural model, model fit criteria using multiple fit indices (absolute fit (RMSEA), ChiSq/df; incremental fit (CFI, GFI); and parsimonious fit (NFI) is measured (Byrne, 2010; Hair et al., 2019). The estimation of the re-specified model yielded a substantial value of absolute fit (RMSEA)=0.053, ChiSq/df= 3196.690;

incremental fit (CFI) = 0.918 and accepted the hypothesised model as valid and reliable for this research. The test of hypotheses resulting from the internal relationship among constructs is reported in the next section.

Table 2. Reliability and Validity Assessment

Construct	Dimension	Code	Mean	SD	Loadings	(α)	CR	AVE
Destination Image	Attribute-Holistics	DAH1	4.27	0.727	.654	0.855	0.860	0.537
		DAH2	4.06	0.833	.653			
		DAH3	4.18	0.765	.652			
		DAH4	4.36	0.707	.701			
		DAH5	4.21	0.729	.682			
		DAH6	4.27	0.741	.708			
		DAH7	4.13	0.778	.733			
	Functional-Psychological	DFP1	4.09	0.741	.551	0.795	0.806	0.635
		DFP2	4.20	0.754	.685			
		DFP3	4.13	0.778	.597			
		DFP4	4.07	0.744	.564			
		DFP5	4.23	0.704	.630			
		DFP6	4.08	0.738	.797			
	Common-Unique	DCU1	4.18	0.759	.664	0.855	0.849	0.578
		DCU2	4.16	0.761	.695			
DCU3		4.17	0.726	.695				
DCU4		4.05	0.744	.672				
DCU5		4.08	0.686	.686				
DCU6		4.11	0.675	.760				
Perceived Risk	Financial Risk	FNR1	3.94	0.874	.653	0.766	0.849	0.561
		FNR2	4.03	0.934	.753			
		FNR3	3.95	0.968	.788			
		FNR4	4.01	0.872	.692			
		FNR5	4.15	0.718	.749			
	Time Risk	TMR1	4.16	0.731	.685	0.877	0.913	0.701
		TMR2	3.99	0.861	.768			
		TMR3	3.79	1.002	.748			
		TMR4	3.82	0.991	.749			
		TMR5	3.90	0.813	.804			
		TMR6	3.96	0.797	.823			
		TMR7	4.00	0.786	.837			
	Performance Risk	PER4	4.40	0.619	.687	0.806	0.890	0.626
		PER5	4.30	0.676	.752			
		PER6	4.42	0.595	.791			
	Social Risk	SOR1	4.49	0.591	.799	0.738	0.925	0.889
		SOR2	4.43	0.624	.669			
		SOR3	4.35	0.601	.811			
		SOR4	4.30	0.563	.811			
		SOR5	4.51	0.582	.721			
		SOR6	4.40	0.584	.816			
SOR7		4.48	0.558	.943				
Psychological Risk	PSY1	4.46	0.546	.831	0.919	0.759	0.581	
	PSY2	4.50	0.577	.537				
	PSY3	3.85	0.804	.762				
Physical Risk	PHY5	4.23	0.762	.800	0.785	0.861	0.630	
	PHY6	4.26	0.756	.868				
	PHY7	4.10	0.805	.794				
Travel Motivation	nill	TVM1	3.75	0.900	.655	0.809	0.813	0.540
		TVM2	3.42	1.032	.634			
		TVM3	3.66	0.973	.612			
		TVM4	3.43	1.025	.560			
		TVM5	3.38	1.057	.569			
		TVM6	3.30	1.077	.562			
		TVM7	3.49	1.030	.735			
Selection of Tour Destination	nill	STD1	3.22	1.030	.554	0.807	0.827	0.594
		STD2	3.41	1.068	.685			
		STD3	3.50	0.937	.632			
		STD4	3.30	1.074	.721			
		STD6	3.36	1.023	.623			
		STD7	3.84	0.820	.774			

Table 3. Heterotrait-Monotrait (HTMT) Ratio

Constructs	Destination Image	Travel Motivation	Perceived Risk	Selection TD.
Destination Image				
Travel Motivation	0.803			
Perceived Risk	0.583	0.814		
Selection TD	0.617	0.594	0.710	

Table 4. Fornell-Larcker Criteria

Constructs	Destination Image	Travel Motivation	Perceived Risk	Selection TD.
Destination Image	0.821			
Travel Motivation	0.634	0.817		
Perceived Risk	0.407	0.527	0.611	
Selection TD	0.511	0.234	0.513	0.711

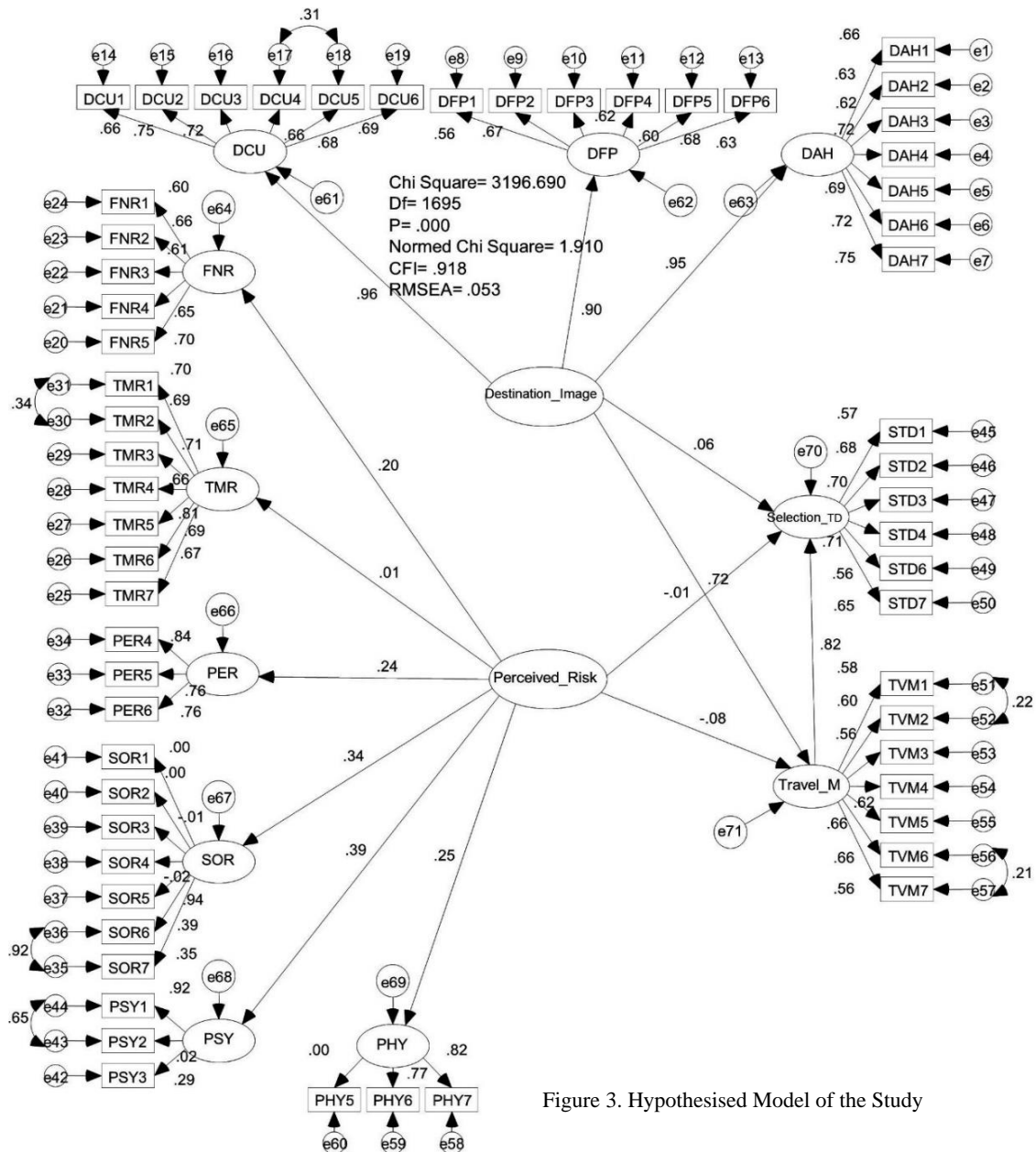


Figure 3. Hypothesised Model of the Study

Hypothesis Testing

SPSS(AMOS) was utilised to evaluate the interrelationships between all the variables: destination image, travel motivation, perceived risk and ecotourism destination selection (Figure 2). Table 5 exhibits the findings of the hypotheses analysis, which consists of the coefficient, *t*-values, and conclusion about the acceptance or rejection of the hypotheses. Moreover, these hypotheses were evaluated using the *t*-values associated with the standardised path coefficients. Suppose an estimated *t*-value is more significant than a specific critical value ± 1.96 ($p < 0.05$) is considered significant (Byrne, 2010; Hair et al., 2019). However, these hypotheses were evaluated using statistical significance at the 0.05 level and the nature of the suggested relationship (+ or -).

The testing of Hypothesis H_1 involved two variables: (i) image of the ecotourism destination; and (ii) tourists' destination selection. The developed hypothesis was supported and aligned with previous studies (Echtner and Ritchie, 1993; Assaker, 2014; Molinillo et al., 2018). As shown in Table 5, the p -value was less than 0.05 (0.000) with a standard error of 0.018, where the t -value was 6.693. As such, when the destination image predicts the selection of ecotourism, the regression weight was significant at the 0.05 level. Therefore, based on the discussion, it concludes that from the Bangladesh perspective, the relationship between destination image and tour destination selection is substantial and psychologically impacts the tourists. Since the relationship is statistically significant, thus, this study accepted hypothesis H_1 .

The perceived risk involves the destination-related risk influencing tourists' visitation to the ecotourism destination. As Fuchs and Reichel (2011) highlighted regarding the role of perceived risk in destination selection, it was required to test this hypothesis further as there were a few other difficulties, such as terrorist attacks, criminal activity, natural catastrophes, and the spread of disease. Table 5 shows no evidence supporting the hypothesis that these two factors are related. The p -value is greater than 0.05 (0.862) with a standard error of 0.015, where the t -value is 0.174. This finding suggested that perceived risk does not affect the selection of ecotourism destinations. Even though past discoveries (Fuchs and Reichel, 2011; Cui et al., 2016; Kani et al., 2018) reported a significant relationship between the. One of the concerns about choosing ecotourism destinations was security, which was not a worry when the data was collected. Most people were confined since they dared not venture out during the COVID-19 outbreak. When given a chance, tourists did not let concerns about potential danger from experiencing the tourist destination. Therefore, the researchers recommended gathering data around the year with standard settings in future studies and thus H_2 , which was rejected. Nonetheless, the fact remains that several earlier investigations indicated the same clarification for the SEM analysis result (Fuchs and Reichel, 2011; Williams and Balaz, 2012; Cui et al., 2016).

The hypothesis (H_3) examined if travel motivation congruence positively with the selection of tour destination. Motivation is a psychological element with many aspects for tourists in the destination selection process. It was first introduced by Plog (1974) in tourism research. Since then, many studies have been conducted on the different types of tourists and perspectives on choosing their travel destinations (Plog, 1974; Crompton, 1992; Leung and Law, 2010). These studies also revealed how 'travel motivation' influences tourists' final choice of destination. Earlier, it has mentioned that Maslow's five-stage needs theory and push and pull components distinguished by Dann (1997) provide a comprehensive guide to tourist motivation. Thus, the hypothesis was tested in the context of Bangladeshi ecotourism destinations as the element of the destination selection mechanism. The results revealed that the estimated parameters (p -value less than 0.05 (0.000) with a standard error of 0.147 and a t -value of 6.365) supported this hypothesis. Similar to the previous evidence (Yousefi and Marzuki, 2015; Qiu et al., 2018; Wijaya et al., 2018; Jeong et al., 2018), the findings of this research revealed the existence of a stronger significant relationship between travel motivation and selection of tour destination and accepted the hypothesis H_3 .

Tourists' travel motivation has been an important field of study since the 1960s and a focal point for understanding tourism behaviour (Otoo and Kim, 2018). There is a lack of consensus among researchers concerning travel motivations for different destinations and tourists' characteristics (Pereira et al., 2019). As shown in Table 5, a significant correlation was found between the variables of destination image and travel motivation. The p -value is less than 0.05 (0.000) with a standard error of 0.087, and the t -value is 8.105. Therefore, hypothesis H_4 was confirmed. The results supported the empirical evidence of the above relationship (Khan et al., 2017; Jani, 2018; Pereira et al., 2019).

Researchers indicated that risk factors and motivations correlate with travel-related decisions and behavioural intentions (Caber et al., 2020). Tourist decision-making may vary regarding risk-taking acceptability on a socio-psychological continuum (Tarlow, 2014). Based on its importance, the hypothesis has been investigated. This study used travel motivation as a unidimensional construct to test its capability to undermine the relationship of perceived risk in ecotourism settings. However, earlier research concentrated on different countries' (i.e., India and Malaysia) views; consequently, this study evaluated Bangladesh's ecotourism destinations (Khan et al., 2018; Caber et al., 2020). The hypothesis (H_5) reflected the relationship between perceived risk and travel motivation in selecting an ecotourism destination. The findings suggested a significant relationship between perceived risk and travel motivation in choosing the tour destination with a p -value of less than 0.05 (0.023), a standard error was 0.015 and a t -value of -2.274. The results also support previous empirical evidence of the relationship between perceived risk and travel motivation (Khan et al., 2019; Caber et al., 2020).

Table 5. Estimates of the Hypothesised Model

H_0	Path	(β)	$\frac{3}{4}^2$	t - value	p - value	Results
H_1	Selection_TD<---Destination_Image	.122	.018	6.693	***	Supported
H_2	Selection_TD<---Percieved_Risk	.003	.015	0.174	.862	Not Supported
H_3	Selection_TD <--- Travel_Motivation	.933	.147	6.365	***	Supported
H_4	Travel_Motivation<---Destination_Image	.709	.087	8.105	***	Supported
H_5	Travel_Motivation<---Percieved_Risk	-.034	.015	-2.274	.023	Supported

IMPLICATIONS

This study has numerous significant consequences. Based on the Stimulus-Response Model of Buyer Behavior theory, this study provides a novel paradigm for future research. In addition, it contributes to the tourism marketing literature as the first empirical study to incorporate destination image, travel motivation, and perceived risk in determining tourist preferences for ecotourism activities. It enables developing countries such as Bangladesh to grasp how the image may be used to foster tourism business and contribute to developing ecotourism destinations. While the association between perceived risk and tour destination selection was insignificant, the other relationship indicates that perceived risk

substantially affects travel motivation. The findings might be applied to various ecotourism locations in other developing countries in Southeast Asia to boost the growth and sustainability of ecotourism destinations.

Finally, the findings from this study would significantly impact destination management organisations to understand risk management. Destination managers can motivate more tourists to visit the Bangladesh ecotourism destination by sharing useful information about the destinations and offering them special incentives for new and returning tourists.

Specifically, the most crucial finding was that destination image is the strongest predictor of tourists' engagement in a recommended risk-lesening behaviour to ensure tourist safety while visiting ecotourism destinations. The results suggested appropriate marketing strategies for destination management organisations and a reliable reference for government and policymakers for ecotourism development and forming a favourable image.

LIMITATIONS AND FUTURE DIRECTION

There are several limitations when interpreting the results of this research. While this study revealed a clear delineation of destination image, a non-significant result concerning the selection of tour destination has occurred. No research has been devoted to studying the destination image and perceived risk of Bangladesh's ecotourism. As a result, it was limited by the availability of earlier research in the same setting.

Another limitation is that this research could not include all of Bangladesh's ecotourism destinations. The survey data were collected from most ecotourism destinations but did not cover all. There were some restricted locations where the survey could not be done due to the global pandemic and travelling restrictions. Moreover, due to the pandemic, convenient travel services and facilities cause a limited number of foreign tourists. So, it was possible to include a limited number of foreign visitors in the overall sample size. To an extent, future research may further define the perceived risk construct to overcome this limitation. Potential researchers who broaden this study's findings may employ different perceived risk dimensions to achieve significant results. However, all visitors to nature-based sites are not inherently right ecotourists because their reasons and behaviours differ and may not be consistent with ecotourism values. Future studies can consider using a different approach to distinguish visitors by observing their behaviour.

CONCLUSION

This research aims to evaluate destination image, travel motivation, and the perceived risk concerning ecotourism destination selection in Bangladesh. The "Stimulus-Response Model of Buyer Behavior" was demonstrated as a viable approach. The framework established by this theory aided in comprehending tourists' aims for destination selections. Upon empirical analysis of 364 valid tourist responses, the researchers found that destination image and travel motivation statistically impact ecotourism destination selection. This exploration supports the current trend in the tourism literature, emphasising destination selection criteria as a critical determinant of sustainable tourism. The findings also advocate the view of Bertella's (2019) study on the development of sustainable wildlife tourism. Overall, it is envisaged that this study would encourage further research on environmental protection and sustainable tourism in Bangladesh.

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ANALYSIS OF THE ECONOMIC STATE OF THE TOURIST INDUSTRY IN THE PAVLODAR REGION (KAZAKHSTAN)

Ayana YESSIM 

L.N. Gumilyov Eurasian National University, Department of Tourism, Astana, Republic of Kazakhstan, e-mail: ayana_esimova99@mail.ru

Roza SHOKHAN 

L.N. Gumilyov Eurasian National University, Department of Tourism, Astana, Republic of Kazakhstan, e-mail: roza-shokan@mail.ru

Dinara YESSIMOVA * 

Toraighyrov University, Department of Geography and Tourism, Pavlodar, Republic of Kazakhstan, e-mail: dika-73@mail.ru

Alina FAURAT 

Toraighyrov University, Department of Geography and Tourism, Pavlodar, Republic of Kazakhstan, e-mail: alina.faurat@yahoo.com

Ruslan SAFAROV * 

L.N. Gumilyov Eurasian National University, Faculty of Natural Sciences, Astana, Republic of Kazakhstan, e-mail: ruslanbox@yandex.ru

Seedou Mukthar SONKO 

Assane Seck University of Ziguinchor, Department of Tourism, Senegal, e-mail: sm.sonko@univ-zig.sn

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Abstract: The Pavlodar region is of interest as an object of economic diversification and development of the tourism industry of the Republic of Kazakhstan. The purpose of this study is to assess the development of tourism in the Pavlodar region. Statistical data on the contribution of tourism activities to the gross regional product (GRP), infrastructure, the labor market of tourism services, and investments in the sector are analyzed. Data obtained from official sources: Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan for the period 2015-2019. During the study, it was found that the nominal contribution of the tourism industry to the development of the region's economy for 2015–2019 ranged from 0.55% to 0.3%. The maximum volumes of services related to tourism activities and the maximum growth rates were in 2017 and 2019. The growth rates of services in these periods were 114.1% and 107%, respectively. In 2019, tourism reached its maximum development in the Pavlodar region until the start of the pandemic, primarily due to investments in the industry. As of 2019, the degree of depreciation of fixed assets in the tourism industry was 46.2%. Thus, studies show that the tourism industry has a low organizational and economic level of development. However, there is also potential for tourism development: the stable political situation in the Republic of Kazakhstan and Pavlodar region; the implementation of measures to support the development of the tourism industry at the state and regional levels; availability of tourist recreational resources.

Key words: tourism industry, the Pavlodar region, diversification of the economy, infrastructure, investments

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INTRODUCTION

The Republic of Kazakhstan is located in Central Asia. This region has acquired an important strategic geopolitical significance, it is located in the center of the Eurasian continent and represents the political and economic interests of various states of the world (Khetagurova, 2017). At present, the Shanghai Cooperation Organization (SCO) is of great importance in the region. The main goal of the organization is to maintain peace, and cooperation in various areas of the economy, politics, culture, education, and tourism development (Danilovich, 2012). One such way to develop tourism in the region and economic development is China's "One Belt, One Road" Initiative. The essence of the project is to create a trade corridor for the direct supply of goods from East to West on preferential terms, to increase investment in the country in export-oriented production (Anderson et al., 2018). Thus, the states on whose territory the Great Silk Road passed: Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, and China, are currently strengthening their cooperation again, including in the field of tourism. An initiative program that promotes the economic benefits of local communities, intercultural exchange, and tourism development - "Tourism development strategy using the corridor approach to the heritage of the Silk Road" joint project of UNWTO (United Nations World Tourism Organization) and UNESCO (United Nations Educational, Scientific and Cultural Organization) (Samarkand Declaration 1994) (General Assembly. Twentieth Session Victoria Falls, 2013).

* Corresponding author

* Corresponding author

Kazakhstan is located at the crossroads of geographical and economic importance; it is the largest country in Central Asia. On the territory of Semirechie and South Kazakhstan, part of the Great Silk Road passes - an ancient transit network and a center of trade and civilization connecting Europe and Asia. Thus, the south of the country, historically rich in recreational resources and monuments, is quite developed in terms of tourism (Mamirkulova et al., 2020; Artemyev and Abdreyeva, 2019; Assylbekova et al., 2022). In addition, with its unique natural resources, Kazakhstan also has a huge tourism potential. The city of Astana, as the capital of the republic, has the potential to develop tourism by organizing meetings, incentives, conferences, and exhibitions (Kenzhebekov et al., 2021; Berdenov et al., 2021).

According to the World Economic Forum, in 2019 Kazakhstan ranked 80th out of 140 countries in the World Tourism Competitiveness Index, an improvement of 1 position compared to 2017 (Vechkinzova and Daribekova, 2021). However, the contribution of tourism to the country's gross domestic product (GDP) remains low: in general, the share of tourism in the GDP structure of Kazakhstan according to the methodology of the World Tourism and Travel Council (WTTC) in 2020 amounted to 1.6%, having decreased by almost two times compared to 2019 (2019 - 3.8%), then in 2021 there is a slight increase - 2.0% (Oxford Economics, national sources and UNWTO, 2022). Thus, the country is dependent mainly on the export of commodities (oil and natural gas). However, the possible fall in world prices for fossil fuels, and the transition to environmentally friendly energy sources, create problems for the country's economy. Then, the Government of Kazakhstan began to seek to diversify the economy (Anderson et al., 2018). Recently, the republic has begun to pay attention to the development of the tourism industry (Baiburiev et al., 2018). Kazakhstan is a full member of the World Tourist Organizations (UNWTO) since 1993 and has a lot to offer travelers, from tours designed to highlight the natural beauty of mountains, from lakes and deserts to more unusual itineraries, including space tourism at the Baikonur Cosmodrome and a visit to a Soviet-era GULAG camp (Main Directorate of Corrective Labor Camps). Attractiveness and the prospect of support at all levels have acquired environmental tourism (Baiburiev et al., 2018; Yessimova et al., 2018; Aktymbayeva et al., 2020).

Kazakhstan has natural and recreational resources, and objects of world cultural significance, but is not able to compete with developed tourist destinations in the world. For the further development of this industry, tourism infrastructure, simplification of visa formalities, as well as the creation and promotion of a national tourism brand are needed (Mussina, 2018; Abubakirova et al., 2016; Aktymbayeva et al., 2020; Suleimenov et al., 2022). Consequently, the country needs to develop new tourist destinations of interest to potential tourists. One of these areas is the Pavlodar region of the republic, which is located in the northeast of the state, and borders on the Russian Federation, the Akmola region (proximity to the capital Astana), and other regions of the country. The Pavlodar region is of interest as an object of economic diversification and development of a new industry, the direction chosen by the country's government, since Pavlodar region is a large industrial region with the country's richest mineral resources, has a strategic and advantageous location of regions, connects with other states and regions of Kazakhstan along the South Siberian and Central Siberian railways, automobile, aviation, pipeline and river modes of transport (Isiksal et al., 2018). The main part of the gross regional product (GRP) of the region falls on the industrial sector. The dominance of industrial production in the GRP structure also determines the resource and raw materials orientation of the region (Isiksal et al., 2018; Azhayevev et al., 2020; Ghemis et al., 2018).

However, the Pavlodar region rightfully has a serious potential for the development of all-season domestic and inbound tourism. This is a huge territory of contrasts, where almost next to large cities there are large spaces of nature untouched by civilization. The uniqueness of the region is because almost all types of tourism can be fully developed here. For example, ecological tourism, balneological, cultural and historical, extreme sports, adventure, family, etc.

Currently, more than a thousand monuments of history and culture are known on the territory of the Pavlodar region. And there are more than 700 archaeological, about 300 monuments of history, architecture, monumental art, and spiritual culture. In addition, the region can offer industrial tourism as an alternative to the usual tour package.

Using industrial facilities, port facilities, and agro-industrial complexes to meet the needs of modern tourists in knowledge through industrial tourism, various types of effects can be obtained: economic, social, environmental, etc. (Chikurova and Oshkordina, 2019; Prada et al., 2017). Thus, the purpose of this study is an economic analysis of the development of tourism in the Pavlodar region. The following indicators will be used: the contribution of tourism to GRP, infrastructure, the labor market of tourism services, and investments in the sector. The scope of the study includes the analysis of statistical data for 2015-2019. This period before the pandemic was chosen as the most indicative in terms of tourism development without the impact of negative factors. Thus, it is possible to trace the gradual natural development of tourism in the region. The recreation infrastructure deserves special attention, as it is the most important condition for the development of tourism. The concept of infrastructure development has received significant attention from tourism researchers (Kanwal et al., 2020; Seidahmetov et al., 2014). Infrastructure development is a leading prerequisite for the progressive development of tourism, supporting society, the economy, and the environment.

Infrastructure development promotes cultural tourism and international sporting events that attract tourism and increase economic benefits (Wang et al., 2020). In Kazakhstan, tourism infrastructure development initiatives are considered as a tourism management strategy. In addition, developed infrastructure will improve the quality of life of the local population (Kanwal et al., 2020), and improve the management of recreational and environmental resources.

MATERIALS AND METHODS

Pavlodar region on the map of Kazakhstan and Central Asia

The Central Asian region, having unique tourism resources, has a huge potential for the development of this sector of the economy. The study of the current state of tourism in Central Asia is becoming increasingly relevant, where tourism resources have every chance of becoming part of the national wealth of these countries.



Figure 1. Pavlodar region on the map of Kazakhstan and Central Asia

(Source: <https://reachbeyond.org/content/news/read/placing-christian-historyhis-storyin-a-central-asian-context>)

Kazakhstan is located in the very center of the Euro-Asian continent (Figure 1). The country ranks 9th in the world in terms of territory and has a land border with a length of 15 thousand km, 8 thousand of which pass along the border with Russia, and 5 thousand km with China. The length of the maritime borders of Kazakhstan is 1.5 thousand km. The total length of the borders is 16.5 thousand km (Khetagurova, 2017). The Pavlodar region has a favorable economic and geographical position. The region is in the northeast of the country on both banks of the Irtysh River. The region borders East Kazakhstan and Karaganda (in the south), Akmola and North Kazakhstan regions (in the west), as well as three regions of the Russian Federation: Omsk (in the north), Novosibirsk regions (in the northeast) and Altai Territory (in the east).

The territory of the region is 124.8 thousand square meters. km. (4.6% of the total area of the republic). The right bank of the Irtysh is occupied by the Baraba lowland and the Kulunda plain. The left bank is occupied by the Irtysh Plain with absolute heights of 100-200 m. The southwestern part is occupied by the small hills of Saryarka and the mountains of Bayanaul, Akbet (1026 m.), Kyzyltau (1055 m.), and Zheltau (959 m.). The Pavlodar region is located in the steppe and semi-desert zones, there are a huge number of lakes in the region - over 1200. About a hundred of them are fresh, the rest are salty. The largest lakes are Silyty-teniz (965 sq. km.), Zhalauly (398 sq. km.), Kyzylkak (180 sq. km.), and Big Azhbulat (110 sq. km.). There are fresh lakes of tectonic origin - Zhasybay, Toraigyr, and Sabandykul.

The region occupies one of the leading places in the mineral resource complex of the Republic of Kazakhstan (Shomanova et al., 2019). The total value of the balance reserves of solid minerals in the Pavlodar Irtysh region is estimated at 460 billion dollars. These are coal, gold, copper, molybdenum, silver, zinc, barite, cobalt, nickel, and other metals, building materials, etc. More than a third of all coal reserves of Kazakhstan are concentrated in the Pavlodar region. Forecast oil resources in the region are estimated at 315 million tons, and gas at 148 billion cubic meters.

The region is also rich in historical heritage. The seven most significant objects of republican, national significance are included in the sacral map of the region: the Konyr-Auliye cave, the Tomb of Zhasybay batyr, the Mausoleum of Mashkhur Zhusup Kopeev, the Akkelin historical and memorial complex: the estate and mausoleum of M. Shormanov - Bayanaul district, the Auliekol archaeological complex, the Isabek mausoleum ishan hazreta - Ekibastuz region, Sultanbet Sultan's estate, which is located within the city of Pavlodar. The Bayanaul resort area is included in the Touristification Map of the TOP-10 priority territories of the Republic with a potential of 450 thousand tourists per year (the current flow is 200 thousand people). Every year, more than 30,000 tourists visit the salt lakes Maraldy and Tuzkala in the Akkuly and Shcherbaktinsky regions (Chub, 2008). The information base of the study included: literary sources, funds, and published materials of republican and regional departments and institutions. Research methods: data collection and analysis. The study used data from official sources: the Department of Statistics of the Pavlodar region, and the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (<https://stat.gov.kz/>).

RESULTS AND DISCUSSION

The tourism industry and tourism services in the Pavlodar region are at the stage of development, since the main contribution to GRP is industry, despite a significant period for the formation of market relations in the region (Isiksal et al., 2018). The functioning of the tourism industry is accompanied by insignificant economic cycles.

Table 1. Nominal dynamics of assessment of the contribution of the tourism industry to GRP of Pavlodar region (P = 430.1 USD (exchange rate as of 06/03/2023) (Data source: www.stat.gov.kz)

Indicator	Year				
	2015	2016	2017	2018	2019
Gross regional product of Pavlodar region, billion dollars	4.0	4.59	5.51	6.38	6.52
Nominal tourism services (full range of services directly and indirectly related to tourism), million dollars	22.31	20.22	23.01	18.36	19.76
A nominal contribution of the tourism industry to GRP, %	0.55	0.44	0.42	0.29	0.30

Its nominal contribution to the development of the region's economy, analyzing the statistical data given in Table 1, Figure 2, for 2015-2019, ranged from 0.55% to 0.3%, respectively, in 2015 \$22.31 million and 2019 - 19.76 million dollars

(2). Compared with more developed cities of Kazakhstan, according to statistics, only in the city of Almaty, the contribution of GRP is 1.5% and varies from year to year around this value.

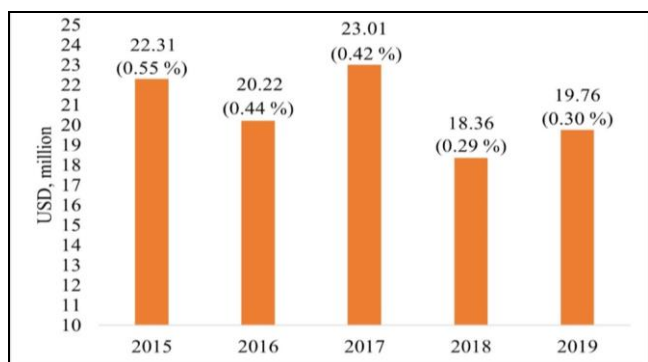


Figure 2. Dynamics of the nominal contribution of the tourism industry to the GRP of the Pavlodar region
(Data source: Compiled by the authors, based on the materials of the Bureau of National Statistics of the Republic of Kazakhstan)

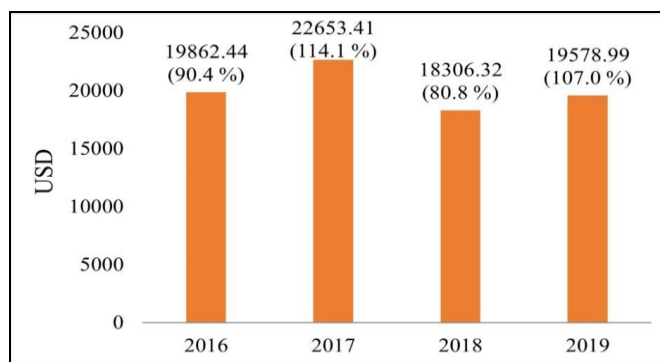


Figure 3. Dynamics of growth rates in the provision of services related to tourism activities

In general, the dynamics of the contribution of the tourist region correlate with the GDP of Kazakhstan. So, since 2015, there has been a gradual decline in the country's GDP and a slight rise by 2019. The largest number of tourist services was offered in 2017. This is indirectly connected with the holding of EXPO-2017 in Kazakhstan - the International Exhibition under the auspices of the International Exhibition Bureau (BIE). EXPO-2017 was attended by 115 states and 22 international organizations. The exhibition was visited by about 4 million people, of which about 0.5 million people came from other countries. Pavlodar region borders on Akmola region, so part of the tourists also visited the Bayanaul National Natural Park and other attractions in the region. Five tourist routes were developed - Bayanaul, pine forest, the mausoleum "Gabdul Wakhit Khazret", excursions around Pavlodar and museums of the city, while active work was carried out to attract Russian tourists to travel to the exhibition through the Pavlodar region.

Since 2018, 1.38 million Russians have visited Kazakhstan, and 1.54 million Kazakhstanis have visited Russia. Some experts associate such large volumes not with classical tourism, but with trips of residents of the border regions. The single economic space of the Customs Union, the existence of the longest land state border between Kazakhstan and Russia, common historical, cultural, and socio-economic development, modern integration processes, and political strategy contribute to the stable development of the tourism sector of the economy (Sansyzybayeva et al., 2021).

Thus, the Pavlodar region has the potential to attract Russian tourists, thanks to a common border, as well as a common history. Researchers estimate that many Russians undertake nostalgic trips, as well as trips to places of memory from the Soviet Union period (Pfoser and Yusupova, 2022). First of all, objects of the natural reserve fund of the region play a key role in the development of tourism. Recreational facilities: Pavlodar region Zhasybay Lake, Sabyndykol, Toraigyr, Birzhankol, stone figures (Kempirtas, Nayzatas, etc.), caves (KonyrAuliye, Auliye, grotto of Dravert), the slopes of Myrzashoky, springs (Auliyebulak, Teleubulak), gorge (Aymanbulak, Stone wonders, Rakhay, Ushsala), Shalday, Beskaragay belt forests, curative mud lake Moydydy, Lake Maraldy, floodplain of the river Yertis.

Specially protected areas: Bayanaul National Park, Kyzyltau nature reserve, state forest nature reserve "Yertis Ormany", Paleontological nature monument "Gusinyy perelet", Natural state reserve "Floodplain of the Irtysh River" (Sansyzybayeva et al., 2021). The Pavlodar region is the industrial center of the Republic, and in recent years, industrialized regions have faced the need to diversify the economy and develop new industries. The advantage of the city of Pavlodar is that there is an opportunity to use the industrial heritage for the development of industrial tourism. Industrial tourism is an effective tool for marketing the territory and a means of diversifying the economy. The potential of industrial regions, due to existing industrial heritage sites, is a solid basis for the development of industrial tourism (Brel et al., 2022).

Unfortunately, being a significant industrial center of Kazakhstan, the Pavlodar region has different problems inherent in industrial cities. It is known that industrial cities have various negative consequences for tourism activity due to the state of the environment. The key environmental problems of the Pavlodar region are air pollution, soil pollution, and environmental problems of the Irtysh River and its floodplain (Azhayev et al., 2020). Thus, when organizing industrial tourism, it is necessary to assess the ecological state of the destination, as well as take all measures for the rational use of resources and recreational load. The functioning of the tourism industry is focused on providing a wide range of services, such as hotel business (accommodation services); recreation, entertainment; sports, etc. Considering directly tourist services, a certain dynamic can be traced. Following Figure 3, the maximum volume of services related to tourism activities and the maximum growth rates were in 2017 and 2019. The growth rates of services in these periods amounted to 114.1% and 107%, respectively. The increase in the growth rate of services, as mentioned above, in 2017 is timed to coincide with the holding of EXPO-2017, and the indicators for 2019 are a gradual increase in the pace, due to the positioning of Kazakhstan as a good tourist destination, and due to the increase in air traffic: in 2019 - from 26 foreign countries on 99 international routes. At the same time, there was an annual increase in the number of international flights.

In 2019, tourism reached its maximum development in the Pavlodar region until the start of the pandemic, primarily due to investments in the industry. According to the forecasts of the Kazakh Tourism National Company, tourism will return to the indicators of 2019 only in 2-4 years (Erkinbayev, 2021). All services related to tourism activities, in the

context of enlarged types, are concentrated in two areas: accommodation services (hotel services) and other recreation services. A study of the dynamics of aggregated types of services related to tourism activities shows that there is a positive trend in accommodation services, while at the same time a negative trend in recreation services.

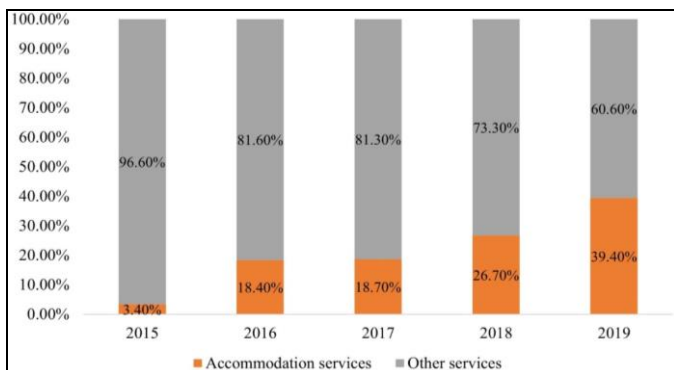


Figure 4. Dynamics of the structure of services related to tourism, in the context of their aggregated types (Data source: Compiled by the authors, based on the materials of the Bureau of National Statistics of the Republic of Kazakhstan)

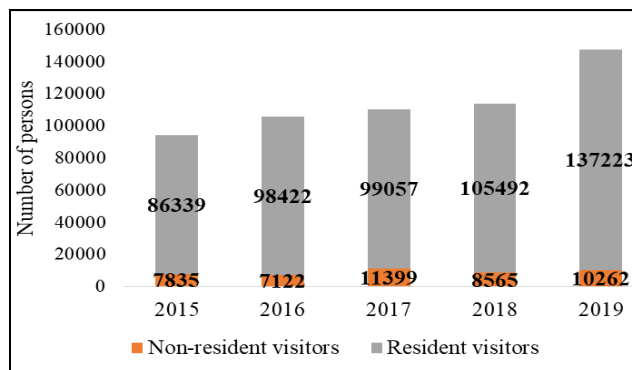


Figure 5. The number of visitors served at accommodation locations (Data source: Compiled by the authors, based on the materials of the Bureau of National Statistics of the Republic of Kazakhstan)

However, from 2015 to 2019, in the structure of services related to tourism activities, by Figure 4, leisure services prevailed. The following are the initial infrastructural organizational and economic foundations for the functioning of the tourism industry:

- organizations providing a range of services related to tourism activities;
- production facilities of the hotel business;
- availability of fixed capital (fixed assets).

The dynamics of organizations providing services related to tourism activities are cyclical. According to research (Titkov et al., 2021), the total number of organizations providing services related to tourism activities from 2015 to 2019 decreased from 193 units to 137 units. The main volume of services rendered falls on small enterprises.

Accommodation companies play an important role, the number of beds in the hotel industry is the most important indicator used to assess the potential of a tourist center or area to receive tourists. According to the results of January-December 2019, the number of accommodation places in the Pavlodar region engaged in accommodating visitors amounted to 112 units, in which there are 3058 rooms, while the one-time capacity is 8374 beds. They served 163,450 people and rendered services in the amount of 3,367.5 million tenge. There are 112 accommodation facilities in the Pavlodar region. Of these, two hotels "Irtysh" and "Dvin" have 4 stars, 4 hotels "Saryarka", "Pavlodar", "Sever" and "Altyn Adam" have 3 stars, the remaining 79 hotels without categories, and 43 other accommodation facilities. Of these, 15 hotels with a restaurant, 48 hotels without a restaurant, 26 holiday homes and one-story bungalows, rural houses (chalets), cottages, small houses, and apartments - 23. The total number of rooms is 3058. Of these: apartments - 5 units; luxury - 378 units; standard rooms - 1,907 units; without amenities - 644 units. For the period of 2019, 163,450 visitors were served in accommodation facilities, and the volume of services rendered amounted to 3,367,502.4 thousand tenge.

Below is a table with data on the number of accommodation places and the number of rooms in accommodation places in the Pavlodar region and the dynamics of changes for 2015-2019. According to official statistics, the number of placements in the Pavlodar region amounted to 97 units, which, compared to 2016, declined and decreased by 4 units.

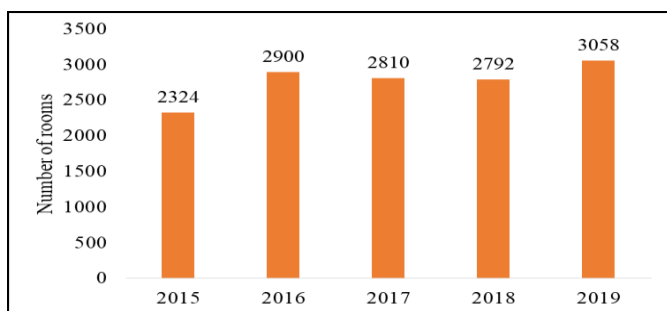


Figure 6. Dynamics of production capacities of tourism activities in Pavlodar region (number of accommodation rooms) (Data source: Compiled by the authors, based on the materials of the Bureau of National Statistics of the Republic of Kazakhstan)

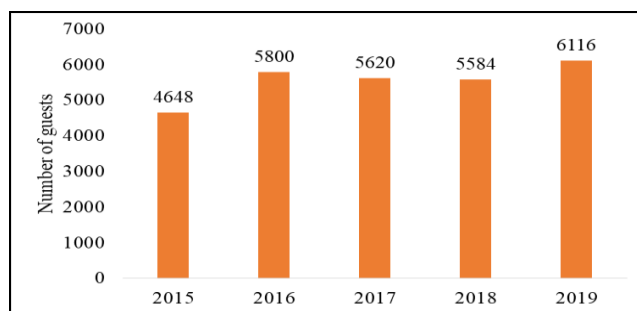


Figure 7. Dynamics of production capacities of tourism activities for one-time accommodation of guests (number of people) (Data source: Compiled by the authors, based on the materials of the Bureau of National Statistics of the Republic of Kazakhstan)

According to the Committee of Statistics of the Republic of Kazakhstan, the number of visitors to accommodation places in 2015-2019 is steadily growing. In the above graph (Figure 5), you can see the growth of residents, which amounted to 6.5% in 2019, which increased by 18% compared to 2015. The availability of accommodations around the world plays a key role in choosing a travel destination. Their sufficiency and level of service significantly affect the volume of tourist flow both within the country and from outside. The following should be considered as the leading production facilities in the tourism sector of the Pavlodar region: the number of accommodation rooms in hotel complexes and the

potential number of guests for one-time accommodation. The dynamics of the number of accommodation rooms and the number of guests for one-time accommodation are shown in Figures 6 and 7.

The maximum production capacity of tourist activities for one-time accommodation of guests falls on the city of Pavlodar (3058 rooms) and Bayanaul district (1482 rooms). Since many travel agencies work with holiday homes in the Bayanaul zone, there has been an increase in accommodation services.

The main tourist attraction of the Pavlodar region is the Bayanaul resort area. Bayanaul is considered the highlight of the Pavlodar region and is the best choice for those who choose tourist trips that take a couple of days. The recreational opportunities of the Bayanaul region are determined by a peculiar combination of natural resources, a wide range of functionality, good transport accessibility of tourism, and recreation facilities for residents of nearby cities and regions. The landscapes of Bayanaul are distinguished by their originality, beauty, and favorable conditions for tourism and recreation, especially in summer. The area is known for ethnographic and historical objects: ancient graves and cemeteries, and traces of ancient settlements. To assess the state of accommodation places and find out the reasons for the low level of tourism, consider the degree of depreciation of fixed assets. In the Pavlodar region, there are growing trends in the depreciation of fixed assets. As of 2019, the degree of depreciation of fixed assets in the tourism industry was 46.2%.

The level of efficiency of fixed assets in the tourism industry can be characterized by the return on assets. The dynamics of capital productivity are shown in Figure 8. The dynamics of capital productivity show that from 2015 to 2019 this indicative indicator is below “1”, as a result, this situation does not correspond to a progressive level (Figure 9).



Figure 8. Dynamics of the degree of depreciation of fixed assets in the tourism industry

(Data source: Compiled by the authors, based on the materials of the Bureau of National Statistics of the Republic of Kazakhstan)

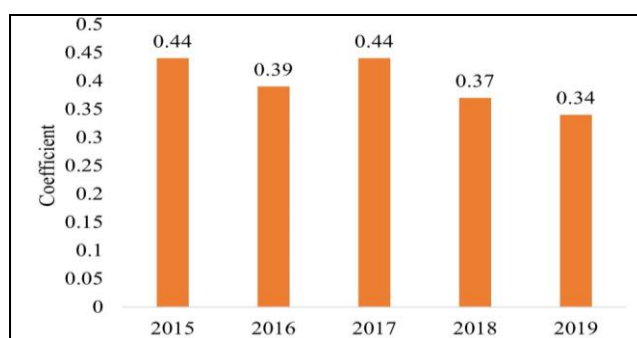


Figure 9. Dynamics of return on assets in the tourism industry

In the complex, the studies show that the tourism industry has a low organizational and economic level of development. Due to the depreciation of the fund, there is also a decline in the entry of tourists to the Pavlodar region. In general, at the present stage, the contribution of the tourism industry to the development of the region, both from a nominal and from a real point of view, remains at a very low level. One of the resulting foundations of the economic results of the functioning of the tourism industry in the Pavlodar region are:

- employment of the population in the field of tourism;
- the average salary of workers in the tourism sector;
- labor productivity in the tourism sector.

Employment in the tourism sector is cyclical. The dynamics of employment in the tourism sector is shown in Figure 10.

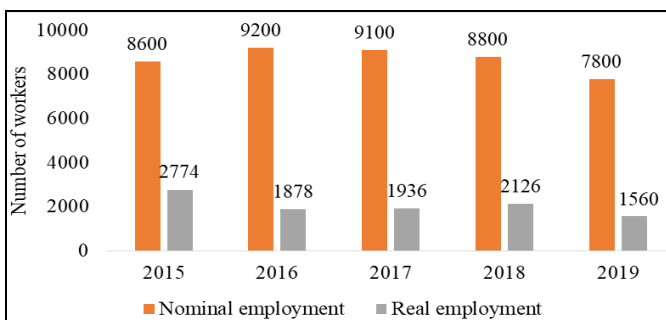


Figure 10. Dynamics of employment in the tourism industry

(Data source: Compiled by the authors, based on the materials of the Bureau of National Statistics of the Republic of Kazakhstan)

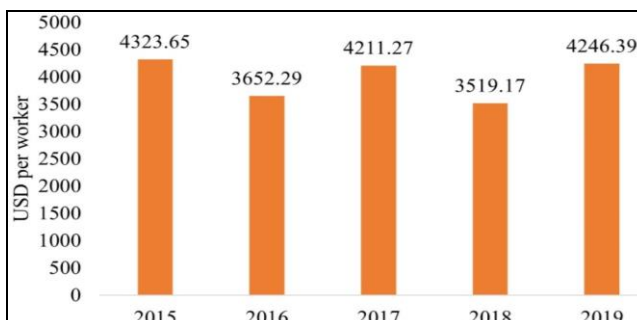


Figure 11. Dynamics of labor productivity in the field of services related to tourism activities

The maximum peak of employment in the tourism sector was in 2016–2017. During these periods, 9200 and 9100 people were employed in the tourism sector, respectively. Comparing the dynamics of employment and the nominal volumes of production of services associated with tourism activities, it is possible to determine labor productivity, the dynamics of which are shown in Figure 11. With a certain degree of probability, there is an intensification of labor processes. Nevertheless, the performance value remains at a very low level. In addition to the general economic trends in the functioning of the tourism industry, we conducted research and analysis of the general organizational and economic foundations for the functioning of the tourism industry in the Pavlodar region.

The investment climate of the tourism industry is cyclically moderate, while the main investments within the strategic period were focused on the development and increase in fixed capital (fixed assets) of tourism organizations. Within the strategic period from 2015 to 2019, investments took place in 2016, 2018, and 2019. The bulk of the investment came in 2019. The dynamics of investments in fixed assets of tourism organizations, in the tourism industry, are presented in Figure 12.

Research and economic calculations show that the main investment in fixed capital of the tourism industry was in 2019 and amounted to 3.3 billion tenge. Priority investment areas on a technological basis are reconstruction, modernization, technical re-equipment of fixed assets, and expansion of production capacities of tourist organizations.

CONCLUSION

The study and analysis of the general economic trends in the functioning of the tourism industry in the Pavlodar region show that tourism activities and the industry as a whole are at the initial stage of formation and development, despite a rather long period of evolution of the market relations in the Republic of Kazakhstan. The tourism industry functions cyclically, which indicates systemic problems of its development, and intensification. The analysis of the tourism industry of the region allows us to conclude that the tourism industry enterprises are not ready to work in the new market conditions. At the moment, many unresolved problems hinder the development of the tourism industry in the Pavlodar region. First of all, this is weak management, both in the tourism sector itself and in related industries, and the depreciation of existing tourism facilities.

However, there is also potential for tourism development:

- stable political situation in the Republic of Kazakhstan and Pavlodar region;
- implementation of measures to support the development of the tourism industry at the state and regional levels;
- availability of tourist recreational resources (natural resources, unique cultural and historical resources, medical and health-improving resources).

In the complex, the studies show that the tourism industry has a low organizational and economic level of development. The production capacities of tourism activities are concentrated only in the cities of the Pavlodar region, as well as in the Bayanaul district, in visitor centers. In the Pavlodar region, there are growing trends in the depreciation of the material base of accommodation facilities, undeveloped infrastructure for the development of inbound tourism, and a low rate of return on assets; low level of service in recreation areas; high cost and low availability of external capital for domestic tourists.

Also, there is a decrease in employment in the tourism industry, low wages, and labor productivity. In the Pavlodar region, small and medium-sized travel companies provide a relatively higher rate of growth in the number of employees. However, one should also point out the ambiguous impact of the development of travel companies on employment processes, since, on the one hand, travel companies, expanding, attracting more and more labor, but at the same time, fierce competition both within the tourism system and between travel companies and large business leads to the ruin of some small enterprises and the loss of jobs. Thus, it is necessary to create such conditions for the functioning of the tourism system under which the growth of employment would be sustainable, for example, by promoting the development of the large tourist organizations in the Pavlodar region.

A comprehensive qualitative and economic analysis of the tourism industry in the Pavlodar region showed that the region has strengths and opportunities for the development of tourism activities with its focus on comprehensive assistance in intensifying economic growth at the mesolevel.

As a vision for the tourism industry, the following aspects should be considered:

- the possibility of creating a regional tourism product: ecological, industrial tourism;
- creation of new jobs, assistance to the development of small and medium-sized businesses;
- opportunities for the development of the infrastructure of the tourism industry;
- a wide range of implementation of entrepreneurial, business projects in the tourism industry;
- Increasing the production capacity of the tourism industry.

There are several basic economic and social prerequisites for considering tourism as one of the national priorities for economic development in the Pavlodar region:

1) increase in incomes of the population, revenues to the state budget, improvement of social well-being, the possibility of creating new jobs, including employing the population of rural and remote areas, young people without interrupting the traditional way of life;

2) promoting the development of a culture of entrepreneurial activity among the general population by creating opportunities for families, and small and medium-sized businesses, including through the implementation of anchor tourism projects in the most promising areas of the Pavlodar region;

3) contribution to the development of regions and rural areas, including the development of engineering, transport, and tourism infrastructure in remote areas of the Pavlodar region;

4) promoting cooperation and creating opportunities in other sectors of the economy, including agriculture, transport, trade, engineering, light and food industries, creative industry and non-manufacturing sector;

5) promotion of the creation of positive and productive intercultural relations that contribute to the promotion of

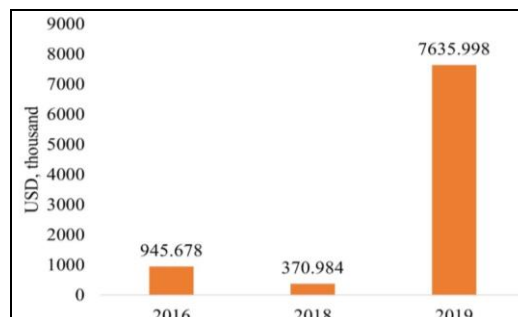


Figure 12. Dynamics of investments in fixed capital of the tourism industry (Data source: Compiled by the authors, based on the materials of the Bureau of National Statistics of the Republic of Kazakhstan)

national and interstate mutual understanding, including the promotion of socio-cultural, ethnographic, medical, sports, cultural, educational, scientific, youth, and other types of tourism, contributing to the promotion of the values of the national idea "Mangilik El";

6) increasing the awareness of the region in the regional, republican, and world markets through active country marketing and brand promotion of the Pavlodar region;

To achieve the national goals of diversifying the economy and improving the welfare and quality of life of the population of the republic, the tourism industry should develop a competitive tourism business, which is based on qualified workers offering attractive tourism products for both domestic and foreign tourists. Development in this direction should contribute to a powerful and stable growth in income from tourism activities for all stakeholders - the state, business, and workers.

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ECONOMIC VULNERABILITY OF SPECIALIZED TOURISM CITY: A CASE STUDY IN SOUTHWEST OF CHINA

Tianyi LI 

University of Debrecen, Institution of Earth Science, Department of Social Geography
and Regional Development Planning, Debrecen, Hungary, e-mail: tianyi0714@gmail.com

Zoltán BUJDOSÓ* 

Hungarian University of Agriculture and Life Sciences, Department
of Sustainable Tourism, Gyöngyös, Hungary, e-mail: Bujdoso.Zoltan@uni-mate.hu

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Abstract: Global epidemics, wars, and lack of resources pose threats to society and the tertiary industry. After the world went through a period of de-globalization for a short period of time since the year 2019, the Global tourism industry suffers a fatal blow. The main objective of this paper is to evaluate the economic vulnerability of a specialized tourism city Dali (a typical tourism city in China) and propose risk avoidance strategies for its sustainable tourism development. This paper establishes a vulnerability assessment model from the aspects of sensitivity and responding capacity by using the set pair analysis (SPA) model to evaluate the economic vulnerability of Dali. The obstacle evaluation model and the entropy value method were used to analyze its obstacle factors. This research employs the National Economic and Social Development Statistics as its primary data source, augmented by the Statistical Yearbook and Yearbooks from different years. The results show that the change of the vulnerability of Dali's tourism economic system is relatively stable, but in general the vulnerability is at a high level in most years. According to the analysis of obstacle factors, the ratio of tourist arrivals to local population, Elasticity coefficient of tourism to industrial growth and National economy (GDP) output value are the main obstacles to reduce the vulnerability of Dali's tourism economy.

Key words: Tourism Industry Vulnerability, Tourism Specialization, Tourism Economic system, Sustainable Tourism Development, Set Pair Analysis

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INTRODUCTION

The global economy faces mounting challenges arising from epidemics, conflicts, and the unequal allocation of resources. Simultaneously, human beings and the natural environment share an interconnected existence, emphasizing the imperative of safeguarding and promoting sustainable development of the ecological milieu (Corrigan, 2014; Torvik, 2012; Pitlik et al., 2010). In light of these circumstances, it becomes crucial to explore avenues for sustainable development within the realm of global governance, system revitalization, comprehensive governance, eco-friendly progress, and inclusive participation. Since 2019, the advent of the COVID-19 pandemic has precipitated a brief phase of deglobalization and inflicted severe repercussions on the global tourism industry, thereby refocusing attention on the vulnerability of tourism from an economic perspective (Hojcska et al., 2022, Hojcska-Szabó, 2022).

Vulnerability is one of the important directions of current global change and sustainability scientific research. In recent years, relevant research results have shown a rapid growth trend. With the continuous development of vulnerability theory, vulnerability research has gradually expanded to the field of economics. In 1999, the United Nations Development Program (UNDP) formally proposed the concept of "economic vulnerability" and used it as a measure of the sustainable development of national and regional economies important indicators (Suhrke, 1999). Vulnerability research emphasizes how to achieve sustainable economic development by reducing system vulnerability, and has become one of the important analytical paradigms in the field of urban and regional economic research (Burton et al., 2002).

Tourism industry, as a typical service industry with strong sensitivity, is easily influenced by external environment and own factors (Huang et al., 2021, Kostilnikova et al., 2022). At the same time, it is difficult for cities developed with tourism resources to achieve industrial transformation and upgrading (Guillaumont, 2004). Under the combined influence of sensitivity factors and coping ability factors, the urban tourism economic system finally shows a certain vulnerability. The vulnerability of the tourism economic system is opposed to the sustainable development of tourism, and the degree of vulnerability determines whether the tourism city can achieve sustainable development (Student et al., 2020; Calgaro et al., 2014). Given the rapid growth of tourism, it is crucial to prioritize the vulnerability of the tourism economic system. By accurately predicting vulnerabilities, timely and effective measures can be implemented to mitigate risks and promote the sustainable development of the tourism economic system. Additionally, the resilience of tourism is shaped by the competitive advantage and specialization exhibited by each country (Koufodontis and Gaki, 2022).

* Corresponding author

In academia, various methods like set pair analysis, principal component analysis, and TOPSIS are commonly used to assess the vulnerability of tourism economic systems (Li, 2013). For example, Li et al. (2021) applying the Delphi-AHP-TOPSIS algorithm to assess the environmental suitability of 684 cities in 2019. But more literature examines the consequences of tourism vulnerability, such as Qin and Chen (2022) conducted a comprehensive study on major tourist cities in China, developing a vulnerability index based on sensitivity and responsiveness. Their research revealed that cities heavily dependent on tourism, with limited economic diversification and weak institutional support, were more susceptible to economic shocks during the pandemic. They emphasized the need to address mechanisms such as reliance on external demand, limited capacity for innovation and adaptation, and inadequate risk management strategies to improve the resilience of tourist cities' economic systems in future crises. Huang et al. (2021) expanded on the analysis of tourism economic vulnerability (TEV) in major Chinese tourist cities, observing an increasing trend in the TEV index from 2010 to 2019, with coastal cities showing higher vulnerability than inland cities. They highlighted the importance of government measures in reducing TEV and promoting sustainable development in regional tourism. Understanding the spatiotemporal evolution of vulnerability allows policymakers to tailor interventions, mitigating adverse impacts from crises like the COVID-19 pandemic. Shifting the focus to Portugal, Lopes and Sargento (2021) explored the vulnerability of the Portuguese tourism and hospitality industry. The research emphasized the necessity of targeted support measures to address vulnerabilities specific to the Portuguese tourism and hospitality industry, ensuring a more inclusive and resilient recovery.

Existing literature primarily focuses on examining the aftermath of tourism economic vulnerability following emergencies. Nonetheless, the tourism industry is a multifaceted system influenced by numerous factors. This study aims to integrate both qualitative and quantitative elements into the decision-making process using mathematical methods. Moreover, it seeks to address and analyze the effects brought about by uncertain elements such as randomness, ambiguity, and incompleteness. By exploring uncertain systems, this research endeavors to unveil implicit knowledge and uncover underlying laws.

CONCEPT AND CHARACTERISTICS OF ECONOMIC VULNERABILITY OF TOURIST CITY

1. Concept of Economic Vulnerability

The study of vulnerability began in the disaster research in 1981. The scholar Timmerman first proposed the concept of vulnerability, which refers to the degree of damage suffered when adverse events occur (Timmerman, 1981). In 1990, at the UNCTAD conference held in Malta, the term "economic vulnerability" was first proposed; in 1992, Briguglio L. introduced vulnerability to the field of economic research and established the economic vulnerability index (Briguglio, 1992). In 1999, UNDP gave a formal definition of the term "economic vulnerability", arguing that economic vulnerability refers to the ability to deal with the damage caused by emergencies in the process of economic development. In 1999, UNDP gave a formal definition of the term "economic vulnerability", arguing that economic vulnerability refers to the ability to deal with the damage caused by emergencies in the process of economic development (Guillaumont, 2010). This paper argues that the economic vulnerability of tourist cities refers to an inherent property that the economic system of tourist cities is restricted by its own characteristics, sensitive to various disturbances inside and outside the system, and lack of coping ability, which makes the system structure and function easily damaged (Gesthuizen and Scheepers, 2010, Kozma, 2010). This property only manifests when disturbed.

2. Characteristics of Economic Vulnerability

The formation of the vulnerability of the tourism economic system is affected by many factors, which can be roughly divided into two aspects: external factors and internal factors of the system (Xie, 2008).

1) The external factors: The complex performance of the external environment of the tourist destination disturbs the tourism economic system. Xie Chaowu calls the external disturbance factors as emergencies outside the tourism industry, and divides them into political crises, social and cultural crises, and economic crises according to the nature of each event. There are four categories of crises and security crises, as shown in Figure 1.

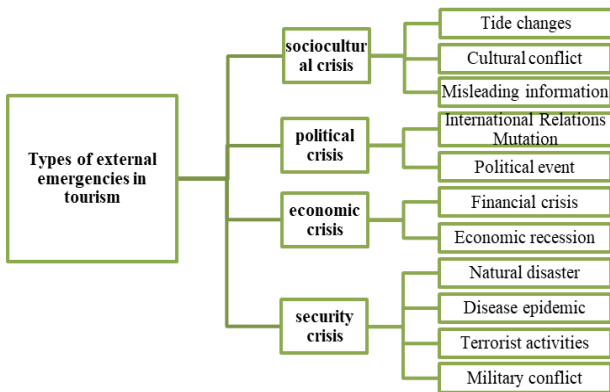


Figure 1. Types of external emergencies in tourism Types of external emergencies in tourism (source: Own compilation)

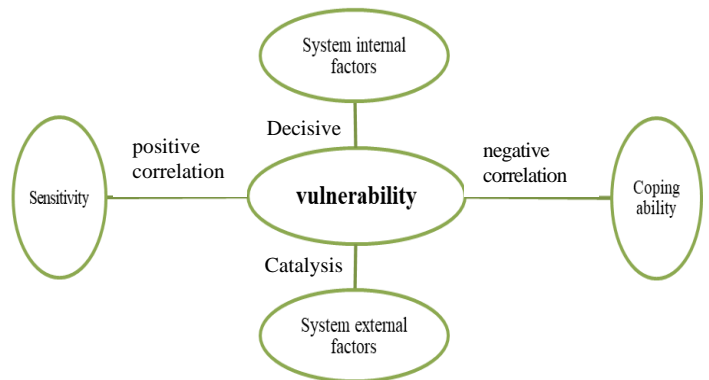


Figure 2. The formation mechanism of the vulnerability of the tourism economic system (Source: Author Modified from different sources)

2) The internal factors: The vulnerability of the tourism economic system is influenced by internal factors, specifically sensitivity and coping capacity. High sensitivity combined with low coping capacity increases the system's vulnerability. Sensitivity refers to the impact on the economic system of a tourist city during internal disturbances and

external shocks. Coping capacity, on the other hand, refers to the system's ability to respond to and recover from adverse impacts caused by various disturbances. This study considers both internal and external coping capabilities, using indicators that cover these factors. In summary, the vulnerability of the tourism economic system is determined by the balance between sensitivity and coping ability. When sensitivity outweighs coping capacity, the system becomes more vulnerable. Figure 2 illustrates how vulnerability increases with higher sensitivity.

RESEARCH METHODS AND MODEL BUILDING

1. Construction of evaluation index system

We finally selected indicators from two aspects: sensitivity and coping ability. In terms of sensitivity indicators, we mainly select five indicators directly related to the tourism economic system; in terms of coping ability indicators, we mainly focus on external economic and social factors. The indicators are selected from two aspects: internal tourism attraction factors. The positive and negative values of the indicator represent the direction of impact on vulnerability, the positive value represents a positive correlation between the indicator and vulnerability, and the negative value represents a negative correlation between the indicator and vulnerability.

Sensitivity index (Table 1) under the condition of certain coping ability, sensitivity and vulnerability are positively correlated. That is, the higher the sensitivity, the higher the vulnerability, and vice versa. Because the economic development of specialized tourism cities is highly dependent on tourism, tourism is the main influencing factor of the economic sensitivity of specialized tourism cities. Therefore, this paper focuses on the relevant indicators reflecting the level of dependence of regional economy on tourism to characterize the sensitivity of economy, which can be divided into two categories: one is the indicators directly reflecting the degree of dependence of regional economic development on tourism, such as S₁, S₄, S₅ and S₈; The other is an indicator that indirectly reflects the dependence of regional economic development on tourism through comparison with other industrial development, such as S₂, S₃, S₆ and S₇.

Among them, S₁ reflects the dependence of the economy on tourism, S₄ reflects the contribution of tourism foreign exchange income to exports, and S₈ reflects regional tourism, The level of industry development can be calculated by directly querying relevant data; S₂ reflects the unbalanced degree of industrial development and S₃ reflects the concentration degree of industrial development structure. S₅ reflects the response of tourism development to economic growth, S₆ reflects the response of tourism to industrial growth, and S₇ reflects the response of tourism to agricultural growth. The calculation method is as follows (Dritsakis, 2004; Sofield, 2003):

$$S_5 = \frac{\text{Growth rate of tourism income}}{\text{Growth rate of GDP}} \quad (1)$$

$$S_6 = \frac{\text{Growth rate of tourism income}}{\text{Growth rate of secondary industry}} \quad (2)$$

$$S_7 = \frac{\text{Growth rate of tourism income}}{\text{Growth rate of primary industry}} \quad (3)$$

$$H = \frac{1}{\sum_{i=1}^n X_i} \quad (4)$$

Coping capability index (Table 1): There are three main considerations in the selection of coping capacity indicators: one is an indicator reflecting the overall economic strength, R₁ reflects the economic aggregate, and R₂ reflects the economic growth capacity; R₆ reflects the contribution of the industrial structure to economic development, which reflects; the economic development capacity. Since investment, consumption and net export are the three major factors driving economic growth, they are represented by R₃, R₄ and R₅ respectively; the third is an indicator reflecting the resilience of the tourism industry. R₇ reflects the growth capacity of tourism economy, and R₈ reflects the attractiveness of tourism.

Among them, R₁, R₂, R₃, R₄, R₅, R₇, and R₈ can be directly queried. The calculation method of the R₆ industrial structure diversification index is as follows (Herfindahl and Hirschman, 1950): (The diversification index formula, also known as the Herfindahl-Hirschman Index (HHI), was developed by economists Orris C. Herfindahl and Albert O. Hirschman independently in the 1950s). In the industrial structure diversification index formula, X_i is the proportion of the added value of the i_{th} industry to GDP, and i is 1, 2, and 3 respectively)

Table 1. Vulnerability Evaluation Index of Tourism Economic System (Source: Author Modified from different sources)

primary indicator	code	Secondary indicators	properties
Sensitivity index	S ₁	Tourism revenue as a share of GDP (%)	+
	S ₂	Industrial Structure Gini Coefficient	+
	S ₃	The first degree of tourism industry	+
	S ₄	Proportion of tourism foreign exchange earnings in exports	+
	S ₅	Elasticity coefficient of tourism to GDP growth	+
	S ₆	Elasticity coefficient of tourism to industrial growth	+
	S ₇	Elasticity coefficient of tourism to agricultural growth	+
	S ₈	The ratio of tourist arrivals to local population	+
Coping capability index	R ₁	National economy (GDP) output value -	-
	R ₂	National economy (GDP) growth rate (%)	-
	R ₃	Fixed asset investment growth rate	-
	R ₄	Urban and Rural Consumption Growth Rate	-
	R ₅	export growth rate (%) -	-
	R ₆	Growth rate of total tourism revenue (%)	-
	R ₇	Industrial Structure Diversification Index	-
	R ₈	Tourism revenue growth rate	-

“+” indicates a positive correlation, “-” indicates a negative correlation

2. Determination and calculation of the weights of the vulnerability index

Using the entropy method to calculate the weight of the vulnerability index of the tourism economic system in Dali Prefecture, in this paper, the entropy value method commonly used in the objective assignment method is selected to calculate the weight. the calculation results are shown in Table 2. Calculate the contribution of the j_{th} index of the i_{th} year or the i_{th} evaluation object, and the calculation formula is (Chen et al., 2009):

$$P = \frac{x_{ij}}{\sum_{i=1}^m x_{ij}} \tag{5}$$

Calculate the information entropy of the j_{th} index of the i_{th} year or the i_{th} evaluation object, and the calculation formula is (Chen et al., 2009):

$$e_j = \frac{1}{\ln n} \sum_{i=1}^n p_{ij} \ln p_{ij} \tag{6}$$

In the formula, n represents the number of years or the number of evaluation objects. Calculate the effect value of the j_{th} index of the i_{th} year or the i_{th} evaluation object, and the calculation formula is (Chen et al., 2009):

$$d_j = 1 - e_j \tag{7}$$

Calculate the weight value of the j_{th} index of the i_{th} year or the i_{th} evaluation object, and the calculation formula is (Chen et al., 2009):

$$w_j = \frac{d_j}{\sum_{i=1}^n d_j} \tag{8}$$

3. Construction of Vulnerability Assessment Model

The tourist city economic system is an open and complex system, and there are many deterministic and uncertain factors. Therefore, this paper chooses the set-pair analysis method, which focuses on solving the problems of certainty and uncertainty in the system, to evaluate the degree of vulnerability of the tourist city's economic system. Set Pair Analysis (SPA) is a method for quantitative analysis of similarities, differences and inversions for deterministic and uncertain problems, which can effectively solve the problems of multi-objective decision-making and multi-attribute evaluation (Li, 2013a; Su and Zhang, 2010). The core idea of set pair analysis is to regard certainty and uncertainty factors as a system, and regard set A and set B that have a certain connection as a set pair H. Assuming that according to the needs of the problem W, we analyze the characteristics of the set pair H, and obtain a total of N characteristics, of which S characteristics are shared by set A and set B, P characteristics are set A and set B are opposed, and in the rest On the F =N -S -P features of , the set A and the set B are neither opposite, nor one (Zhao, 2000). Then the connection degree μ of set A and set B under specific problem W can be expressed as. Determine the optimal and worst scheme, and obtain the optimal value and the worst value vector (Su and Zhang , 2010):

$$D_i^+ = \sqrt{\sum_{j=0}^n (Z_{ij} - Z_j^+)^2 \alpha} = b \tag{9}$$

$$D_i^- = \sqrt{\sum_{j=0}^n (Z_{ij} - Z_j^-)^2 \alpha} = b \tag{10}$$

Calculate the overall evaluation value (Su and Zhang ,2010):

The comprehensive evaluation value Ci is between 0-1. A higher Ci value indicates a more fragile system, and vice versa (Xiang et al., 2022; Su et al., 2020; Li, 2013b).

$$C_i = \frac{D_i^-}{D_i^+ + D_i^-} \tag{11}$$

4. Construction of Obstacle Assessment Model

The main function of the obstacle degree evaluation model is to calculate the degree of obstacles of each index to reduce the vulnerability of the tourism economic system, so as to determine the main factors affecting the vulnerability (Cutter, 1996; Watson et al., 1998; Briguglio, 1992). The larger the obstacle degree value, the greater the hindering effect of this index on reducing the vulnerability of the tourism economic system; the smaller the obstacle degree value, the less the hindering effect of this index on reducing the vulnerability of the tourism economic system. In this paper, the calculation formula of the obstacle degree evaluation model is given as (Su and Zhang , 2010):

$$Q_i = \frac{w_i \times F_i}{\sum_{i=1}^{16} w_i \times F_i} * 100\% \tag{12}$$

In the formula, Q_i is the fragility obstacle degree of the economic system; F_i is the index deviation degree, $F_i = 1 - x_i^*$ (x_i^* is the standardized value of the i_{th} index) (Zhang et al., 2021; Zhao et al., 2022; Chen et al., 2022).

RESEARCH AREA

Dali Prefecture is a famous tourist city in the southwestern border of China. It is one of the cities with an early start of tourism in Yunnan Province and even the whole country. Its rich tourism resources have enabled the rapid development of tourism in Dali Prefecture. Dali, situated in southwestern Yunnan Province, China, boasts a captivating blend of natural and cultural features. Geographically, it lies at approximately 25.6°N, 100.2°E, encompassing an area of 14,500 square kilometers (Figure 3). Dali Ancient City, enclosed by well-preserved Ming Dynasty city walls, retains its traditional architectural style and offers a glimpse into the region's historical heritage. To the east, Erhai Lake, covering 250 square kilometers, showcases scenic beauty with its clear waters mirroring the surrounding mountains. The Cangshan Mountain Range, with peaks exceeding 4,000 meters, serves as a picturesque backdrop to Dali and provides opportunities for hiking

and exploration. Moving south from Dali Ancient City, Xiaguan serves as the modern district and serves as the economic and transportation hub of the region. Noteworthy attractions in the vicinity include Xizhou and Zhoucheng villages, renowned for their Bai ethnic minority culture, traditional architecture, and tie-dye techniques.

Dali experiences a mild climate, characterized by warm summers (averaging 25-28 degrees Celsius) and cool winters (8-12 degrees Celsius). Spring and autumn offer pleasant temperatures and vibrant landscapes.

Dali's geographical composition, encompassing the ancient city, Erhai Lake, the Cangshan Mountains, and surrounding villages, showcases a captivating interplay of natural beauty and cultural heritage, making it a remarkable destination for exploration and appreciation of southwestern China's allure.

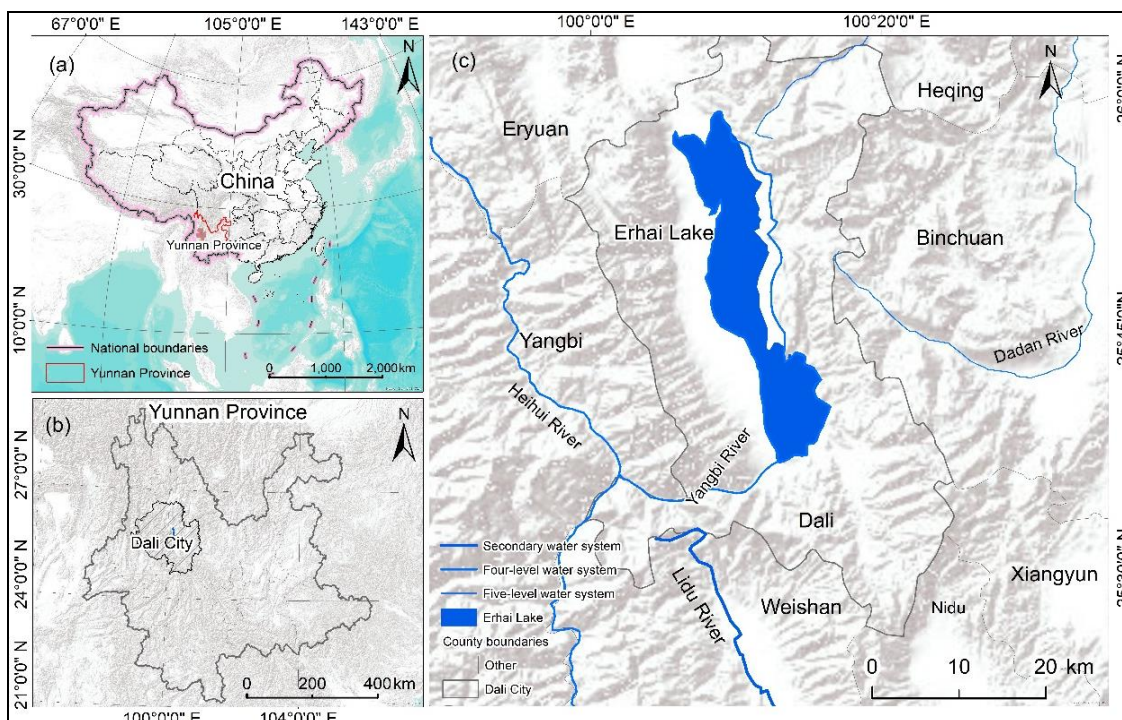


Figure 3. The location of the research area (Source: Own compilation)

In 2016, the tourism revenue of Dali Prefecture exceeded 5 billion yuan (1CNY= 0,12 EUR) for the first time, reaching 534.6 billion CNY, accounting for 54.9% of the GDP. In 2019, tourism revenue was 941.9 billion CNY, accounting for 67.68% of the GDP. It can be seen that tourism has become the pillar industry of Dali Prefecture. Since 2015, the local economy has been highly dependent on the development of the tourism industry. In 2020 and 2021, the epidemic will have a huge impact on the local tourism industry, and the local economy from tourism industry has been hit hard.

Table 3. The economy's dependence on tourism (Source: Data from Dali year books)

particular year	2015	2016	2017	2018	2019	2020	2021
Total tourism revenue (billion CNY)	388.4	534.6	647.8	795	941.9	604.6	539.5
GDP (billion CNY)	910.1	1026.7	1127.6	1254.8	1391.7	1484	1633
Tourism revenue as a share of GDP (%)	42.68%	52.07%	57.45%	63.36%	67.68%	40.74%	33.04%

Table 4. The evaluation results of the vulnerability of tourism economy in Dali (Source: Own compilation)

Particular year	Sensitivity	Coping ability	Vulnerability	Degree of vulnerability
2004	0.271748	0.46866	0.3670	moderately
2005	0.240159	0.503247	0.3231	low
2006	0.244324	0.437946	0.3581	moderately
2007	0.261539	0.521633	0.3339	moderately
2008	0.24231	0.445938	0.3521	moderately
2009	0.370759	0.578751	0.3905	moderately
2010	0.37002	0.685562	0.3505	moderately
2011	0.337589	0.645243	0.3435	moderately
2012	0.478494	0.655694	0.4219	moderately
2013	0.472507	0.657774	0.4180	moderately
2014	0.596404	0.563393	0.5142	higher
2015	0.53316	0.446586	0.5442	higher
2016	0.838263	0.666352	0.5571	highly
2017	0.649494	0.52269	0.5541	highly
2018	0.696765	0.546926	0.5602	highly
2019	0.917439	0.464007	0.6641	highly

VULNERABILITY EVALUATION RESULTS AND ANALYSIS

1. Vulnerability Analysis

Evaluation results: The entropy method was used to calculate the weight of the vulnerability index of the tourism economic system in Dali Prefecture from 2004 to 2019. According to the SPA model of formulas (1) - (5), the economic vulnerability, sensitivity and coping capacity of tourism cities are calculated Index (Table 4 and Figure 4). In order to reveal the economic vulnerability among tourist city, the vulnerability mean $M=0.4407$ and standard deviation $Std=0.1074$ as the evaluation basis, the economic vulnerability rm is divided into four categories (Table 5), In-depth analysis from two aspects of economic sensitivity and coping capacity. Economic system is divided into six levels: low vulnerability, moderate vulnerability, high vulnerability and high vulnerability. The results are shown in Table 5.

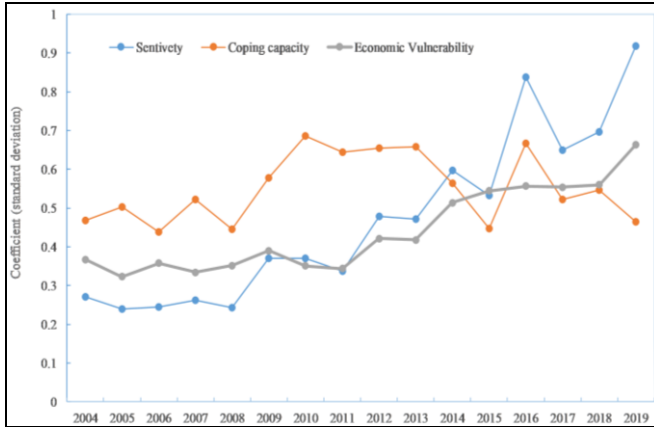


Figure 4. Line chart of tourism economic sensitivity, coping capacity, and vulnerability changes

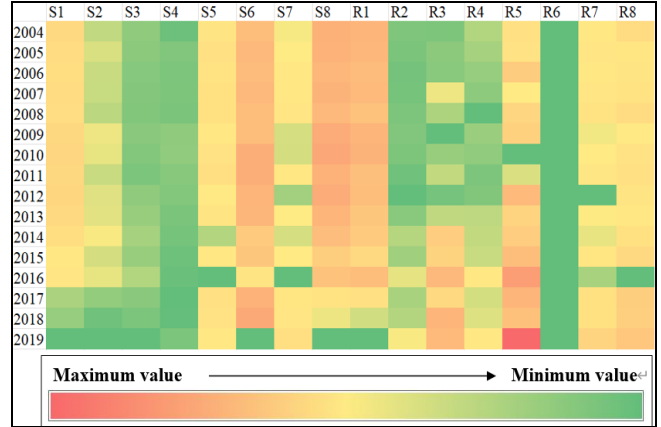


Figure 5. Visualization analysis applied in obstacle factor of tourism economic (2004-2019) (Source: Own compilation)

Table 5. Vulnerability classification evaluation of tourism economic system (Source: Own compilation)

Project	Grading standards			
	(0,M-Std]	(M-Std,M]	(M, M+Std]	(M+Std,1]
Vulnerability Index	(0,0.333]	(0.333,0.441]	(0.441,0.548]	(0.548,1]
Degree of vulnerability	low vulnerability	moderately vulnerable	higher vulnerability	highly vulnerable

M stands for mean, Std stands for standard deviation

Base on Table 4, Table 5, and Figure 3 show that the vulnerability of Dali's tourism economic system has shown a fluctuating upward trend in the past fifteen years.

In the 2008, the global financial crisis that broke and strong domestic inflation expectations, and the outbreak of the H1N1 virus, greatly affected the travel demand and travel ability of residents. The two reasons together led to the growth of Dali's tourism economic sensitivity and fluctuations; however, the government also quickly responded to the financial crisis with corresponding policies, and the coping ability was also significantly improved from 2009 to 2010. Therefore, after the 2008 financial crisis, Dali's tourism vulnerability did not have a significant effect.

From the year of 2015, the tourism industry in Dali Prefecture recovered rapidly. Sensitivity indicators such as the proportion of tourism revenue in GDP and the elasticity coefficient of tourism growth all maintained high values. Sensitivity has also increased, but the ability to respond has a downward trend relative to the sensitivity value from 2014, which led to a relatively fragile period for Dali's tourism economic system from 2015 to 2019.

The change of the vulnerability of Dali's tourism economic system is relatively stable, but in general the vulnerability of Dali's tourism economic system is at a high level in most years. In order to further explore the main factors hindering the decline of the vulnerability of Dali's tourism economic system, this paper adopts the obstacle degree model to carry out calculation and analysis, and obtain the research results.

2. Obstacle Assessment

Reducing system vulnerability is the key to sustainable economic development premise, in order to further reveal the obstacles to the economic development of cities.

The primary focus for reducing vulnerability entails the introduction of the obstacle degree concept. By applying calculation formula 12, the obstacle degree value of Dali's tourism economic system vulnerability over the preceding ten-year period is determined. The subsequent analysis of these results is visually presented and documented in Table 6.

According to the analysis of the visualization chart results, during the 2004 to 2014, the highly frequency obstacle indicators to reduce the vulnerability of tourism economy in Dali Prefecture are sensitivity (S_5, S_6) and coping ability (R_1); after the 2014 the coping ability (R_3, R_5) obstacles become increasingly prominent, during the 2014 to 2019 the mainly obstacle indicators gradually changed to R_3, R_5 .

Looking at the overall situation, in the early stage, it was restricted by the system's internal factors, which are the industrial structure of the region and its own economic development; in the later stage, it was restricted by external factors, that is, the boosting force of investment and exports to the industry.

And we select the top five indicators in each year (Table 6), and determine the main factors that hinder the reduction of the vulnerability of Dali's tourism economic system (Shown in Figure 5). On the whole, in the past fifteen years, the most frequent obstacles to the vulnerability of the tourism economic system in Dali Prefecture are the ratio of tourist arrivals to local population (S_8), Elasticity coefficient of tourism to industrial growth (S_6) and National economy (GDP) output value (R_1), which are the biggest obstacles to reducing the vulnerability of Dali's tourism economy; It is worth noting that the Sino-US trade war broke out in 2018, China's export economy was seriously affected, and the impact of the export economy on the local tourism industry was also shown in the obstacle analysis. Export growth rate (R_5) is called the maximum obstacle degree in the 2019 annual data.

Table 6. Table of top 5 Obstacle Factors of Tourism Economic System in Dali

Year	1st obstacle		2nd obstacle		3rd obstacle		4th obstacle		5th obstacle	
	index	obstacle	index	obstacle	index	obstacle	index	obstacle	index	obstacle
2004	S_8	0.1897	R_1	0.1795	S_6	0.1564	S_1	0.0885	R_8	0.0841
2005	S_8	0.1866	R_1	0.1747	S_6	0.1711	S_1	0.0812	S_5	0.0690
2006	S_8	0.1742	R_1	0.1608	S_6	0.1606	R_5	0.1216	S_1	0.0776
2007	S_8	0.1840	S_6	0.1707	R_1	0.1668	S_1	0.0844	S_5	0.0701
2008	S_8	0.1685	S_6	0.1604	R_1	0.1473	R_5	0.0996	S_1	0.0831
2009	S_8	0.2014	R_1	0.1780	S_6	0.1560	R_5	0.1100	S_1	0.0932
2010	S_8	0.2132	R_1	0.1964	S_6	0.1837	S_1	0.1004	S_5	0.0673
2011	R_5	0.1970	R_1	0.1876	S_6	0.1528	S_1	0.0930	S_5	0.0757
2012	R_5	0.2023	S_6	0.1789	R_5	0.1667	R_1	0.1564	S_1	0.0976
2013	S_6	0.1780	S_6	0.1777	R_1	0.1360	R_5	0.1009	S_1	0.0882
2014	S_6	0.1598	S_6	0.1249	R_1	0.1244	R_5	0.1196	R_3	0.1188
2015	R_5	0.1575	S_6	0.1375	S_8	0.1170	R_3	0.1042	R_1	0.0897
2016	R_7	0.2386	R_3	0.1691	R_1	0.1566	S_8	0.1450	S_6	0.0618
2017	S_4	0.1860	R_5	0.1780	R_8	0.1164	R_3	0.0901	S_5	0.0718
2018	S_5	0.2096	R_3	0.1781	R_5	0.1485	R_8	0.1151	R_7	0.0696
2019	S_1	0.3672	R_3	0.1672	R_8	0.1342	R_7	0.1011	S_7	0.0735

CONCLUSION

This study focuses on Dali Prefecture and establishes a vulnerability index system for the tourism economic system based on sensitivity and coping ability. The analysis reveals the following findings:

- Dali's tourism economic system exhibits an upward fluctuating trend in sensitivity, with a relatively stable ability to respond to small fluctuations. The vulnerability shows a steady increase, reaching a high level in most years.
- Factors impeding the reduction of Dali's tourism vulnerability include the ratio of tourist arrivals to the local population, the elasticity coefficient of tourism to industrial growth, and the national economy's output value (GDP).

Addressing the vulnerability of the tourism economic system requires considering both internal and external factors. Internally, optimizing the system's structure is essential. This involves focusing on customer sources, particularly by reducing the proportion of inbound tourists and foreign exchange income from tourism, which are more susceptible to external influences. Additionally, enhancing tourism attractiveness by leveraging local cultural resources is crucial to reduce vulnerability.

Externally, the development of the tourism industry is reliant on the external environment. Thus, optimizing the external environment can contribute to reducing vulnerability. The national economic growth rate, national economic output value, and industrial structure diversification index are significant obstacles hindering vulnerability reduction. Therefore, Dali Prefecture should prioritize developing the national economy, optimizing economic and industrial structures, and ensuring sustainable and healthy economic growth to provide favorable support for the tourism economy's development.

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A STUDY ON THE SKILLS GAP ANALYSIS IN THE JORDANIAN TOURISM SECTOR

Ali S. HYASAT* 

Al-Balqa Applied University, Faculty of Business, Department of Planning
and Project Management, Al-salt, Jordan, e-mail:ali.hyasat@bau.edu.jo

Giuseppe AMORUSO 

Design Department, Politecnico di Milano, Milano, Italy, e-mail: giuseppe.amoruso@polimi

Alessandro IANNIELLO 

Design Department, Politecnico di Milano, Milano, Italy, e-mail:alessandro.ianniello@polimi.it

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Abstract: According to the national development plans, the Jordanian tourism sector needs to be updated in order to meet international qualitative standards. To achieve this goal, one of the expected actions to be undertaken is the definition and the implementation of innovative professional profiles that should be integrated within the whole supply chain, and the updating of the related study plans. In order to address this demand, the research aimed to produce a skills gap analysis of the Jordanian tourism, hospitality, and heritage education system, which should highlight sets of innovative and underdeveloped skills for the tackled sectors, and the relative academic paths. The research also aimed to understand the actual offering of the Jordanian education system and to compare it with the requirements of the labor market. Although different plans have been developed, their implementation is still not fully exploited to achieve the desired transformation of the reference sector. By exploiting mixed research techniques, both quantitative and qualitative, it has been possible to understand the actual offering of the Jordanian education system and to compare it with the requirements of the labor market: these activities represent the needed basis to produce the demanded skills gap analysis, which is also part of this contribution.

Key words: skills gap, tourism, hospitality, cultural heritage, labor market, Jordan

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INTRODUCTION

In accordance with the goals defined by the United Nations for the 2030 Agenda (UN, 2015), in 2015 The Hashemite Kingdom of Jordan developed a sustainable development plan which is being implemented during these last years (The Hashemite Kingdom of Jordan, 2017). Within the different sections, it includes a series of actions and goals for the country's tourism sector. The Tourism Sector Green Growth National Action Plan 2021-2025 is more detailed and punctual, which has been drafted by several public institutions. According to this plan, the actions to be undertaken must include transparent governance processes, mechanisms that incentivize sustainable growth, planning processes that value social impact, behavioral changes, and building skills and capacities to address female and youth unemployment (The Hashemite Kingdom of Jordan, 2020). At a broad level, the plan's goals consist of developing tourism products and enhancing their competitiveness; developing the infrastructure of tourist attractions and transport in the area; promoting internal and external tourism; increasing employment and strengthening human resources and implementing legislation that supports and facilitates governance of the sector. The above-mentioned strategic plan is divided into 12 actions, which meet one or more of the following sustainable objectives: enhancement of natural capital, sustainable economic growth, social development and poverty reduction, resource efficiency, climate change mitigation, and adaptation.

The research stemmed from an international project whose aim, in line with what previously mentioned, is to define at least ten innovative professional profiles for the Jordanian tourism sector. To fulfill it, a skills gap analysis has been conducted, involving, through different means, the post-secondary education institution, the private establishments and new graduates and employees. Therefore, this contribution aims to present the results obtained through this process: the first section of this paper defines the literature review, which has been fruitful in tracing the boundaries of the research and in understanding which general skill sets and related skills form the complexity of the market labor demand. The second section justifies the methodology and the methods used throughout the research. The third section presents the quantitative and qualitative stages of the research with the results obtained. The fourth section is devoted to the actual development of the skills gap analysis of four sectors considered to be those of greatest interest to the tourism labor market; finally, in the fifth section, the conclusions and next steps of the research are reported.

LITERATURE REVIEW

The process of literature review consists of different phases: it starts with the identification of general keywords, such as

* Corresponding author

“sustainable tourism”, “experiential tourism”, “Jordanian education”, and “Education path in Jordan”, which help in producing a first technical review retrieved from institutional or private reports drafted by the Hashemite Kingdom of Jordan (2015, 2017, 2020), the Jordanian Ministry of Education (2018), the European Training Foundation (2019a, 2019b, 2020a, 2020b, 2020c, 2020d), OECD (2020), UNWTO (2019), World Economic Forum (2019), and the Economic Policy Council (2018). These reports support the comprehension of the general context, of the designed strategic plans, and the recognition of the values, the possible opportunities, and the existing threats related to the area of application of the project. Although different plans have been developed, their implementation is still not fully exploited to achieve the desired transformation of the reference sector. It also allows to identify and define the main problem, which can be summarized in four points: youth unemployment (The European Training Foundations, 2020a, 2020b, 2020c), low participation of women in the labor market (The Hashemite Kingdom of Jordan, 2017), low competitiveness of academic and professional qualifications (The Jordanian Minister of Education, 2018), sustainability of the tourism industry (UNWTO, 2019). It also contributes to the understanding of the digital innovation taking place within the tourism sector, both in Jordan and in other countries.

The academic literature review is developed using the *Google Scholar* platform for a first general draft, and Elsevier Scopus and Web of Science platforms to produce the contextual review, while referring to different keywords retrieved from the aforementioned reports, such as “Jordanian tourism”, “Jordanian tourism education”, “Youth unemployment in Jordan”, “Jordan Tourism Skills Gap”, “Digital strategy for tourism”, “Jordanian female participation in tourism”, “Sustainable tourism in Jordan”, and so on. It has been, therefore, possible to take a two-fold perspective and understand how the field of academia and public institutions interprets and tries to find solutions to the aforementioned problems (Figure 1).

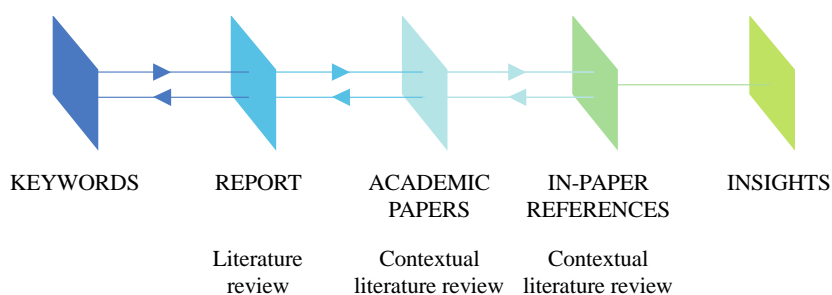


Figure 1. The different followed steps to produce the literature review, with the indication of the searched references.

In particular, what is noted through this process is the existing gaps between the needs of employers and the educational paths offered by higher education in tourism and hospitality (Mustafa, 2012). Another notable factor that emerged through this process is the fact that universities’ and colleges’ study plans are perceived to be too much theoretical and not able to facilitate the students’ skills development (Al-Zoubi, 2019; Mustafa et al., 2017); furthermore, the relationship between post-secondary education institutions and the labour market is underdeveloped resulting in a gap related to the transition study-work, again, in not useful skills transferring, and in not updated study plans for the sector needs.

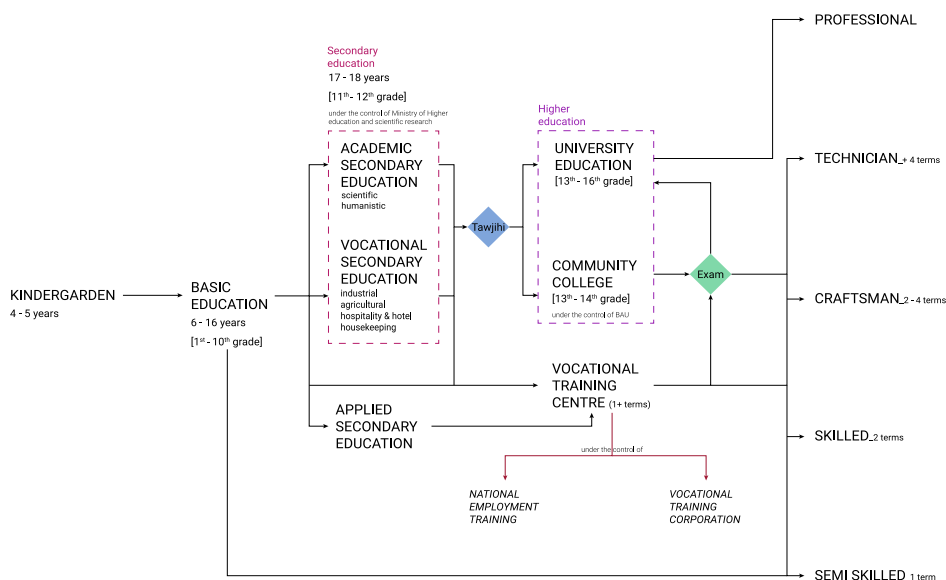


Figure 2. The different levels of education in Jordan, highlighting the years, the grades, the typology, and the outcome of each path

To overcome these gaps, it’s fundamental that educational institutions integrate new tools to and means to facilitate students’ transition to work dimension: to do that, it’s vital to foster the dialogue and the connections between the labor market and the education system in order to understand its requests and, consequently, to integrate the curricula with new teachings, that should be highly qualitative (Mustafa, 2019). As stated by Zagonari (2009), to design, implement, and upgrade study plans, four different actors are needed, which are industry and labor market, providing the current needs of

the establishments; educational institutions, that are responsible for connecting the students with the industry; students, who must be trained to meet the industry's demands; and, finally, governments. Following this statement, the research phases have been conducted involving the educational institutions, industries and private sector, and students.

The process of literature review has also been helpful in understanding the structure of the Jordanian education system (Figure 2) and in highlighting the general skills cluster, with their related skills, that underpin the various professions in the tourism sector, which indeed are digital skills, marketing skills, customer relationship skills, business administration skills, analytical skills, teamwork skills, heritage management skills, and technical skills. The aforementioned clusters and related skills were used to design parts of the questionnaire delivered to academic institutions, the focus group activities carried out with the private sector and the survey provided to new graduates and employees.

METHODOLOGY AND SURVEY

The research here presented requires both quantitative and qualitative research, thus it has been assumed a pragmatic perspective, an epistemology that emphasizes process and experimentation (Rylander, 2012). Furthermore, pragmatists believe that the process of acquiring knowledge is a continuum rather than two opposing and mutually exclusive poles of either objectivity and subjectivity (Goles and Hirschheim, 2000); it embraces these two extremes and offers a flexible and more reflexive approach to research (Feilzer, 2010), due to the possibility of selecting the methodologies that are the most suitable to achieve the goals, and to the use of abductive reasoning (Zingale, 2013) that moves back and forth between deduction and induction. Pragmatism sidesteps the contentious issues of truth and reality, accepts the existence of multiple realities open to empirical inquiry, and orients itself toward solving practical problems in the real world. Pragmatism allows the researchers to be free of mental and practical constraints imposed by the dichotomy between quantitative or objectivist, and qualitative or constructivist approaches (Creswell and Plano Clark, 2007), and, so, it allows them to apply both methodologies (Robson, 1993). Therefore, a pragmatist stance is an approach to knowledge that tries to take into consideration multiple viewpoints, perspectives, positions, and standpoints (Johnson and Rorher, 2007); it is based on the collection or analysis of mixed data in a single study, which involves their integration at one or more stages in the process (Creswell et al., 2003).

This kind of framework has different and many purposes, which can be summed up in the convergence between the results of various methods to foster the validity of the results by decreasing the risks of using irrelevant sources; in increasing the validity of the results, through the elaboration and clarification of one method activity by applying the second one, and vice versa, also capitalizing their strength and their meaningfulness; in the creation of new perspectives and in the identification of paradoxes and contradictions; in the extension of the range of inquiry to evolve its scope by selecting the most appropriate methods (Gray, 2014). Clearly, there are issues in the application of this epistemology, mainly related to the integration of opposite but complementary methodologies, which can result in difficulties when integrating and validating the results obtained, and also, when analyzing hybrid data sets (Bryman, 2006). Within the research framework, the main quantitative method exploited is the questionnaire, while the main qualitative method applied is the focus group.

Quantitative and qualitative research

Quantitative research usually refers to objectivist epistemology, and it is based on empirical inquiry (Gray, 2014). In the case here tackled and described the methodology applied has been surveyed research which was a deductive activity; to fulfil this kind of method, it is necessary to identify the right researched population and a representative sample of it; it is also needed to control all the variables that may influence the analysis; finally, in survey research, the data gained should be generalized (Gray, 2014). While qualitative research is often based on inductive reasoning (Rylander, 2012). Thus, it is preferable to apply qualitative methods when trying to achieve complex, less objective, and more variable data gathering and analysis. Therefore, the focus group is a more suited tool to understand the requirements of the labor market, which is fundamental in producing the skill gap analysis.

Academic survey

A questionnaire has been designed and provided to various academic institutions to generate an adequate data set to be further analyzed. In this section, the quantitative research phase, the exploited method, and the tool are presented, focusing on the aim and goals of these actions, the sample analyzed through the questionnaire and the results of this first step (Appendix A: survey structure and datasets).

Aims and goals

On one side, the survey research has been useful to understand the state-of-the-art of the post-secondary academic institutions that provide education in the field of tourism, hospitality, and cultural heritage regarding their study plans and transferred skills, among other sets of information. The goal of the questionnaire was to provide a quantitative description of the academic perspective regarding the current gaps that they can identify in relation to the request of the labor market. This first step has also been fundamental for organizing the next activities, such as focus groups.

Survey's structure

The questionnaire was divided into two main parts: the first one has been fruitful to map and positioning the sample of people answering it, while the second one was focused on four clusters of information: general information regarding the academic degrees and courses, such as the field of academic paths, their duration, the admission requirements, and the kind of final certificate obtained by students. The second cluster revolved around information regarding the contents of the courses, the languages used, and the period of training or internship, while the third, instead, was focused on

getting information about the students, such as the number of attendants, the percentage of female enrollment, the percentage of students who get the final certificate and enroll in higher education. Finally, the last required information dealt with the main transferred skills and the job placement.

Survey sample

Due to a scarcely reached sample, the questionnaire has been provided two times through emails and other media: the first time, only 47 answers (40, 17%; valid 32: 27, 35%) have been received, while the sample was constituted of 117 people, among which professors, deans, and other institutional academic positions. During the second round, the received answers have been 85 (73%) among which 55 (47%) were considered valid.

Unfortunately, compared to the expected number of responses, those received and considered valid did not, in any case, exceed the 50% threshold, which, undoubtedly, means that the sample cannot be considered exhaustive. The primary identified cause could be that the questionnaire was not correctly designed in all its parts; nevertheless, given the wide range of responses received per institution (considering that the vocational institutions were represented by TVC), it was decided not to proceed with a third questionnaire delivery, to avoid compromising the schedule of the entire research. A general analysis of the sample results is illustrated in the Figure 3, 4 and 5.

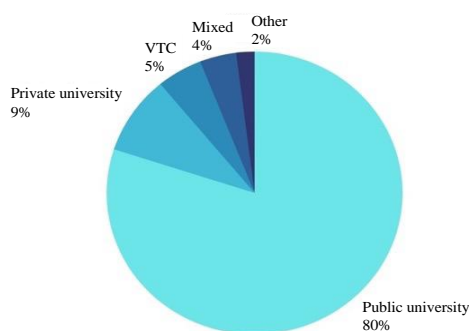


Figure 3. Survey outcome. Percentage of answers according to public or private universities, vocational training centers (VTC) and other bodies or institutions

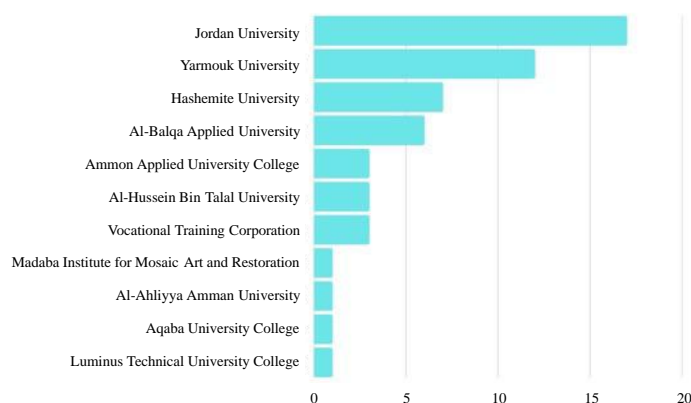


Figure 4. The number of answers for the horizontal axis divided for the individual institutions

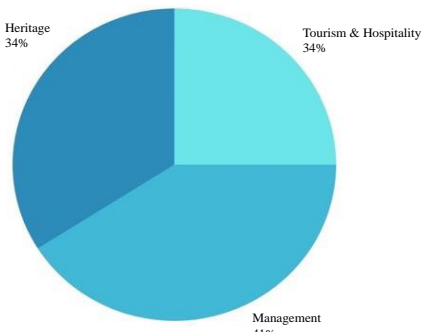


Figure 5. The overview of the analyzed sample by area of teaching

RESULTS

Focusing on the transferred skills and linking them to the professional fields (Figure 6 and 7) and the demands of the labor market highlighted by the sample, it can already be understood that there are evident gaps and mismatching: from the obtained results, analytical and heritage management skills are strongly developed, but required for few professional positions, while digital and marketing skills, for different reasons, appear to be underdeveloped in post-secondary education, but strongly required for many market establishments. The analysis highlights that even with a high percentage of students getting the final certificate, there is a low/medium percentage of job placement, which reflects what was discovered through the literature review process. The result is that unemployment is high in the country in the tourism sector (Figure 8). By comparing the educational offering with the skills required by the labor market, different discrepancies can be highlighted: not all the transferred skills are needed to find a job position, while others appear to be undertaught compared to the market requests. A significant number of academic institutions does not have information about students' careers after their educational path. The lack of data does not allow to have feedback on their performances. It would be essential to discover the reasons why only a few students continue their studies after college or a bachelor's degree. Since every academic institution offers a training period, it is mandatory to investigate the reason why the labor market perceives a lack of needed skills in the new employees. Due to this gap, it can be understood the present communication issues between academic institutions and private establishments.

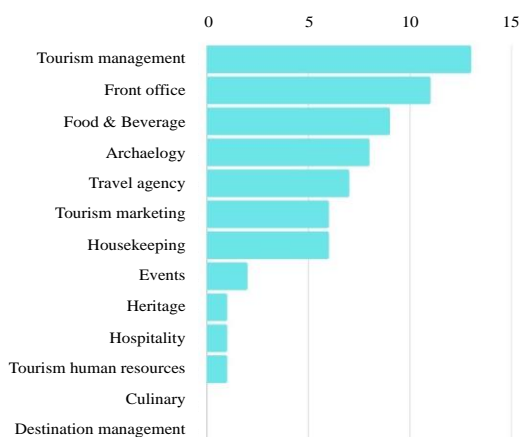


Figure 6. The main job opportunities that new graduates can undertake on the horizontal axis, and the number of given answers on the vertical axis.

		SKILLS SET							
		Technical	Analytical	Heritage management	Customer relationship	Teamwork	Digital	Business administration	Marketing
MARKET ESTABLISHMENT	Archaeology								
	Culinary								
	Destination management								
	Events								
	Food & Beverage								
	Front office								
	Heritage								
	Hospitality								
	Housekeeping								
	Tourism human resources								
	Tourism management								
	Tourism marketing								
	Travel agencies								

Figure 7. The perspective of the sample regarding the transferred sets of skills compared to the labor market need.

Focus group with private establishments

The focus group is a more suited tool to understand the requirements of the labor market, which is fundamental in producing the skill gap analysis. In this section, the qualitative research phase, the exploited method, and the tool are presented, focusing on the aim and objectives of these actions, the participants of the focus group, and the results of this second step.

Aims and goals

The main aim of this research phase was to evidence the comparisons between what was stated in the questionnaire by academic institutions and the actual demands of actors in the labor market. In this way, it is possible to understand what actual skills are required by private establishments and which are perceived to be lacking.

Participants

The participants of the focus group were 10, employees or representatives of four working associations, which are the Jordan Society of Tourism & Travel Agents, the Jordan Hotel Association, the Jordan Restaurant Association, and the Specialist Tourism Transport Association. The members of each association worked together to fill in the documents, with answers that represent their field of application.

Focus group’s structure

The focus group was divided into four sessions: the first one, lasting 10 minutes, asked the participants to rank different skills (digital skills, analytical skills, customer relationship skills, marketing skills, technical skills, heritage management skills, teamwork skills, and business administration skills) in order of importance for the establishment they are part of.

The second part of the focus group, lasting 45 min, asked the participants to indicate the most required skills for their establishment, picking them from the general clusters of the previous activity (digital skills, business administration skills, customer relationship skills, marketing skills, analytical skills, teamwork skills, heritage management skills, and technical skills). The third step of the focus group, lasting 45 minutes, asked the participants to select the missed skills in their establishment, picking them from the previous lists for each cluster.

In the last activity of the focus group, which lasted 20 minutes, the participants were asked to answer the following question: which skills and expertise are you looking for in your junior and intern positions?

Results

The first result obtained through this phase are related to the perception and skills requirements of the different private establishments regarding the competencies needed by their new employees or interns (Figure 9 and 10).

Though the other activities, it has been possible to outline and compare the most required and the lacking skills for each establishment, starting to define a more detailed picture for each of the sectors taken into consideration, despite matching lacking and required skills, it comes out that answers are not homogeneous between involved stakeholders. The skills that appear to be both the most required and the lacking ones are communication within the cluster of teamwork skills (JSTTA, JRA, STTA), statistics within the analytical skills (JSTTA, JHA, STTA), accounting within business administration set (STTA, JRA), promotion of tourism products and services (JSTTA, STTA) and online marketing (JHA, JRA) within marketing skills, and, finally, creative thinking within analytical skills set (JHA, JRA).

Due to the inexhaustive results obtained during this step, it has been necessary to compare the outcomes with other similar research, such as “Labor market analysis in the tourism sector” by Al Kahled (2021), to fulfill its scope and overlap what has been highlighted through this activity with what instead has been understood during the first phase. To conclude, despite the absence of some responses, it is possible to identify several skills that the labor market, in the tourism sector, highlights as necessary but lacking in their junior and intern positions. Thus, the actual gap between educational programs and the real demand of the sector is inferred, which has been also highlighted by the answers given by the representatives of the post-secondary education, who recognize the need for the study programmes and planes to be updated.

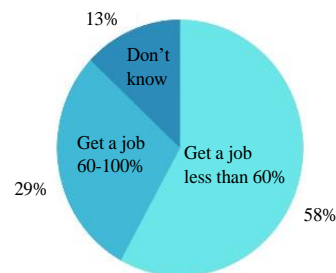


Figure 8. The percentage of job placement divided into three categories related to the percentage of given answers.

New graduated student’s survey

The last step of this phase of research has been the delivery of another questionnaire (Appendix B: survey’ structure and dataset) to new graduates (that have graduated since 2018 due to the Covid-19 pandemic).

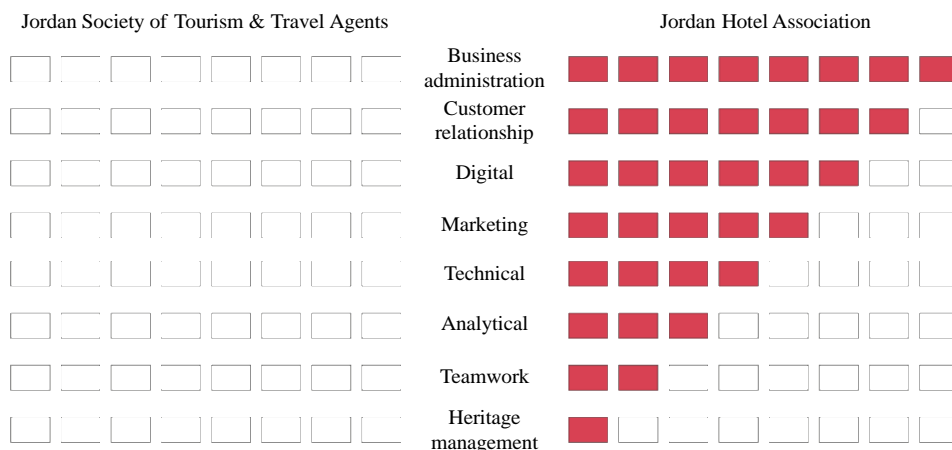


Figure 9. The level of importance (8: the most required; 1: the least required) of each skill set for the Jordan Society of Tourism & Travel Agents and for the Jordan Hotel Association. Unfortunately, the Jordan Society of Tourism & Travel Agents did not provide a satisfactory answer to this activity.

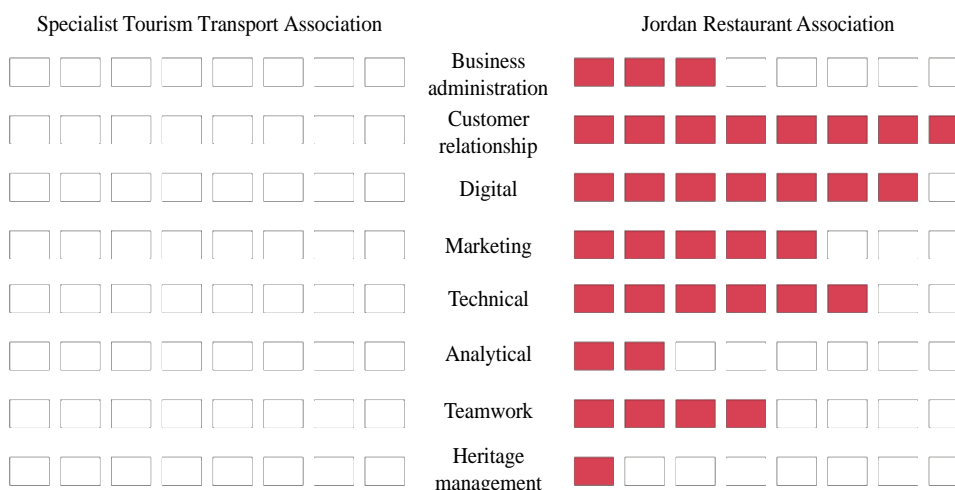


Figure 10. The level of importance (8: the most required; 1: the least required) of each skill set for the Specialist Tourism Transport Association and for the Jordan Restaurant Association. Unfortunately, the Specialist Tourism Transport Association did not provide a satisfactory answer to this activity.

Aims and goals

This survey aimed to highlight current gaps from the perspective of new graduates and employees to match their answers with the results obtained during the previous steps and to produce an exhaustive skills gap analysis.

Survey’s structure

The survey was divided into three main parts: a first set of questions to sample the respondents, a second one to investigate the job positioning, and a third to understand the perspective of the sample about the useful developed and the lacking skills, they had obtained during their study paths, chosen among the same clusters and lists provided during the previous steps.

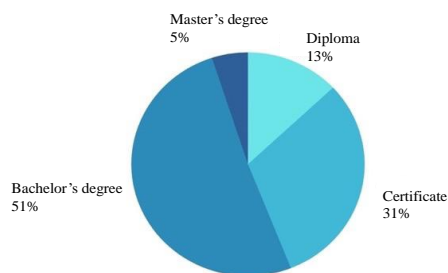


Figure 11. Education level granted by the different institutions

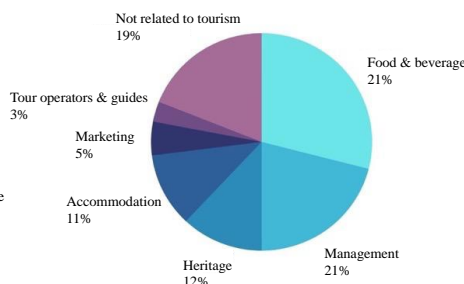


Figure 12. Field of studies addressed by each institution

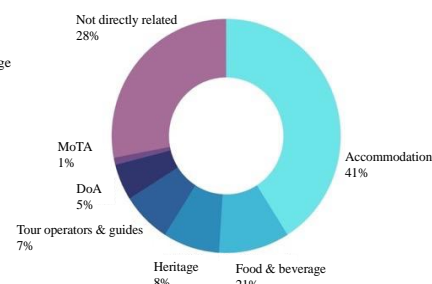


Figure 13. Fields of occupation indicated by each institution involved in the activities

Analyzed Sample

The questionnaire was filled out by 121 people representing 60% of the expected sample. 63% of the respondents were male, while 36% were female, with 1% of responses not provided.

8% of the sample were aged between 15 and 20, 43% between 21 and 25, 29% between 26 and 30 and 20% over 30. A more detailed analysis related to their study paths and fields of study is shown in Figure 11-12.

Job positioning

Interesting and relevant answers have been received within the section related to job positioning. It was possible to confirm what was found through the literature review process and during the post-secondary survey phase: the level of youth unemployment in the tourism sector is fairly high. Furthermore, almost a third of the respondents declare that they are not working in establishments directly related to their field of study which highlights the incompleteness and inadequacy of study programs in relation to the demands of the labor market. The figure 13 instead describe the job positioning relating it to the establishments in which new employees work.

Results

This final step of the research made it possible to obtain a complete picture of the needed skills by the tourism sector, of the currently existing gap between what is required by the labor market and what is transmitted instead during the study paths, and of the perception of each stakeholder involved. Besides this wide gap, the main challenges highlighted by the respondents of this survey were related to teamwork, customer relationship, technical, business administration, marketing, and analytical skills, and to job condition.

Skills gap analysis

This section presents the results of the entire skills gap analysis, highlighting the threats and opportunities for the four establishments that have been considered: food and beverage, accommodation, tour operators and guides, and heritage management. To produce those final results, the data obtained through all the phases have been merged to define the correct skill sets for each establishment and rank them to understand the gaps within each field involved in the research.

A general overview

By highlighting the results obtained on the average of the sector taken into consideration and the main challenges faced in the transition from study to work, the skill sets to be strengthened the most are: marketing skills, teamwork skills and customer relationship skills (Figure 14). Within the cluster of digital skills, the ones that need to be strengthened or implemented are operating system use, communication, use of software, social media management, data analytics, and AI and robotics; the marketing underdeveloped skills are promotion of tourism, identification of target areas, social media marketing, sales, SEO and SEM, brand management, and storytelling; for customer relationship skills, the ones that are shared the most are communication, empathy, patience, foreign languages, and customer services, while, within the business administration cluster, computer skills, product development and innovation, destination management, and marketing and sales have been highlighted. The analytical shared set is composed of problem-solving, creativity, decision-making, and time management, while the teamwork one of communication, emotional intelligence, organization, delegation, problem-solving, leadership, and team management. Finally, community engagement, ethics, and legal skills are the reported and underdeveloped heritage management skills.

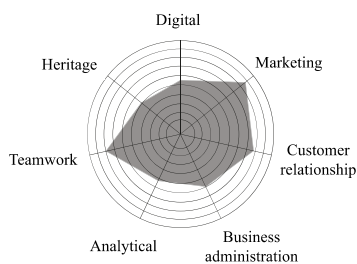


Figure 14. The overall situation of the tourism sector regarding the development of the skills highlighted through the research

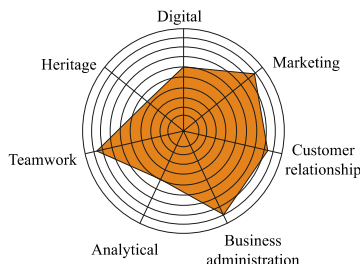


Figure 15. The overall situation of the food and beverage sector regarding the development of skills highlighted through the research

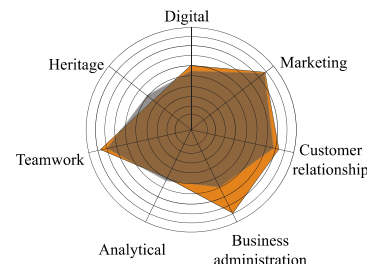


Figure 16. The average results for the tourism sector compared with the ones from the food and beverage sector highlighted through the research

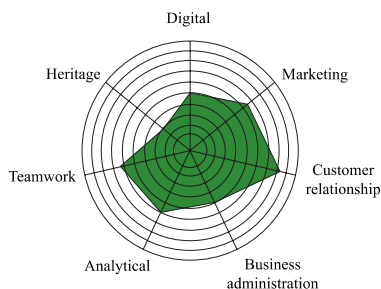


Figure 17. The overall situation of the accommodation sector regarding the development of skills highlighted through the research

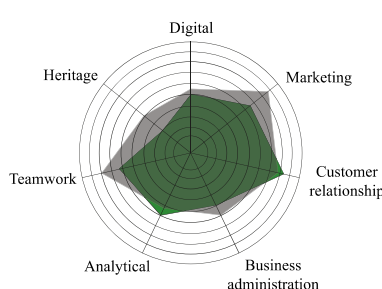


Figure 18. The radar compares the average results for the tourism sector with the ones obtained by the accommodation sector highlighted through the research

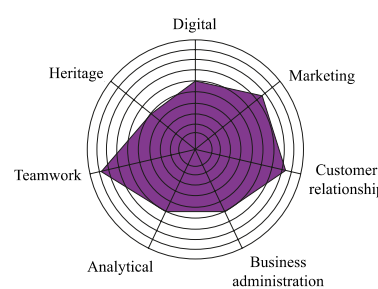


Figure 19. The overall situation of the tour operators and guides sector regarding the development of skills highlighted through the research

A focus on the sectors

As shown in figure 15, the food and beverage sector shows wide gaps in different skills sets, making it one of the sectors that requires strong intervention. By comparing the overall scores of the food and beverage field with the average of the tourism sector, the main skills sets to strengthen are business administration skills, teamwork skills and customer relationship skills (Figure 16). The accommodation field is perceived to be one of the best-performing sectors (Figure 17) by comparing the overall scores of the accommodation field with the average of the tourism sector, the only skills set to strengthen are analytical skills and customer relationship skills (Figure 18). As food and beverage, also the field of tourism operators and guides appears to be one of the worst-performing sectors (Figure 19): by comparing the overall scores of the tour operators and guides field with the average of the tourism sector, the main skills set to strengthen are analytical skills, teamwork skills, digital skills, and customer relationship skills (Figure 20). Finally, the heritage management field shows the best performance among the ones analyzed (Figure 21): it's interesting to note that the skills set perceived to need improvements are heritage management skills and teamwork skills (Figure 22).

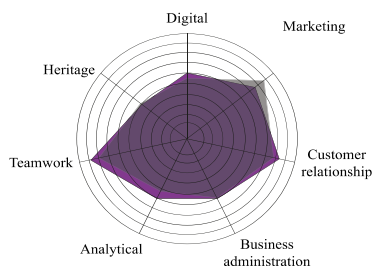


Figure 20. The radar compares the average results for the tourism sector with the ones obtained by the tour operators and guides sector

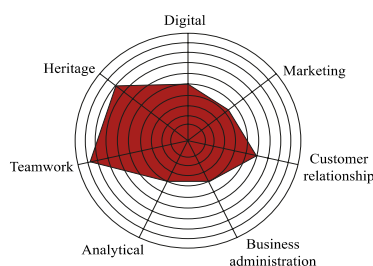


Figure 21. The overall situation of the heritage management sector regarding the development of skills highlighted through the research

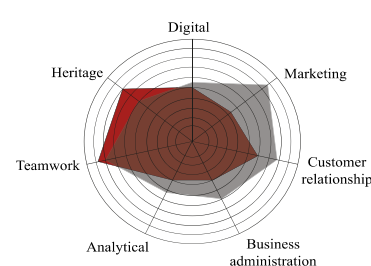


Figure 22. The average results for the tourism sector compared with the ones from the heritage management sector

CONCLUSION

The study presented in this contribution focuses on the state of the art of the Jordanian education sector in the area of tourism, hospitality, and heritage management. Starting from three research phases, it was possible to outline an analysis regarding the skills gap between what is taught in post-secondary education and what is required by the labor market. From the research carried out, it is clear that the most prominent gap is to be found in the following skill sets: marketing skills, teamwork skills, and customer relationship skills. The sectors that perceive the greatest difficulties are food and beverage (especially in business administration skills, teamwork skills, and customer relationship skills) and tour operators and guides (especially in analytical skills, teamwork skills, digital skills, and customer relationship skills).

Other notable elements produced by the research concern the lack of a strong link between the academic and professional worlds, which translates into the lack of available data regarding the study-work transition; and the need to integrate further educational tools to facilitate learning by doing processes and to enable students to mature the skills required by the labor market. Furthermore, one other noticeable piece of evidence that has been highlighted by comparing the final results with part of the one obtained during the academic survey is the mismatch between the perceived importance (and the level of teaching) of digital skills and the real requests of an evolving labor market. Those results were also supported by other research conducted over the past year on the areas and topics of interest (Hyasat, 2022, Hyasat et al., 2022). As mentioned throughout the paper, the research has some limitations: in the first phase of the quantitative analysis, the number of valid answers was less than a half of the respondents; and the focus group activity did not produce the expected results in all its steps.

For these reasons, it was necessary to integrate what was discovered with a further phase of literature review, focused on similar research carried out in previous years. Through this utter process, it was possible to obtain an exhaustive set of data to proceed with the next phase of skills gap analysis. After the identification of the skills sets and the skills gap for each subfield, it will be possible to define different professions that should be updated with new skills or that should be completely invented and designed from new. Then, by highlighting integrated or new needed professions it is necessary to define the academic paths through which students should obtain the needed skills. Finally, in order to validate the highlighted skills, the defined job profiles, and the related training paths, they need to be assessed and included in the National Qualification Framework.

Author Contributions: Conceptualization, all authors; methodology, A.S.H. and G.A.; software, A.I.; validation, A.S.H. and G.A.; formal analysis, A.I.; investigation, A.I.; data curation, A.I.; writing – all authors; writing - review and editing, all authors; visualization, A.I.; supervision, G.A. and A.S.H.; project administration, G.A. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest: The authors declare no conflict of interest.

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ANCIENT KEDAH IRON SMELTING EXPERIMENT IN PREPARATION FOR OFFERING ARCHAEOLOGICAL TOURISM HERITAGE PACKAGES AT SUNGAI BATU ARCHAEOLOGICAL COMPLEX (SBAC), BUJANG VALLEY, KEDAH, MALAYSIA

Mohd Hasfarisham Abd HALIM* 

Independent Researcher, Sungai Petani, Kedah, Malaysia, e-mail: mhasfarisham@gmail.com

Naizatul Akma Mohd MOKHTAR 

Independent Researcher, Sungai Petani, Kedah, Malaysia, e-mail: naizatulm@gmail.com,

Iklil Izzati ZAKARIA 

Independent Researcher, Sungai Petani, Kedah, Malaysia, e-mail: ikilizakaria@gmail.com

Siti Nurul Siha MOHAMAD 

Independent Researcher, Sungai Petani, Kedah, Malaysia, e-mail: nurulsihamohamad@gmail.com

Nur Saerah Abd HAMID 

Independent Researcher, Sungai Petani, Kedah, Malaysia, e-mail: nursaerah1811@gmail.com

Shyeh Sahibul Karamah MASNAN 

University Sains Malaysia, Penang, Malaysia, e-mail: shyehsahibul@usm.my

Mokhtar SAIDIN 

Independent Researcher, Sungai Petani, Kedah, Malaysia, e-mail: mokhtarsaidin@gmail.com

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Abstract: In order to obtain primary data related to the iron smelting activities, the experimental process of furnaces, tuyere and air pumps making is carried out. The experiment has conducted since 2013 through the Knowledge Transfer Program (KTP) in Sungai Batu Archaeological Complex (SBAC). Through the experiment, the clay in this complex has been used as a raw material for furnaces and tuyere making while the bellows is made of wood, plywood and fabric. In order to complete the experiment regarding the raw material that use for iron smelting, iron ore was taken through survey activities in the area of Kampung Batu 5, UiTM Merbok and Bukit Tupah while charcoal was used from rubber wood in the rubber plantation near the Sungai Batu Archaeological Complex. After the experiment was conducted, the results recorded were different from the findings of the iron ingot excavation at the iron smelting site which is likely to occur due to the difference in technique and ratio of materials used during smelting activities. Although the results obtained during the experiment are different, the smelting process can be used as the main reference for offering tourism full packages related to the demonstration of iron smelting in this complex to foreign tourists.

Key words: Knowledge Transfer Program, experiment, Sungai Batu Archaeological Complex, archaeotourism

* * * * *

INTRODUCTION

Archaeological research at the Sungai Batu Archaeological Complex (SBAC) (Figure 1) have enabled for the first-time records of the iron smelting industry (Mokhtar, 2019), river jetty (Halim et al., 2022), port management (Ahmad, 2016; Yusof, 2016), rituals and Buddhist monument (Hassan, 2018) sites of ancient Kedah Kingdom to be examined, identified and given chronometric dating used since 788 Century BCE (Beta 516413) in iron smelting activities (Mokhtar, 2019). The determination of the chronometric date uses radiocarbon method on charcoal samples at one of the ancient Kedah iron smelting workshop sites in the SBAC which is still in-situ in the area near the base of the furnace (Mokhtar, 2019). This is because archaeological research from 1840 to 2009 has not been able to record evidence of such industry and jetty-port architecture although there are records from al-Kindi, al-Biruni (Gilmour and Hoyland, 2012), I-Tsing (I-Tsing, 1896), Pattinapalai Poetry (Thilakavathy, 2019), Silappadikaram (Saidin, 2023), Kathasaritsagara, Kaumudimahotsava (Saidin, 2023) and inscriptions (Khaw, 2011) which describe the role of ancient Kedah in the trade and export of early world iron ingots. Previous studies have only recorded findings of Hindu-Buddhist religious structures (Ali et al., 2023) and trade artifacts (Adam, 2020) that most of the sites are given relative dating since the 5th Century AD.

* Corresponding author

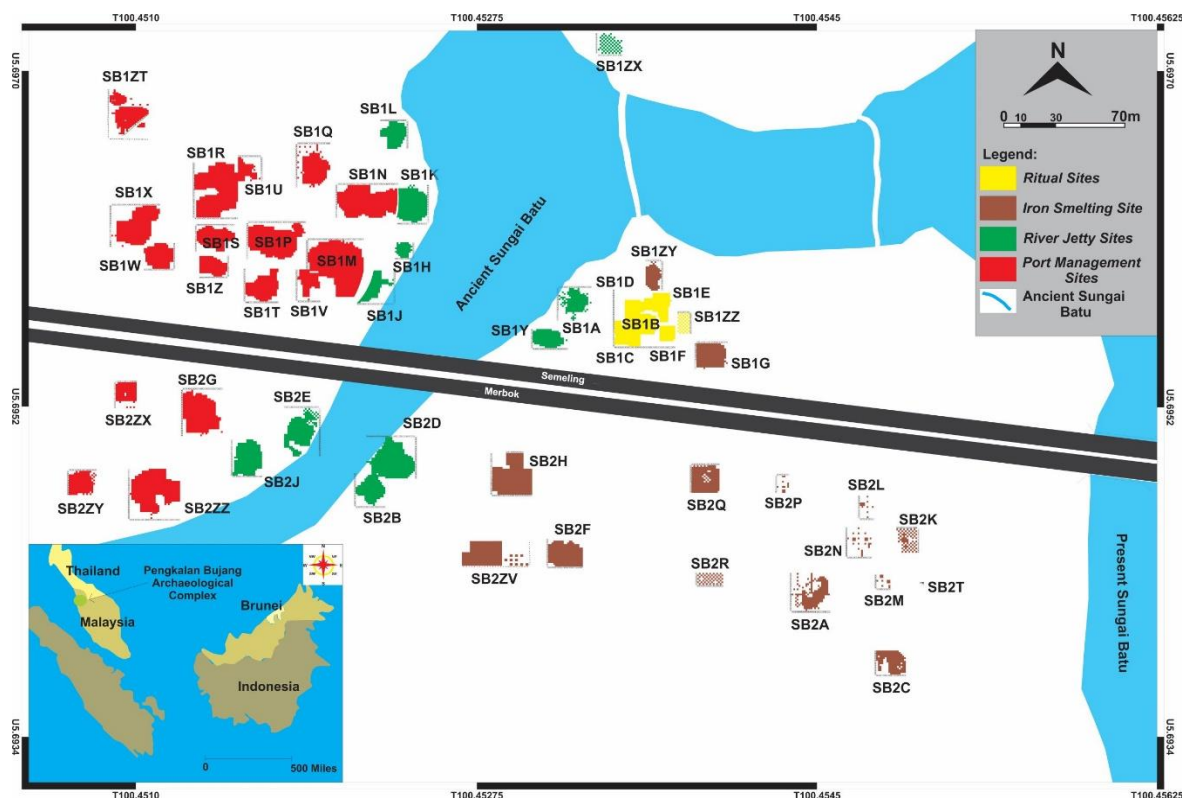


Figure 1. Iron industry, river jetty, port management, ritual and Buddhist sites that have been conducted systematically research in the SBAC (Source: Research data analysis, 2023)

Archaeological research at the SBAC until since 2009 to 2023 is the only one to reveal complete evidence of the heavy industry of ancient Kedah up to the architecture of the river jetty and port management monument that managed its trade affairs. To develop this site, especially in the national archaeotourism sector, some initial steps were taken to provide trained and certified tour guides. Therefore, the Knowledge Transfer Program (KTP) at the SBAC was established since 2013 with the main purpose of providing knowledgeable tourist guides to the historical and archaeological evidence at the SBAC in general and Lembah Bujang in particular. In order to strengthen the knowledge of tour guides related to industrial evidence in this complex, archaeological experiments related to iron manufacturing and smelting technology were applied during the KTP programme. These archaeological experiments were conducted with the main purpose of obtaining an initial description of earlier societies through archaeological research as interpreted by Humphris (2010), Humphris et al. (2018) and Chuenpee et al. (2014). Therefore, the experiment archaeological research is able to record primary data related to smelting technology of the ancient Kedah community and it can be processed and applied in offering a full tourism package "iron smelting demonstration" at the SBAC in particular.

In general, the KTP which involved 18 participants from the Kuala Muda district. This program is organized by the Center for Global Archaeological Research (CGAR), University Sains Malaysia, Penang. Through this program, participants will be exposed to archaeological research procedures, in-depth archaeological experiments and also undergo a tour guide course held in collaboration with The Northern Corridor Implementation Authority (NCIA) under the Merbok Area Tourist Guide Program grant. The course is conducted to qualify them to get a green badge and become a certified tourist guide in the Kuala Muda district for the natural heritage category.

AIMS OF THE STUDY

This study aims to provide certified tourist guides related to archaeological heritage sites in the Kuala Muda district. In order to achieve this goal, the iron smelting experimental process is organized under the Knowledge Transfer Program to obtain primary data how the iron smelting process takes place. The information and results observed during the experiment were then used as the main reference for the offer of tour packages based on the demonstration of iron smelting in this complex after they had become certified tour guides in this area.

MATERIALS AND METHODS

This research is based on the iron smelting workshop evidence recorded at the SBAC (Figure 2). Excavations revealed iron ore as the raw material of iron smelting, iron slag and iron ingots, tuyeres and base of furnace. The existence of a combustion furnace clearly strengthened the interpretation it served as an iron smelting workshop. Based on the excavation evidence, several observations and measurements related to the size base of the furnace, tuyere were conducted in detail to obtain primary data related to the measurement of the furnace structure to be used as a guideline during archaeological experiments. Besides, several soil samples at the base of the furnace, iron ore and iron ingots were also

sampled, and chemical analysis was carried out to obtain information on the raw materials of the furnace and tuyere. Charcoal found near the furnace area also analyzed to obtain data on the type of trees used for the purpose of iron smelting in this complex. After the information was obtained, survey activities were carried out to obtain the raw material of clay for the purpose of furnaces and tuyere making, iron smelting catalyst and fuel to enable experiments to be carried out more thoroughly. Thus Figure 3 is the working stage of the fieldwork methodology used in the archaeological experiments.

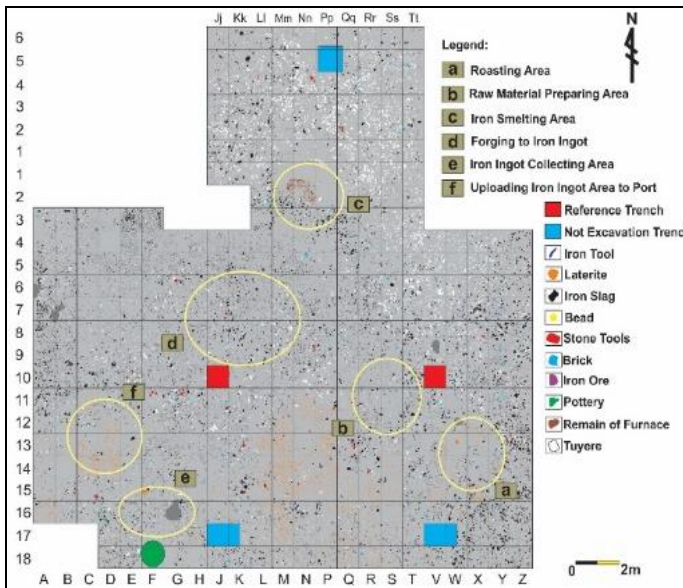


Figure 2. The excavation process revealed the findings of an iron smelting workshop with the presence of iron ore, iron slag, furnace and tuyere at the site

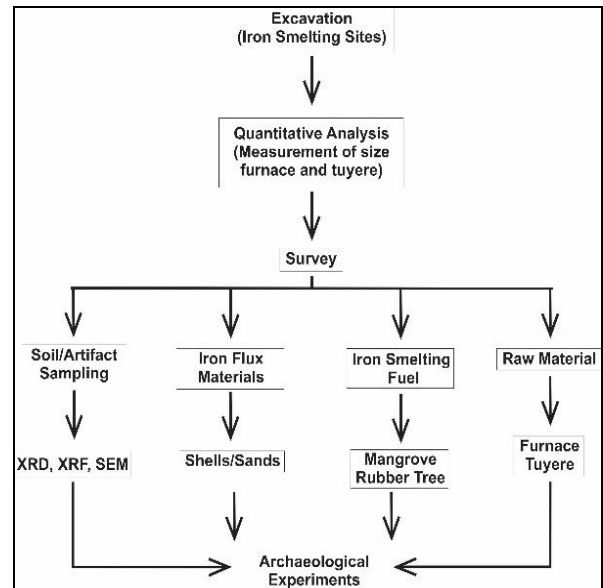


Figure 3. Archaeological experiment flow chart of iron smelting at the SBAC (Source: Research data analysis, 2023)

RESULTS AND DISCUSSION

The KTP at the SBAC has conducted experiments on the production and manufacture of furnaces, tuyere, wind pumps (bellow) to be used in the experimental process of iron smelting. The experiment was conducted with the main purpose of exposing KTP participants to the production technology of iron smelting activities.

Table 1. Evidence of the discovery of furnace base at iron smelting sites of ancient Kedah at SBAC (Source: Molingka, 2013; Mokhtar, 2019)

No	Sites	Classification
1	SB1G	The base of furnace I is about 48 cm high and a width of 95 cm. Based on the remnants of the furnace, it is suggested that this furnace I is shaft shaped. The base of the furnace II has a length of about 146 cm and a width of 96 cm. It is likely that this furnace is dome shaped with a height of about one meter.
2	SB1ZY	The base structure of the furnace III at this site is about 83 cm wide and 15 cm thick, which suggests that the furnace is a dome type with a height of about 100 cm. through the air pump (tuyere).
3	SB2A	The base of the furnace IV consists of soil and bricks measuring about 110 cm long and about 90 cm wide. Therefore the shape of the furnace structure at this site is dome shaped.
4	SB2C	The base of the furnace V at this site is produced using soil measuring about 100 cm with a width of about 90 cm. The wall thickness of the furnace is estimated at about 18-20 cm.
5	SB2F	The base of furnace VI consists of soil and burnt bricks. The length of the base of the furnace is 114 cm with a width of 110 cm. Based on the width of the furnace base, it is suggested that the architecture of furnace VI is dome shaped. The base of the furnace VII has a length of about 100 cm with a width of about 90 cm. The thickness of the soil layer for the base of this furnace is about 20-26 cm. The base of furnace VIII was also built using clay. The length of the base of the furnace is 190 cm with a width of 130 cm. The thickness of the soil layer of the base of the furnace is around 10-16 cm which suggests the architecture of furnace VIII is dome-shaped with a height of between 100-150 cm.
6	SB2H	The structure of the furnace IX at this site is characterized by the shape of a crater surface with a diameter of up to five meters. The base structure of the furnace is in the middle of the crater surface with respect to the length of the furnace reaching 153 cm and a width of about 53 cm. It is made of soil.

Finance and tuyere experiments making

In order to maximize the knowledge related to the information on the architectural design of the furnace that is likely to be used in the ancient Kedah iron smelting activity at the SBAC, the furnace making experiment was conducted. Mokhtar (2019) study at the iron smelting site at the SBAC and Muztaza (2015) in Jeniang was used as the main reference regarding the architectural appearance of the furnace to be erected by KTP participants.

The furnace structure is an enclosed architecture and has only openings at the top and a small portion at the base in addition being able to withstand high combustion temperatures (Rostoker and Bronson, 1990). It is also constructed in

the presence of a hollow cylinder shaped tuyere to conduct air (oxygen) during the smelting process (Tylecote, 1962). Archaeological studies have so far been able to record the findings of furnace base with a diameter of between 90 to 100 cm which suggest the domed furnace type (Table 1). Furnace base with less wide is required for a domed furnace structure as it is only built at a height of about one meter only (Marks et al., 2020).

This is in contrast to the shaft-type furnace structure which requires a wider furnace base to accommodate the height of the constructed furnace to exceed a height of two meters (Domergue and Fabre, 2017). Until 2022, there is only one find of a furnace base at the SB1G site that has a remnant of a wall structure as high as 48 cm with a base diameter of 158 cm and a width of 95 cm which suggests the furnace represents a shaft type (Mokhtar, 2019).

Table 2. Results of X-Ray Diffraction Diffractometer (XRD) analysis of clay samples in the riverbank of the ancient Sungai Batu

Sample	Locatin	Mineral Content
S1a	Riverbanks of ancient Sungai Batu	Quartz (SiO ₂), kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄) & microcline (KAlSi ₃ O ₈)
S2a		Quartz (SiO ₂), montmorilonite (Na _{0.3} (AlMg) ₂ Si ₄ O ₁₀ OH _{2.6} H ₂ O) & kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄)
S3a		Quartz (SiO ₂), montmorilonite (Na _{0.3} (AlMg) ₂ Si ₄ O ₁₀ OH _{2.6} H ₂ O) & kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄)
S4a		Quartz (SiO ₂), montmorilonite (Na _{0.3} (AlMg) ₂ Si ₄ O ₁₀ OH _{2.6} H ₂ O) & kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄)
S5a		Quartz (SiO ₂) & kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄)
S6a		Quartz (SiO ₂), kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄) & diaspora (AlO(OH))
S7a		Quartz (SiO ₂), kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄) & orthoclase K(AlSi ₃ O ₈)
S8a		Quartz (SiO ₂), kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄) & orthoclase K(AlSi ₃ O ₈)
S9a		Quartz (SiO ₂), kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄), orthoclase K(AlSi ₃ O ₈) & dolomite (CaMg(CO ₃) ₂)
S10a		Quartz (SiO ₂), montmorilonite (Na _{0.3} (AlMg) ₂ Si ₄ O ₁₀ OH _{2.6} H ₂ O) & kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄)
S11a		Quartz (SiO ₂), montmorilonite (Na _{0.3} (AlMg) ₂ Si ₄ O ₁₀ OH _{2.6} H ₂ O) & kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄)
S12a		Quartz (SiO ₂), montmorilonite (Na _{0.3} (AlMg) ₂ Si ₄ O ₁₀ OH _{2.6} H ₂ O) & kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄)
S13a		Quartz (SiO ₂), montmorilonite (Na _{0.3} (AlMg) ₂ Si ₄ O ₁₀ OH _{2.6} H ₂ O) & kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄)
S14a		Quartz (SiO ₂), montmorilonite (Na _{0.3} (AlMg) ₂ Si ₄ O ₁₀ OH _{2.6} H ₂ O) & kaolinite-1A (Al ₂ Si ₂ O ₅ (OH) ₄)

Table 3. XRF analysis of the major elements of clay samples taken from the vicinity of the ancient riverbank at SBAC

No. Sample	Dry Weight (%)									
	SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MnO	MgO	CaO	Na ₂ O	K ₂ O	P ₂ O ₅
S1a	75.77	0.78	16.00	1.80	0.01	0.48	0.03	0.06	0.77	0.02
S2a	75.85	0.74	15.52	1.73	0.01	0.44	0.02	0.07	0.72	0.02
S3a	71.97	0.79	17.04	1.89	0.01	0.46	0.03	0.06	0.76	0.03
S4a	69.57	0.83	18.05	1.88	0.01	0.54	0.02	0.06	0.83	0.01
S5a	69.76	0.83	18.05	1.88	0.01	0.54	0.02	0.06	0.83	0.01
S6a	74.31	0.76	16.03	1.90	0.01	0.48	0.03	0.08	0.74	0.02
S7a	73.05	0.77	14.80	1.64	0.01	0.42	0.04	0.06	0.66	0.06
S8a	79.78	0.60	11.61	1.30	0.01	0.35	0.03	0.08	0.52	0.04
S9a	69.17	0.90	17.93	2.07	0.01	0.51	0.02	0.06	0.82	0.02
S10a	74.38	0.80	15.50	1.82	0.01	0.47	0.06	0.06	0.75	0.02
S11a	76.17	0.70	14.16	1.81	0.01	0.39	0.04	0.08	0.63	0.03
S12a	76.73	0.74	14.78	1.72	0.01	0.42	0.03	0.06	0.65	0.01
S13a	72.10	0.80	16.94	1.83	0.01	0.49	0.03	0.07	0.76	0.02
S14a	75.73	0.78	15.15	1.93	0.01	0.46	0.02	0.06	0.68	0.01

Table 4. XRF analysis of trace elements for clay samples around SBAC area

Code Sample	Element (ppm)																				
	Bi	Br	Ce	Cl	Cr	Cu	Ga	Nb	Ni	Pb	Rb	S	Sr	Th	Y	Zn	Zr	Au	F	Pr	Hf
S1a	bdl	bdl	bdl	130	70	-	20	30	40	30	50	260	20	30	20	40	330	-	-	-	-
S2a	-	10	-	370	60	20	20	20	40	30	40	550	20	-	20	40	300	-	570	-	-
S3a	-	10	bdl	140	70	bdl	20	20	bdl	30	40	310	20	20	20	30	300	-	bdl	-	-
S4a	-	10	-	170	90	bdl	220	20	bdl	30	40	300	10	-	20	30	330	-	-	-	-
S5a	-	10	-	120	80	bdl	20	20	-	30	30	340	20	-	20	30	330	-	-	-	-
S6a	-	10	-	130	90	-	10	20	bdl	40	50	170	20	-	20	30	310	-	-	-	-
S7a	-	bdl	-	100	70	20	230	20	-	30	40	130	20	bdl	30	20	280	-	-	-	-
S8a	-	bdl	-	100	40	bdl	280	20	-	20	40	280	20	20	20	330	-	-	-	-	-
S9a	-	bdl	140	120	120	bdl	280	20	40	40	40	170	20	bdl	20	40	320	-	-	-	-
S10a	-	bdl	-	120	40	bdl	20	10	bdl	20	30	230	10	-	20	30	300	-	bdl	-	-
S11a	20	10	-	140	70	-	10	30	-	30	30	230	10	-	20	40	400	-	-	-	-
S12a	-	10	-	150	60	-	10	20	50	30	50	370	20	-	20	30	340	-	-	-	-
S13a	-	bdl	bdl	100	40	bdl	140	20	40	30	40	310	10	bdl	30	30	320	-	bdl	100	-
S14a	-	bdl	-	130	70	bdl	180	20	bdl	30	40	350	20	-	30	50	330	760	bdl	-	-

*bdl: Below Detection Limit; Bismuth (Bi); Bromine (Br); Cerium (Ce); Chlorine (Cl); Chromium (Cr); Copper (Cu); Gallium (Ga); Niobium (Nb); Nickel (Ni); Lead (Pb); Rubidium (Rb); Sulfur (S); Strontium (Sr); Thorium (Th); Yttrium (Y); Zinc (Zn); Zirconium (Zr); Gold (Au); Iron (F); Praseodymium (Pr); Hafnium (Hf)

Raw materials from the riverbanks of ancient Sungai Batu was proposed based on XRD (Table 2) and XRF major (Table 3), trace element (Table 4) and SEM analysis of the samples which revealed the similarity of the elements and mineral content of both the furnace and soil samples. XRD analysis has revealed the presence of quartz, phyllites and soil minerals (muscovite, montmorillonite and illite) which are also reinforced by SEM analysis which clearly shows the presence of subsidual and subcircular quartz which explains the raw material taken in river environment (Mokhtar, 2019). XRF analysis also showed that the silica and alumina content dominated the sample between 62.94% and 10.33-15.54% which explains the use of raw materials in the area around Sungai Batu as the raw materials for furnace manufacturing. Therefore, archaeological experiments of furnace making were carried out using alluvial raw material (soil) taken from the ancient riverbanks of Sungai Batu and mixed with sand and hay as temper.

After that, the process of kneading the soil is done by mixing a little water. The mixture was arranged into a spiral structure on the ground to form a circle for the furnace. Tuyere is also produced using soil that is shaped to form a circle and has a length of about 22 cm with a hole in the middle between 1-2 cm. This tuyere is formed using PVC pipe as a mold which is cut according to the size of the tuyere (Figure 8). The clay joint will be formed in a circle by sticking to the PVC pipe which eventually allows a circular opening space in the tuyere to be formed. During the process of forming the base of the furnace is carried out with a diameter of one meter, the structure of the mouth of the furnace is also built which serves as a place to drain the slag after smelting. When the base part of the furnace structure is dry and strong then the top of the furnace was built up until it reached a height of 93 cm. Once the construction of the furnace reached a height of 25-30 cm, four tuyeres were placed on the furnace wall to facilitate the process of channeling oxygen into the furnace.

After the furnace reaches a height of about 93 cm, an opening space with a diameter of 40 cm is produced with the main purpose as a place to insert iron ore, charcoal, sand and shells for smelting purposes. Once the furnace structure is completed, the furnace will be left to dry for five to seven days (depending on weather conditions) before being burned to harden the furnace wall structure (Figure 4). The purpose is the furnace wall does not crack and collapse as a result of the sudden evaporation of water content when the furnace is used in high temperature of smelting activities.



Figure 4. The process of attaching the tuyere to the furnace wall to complete the shape of the built furnace (a) and when the furnace is dry, it is burned to strengthen of the furnace structure (b) (Source: Research data analysis, 2023)

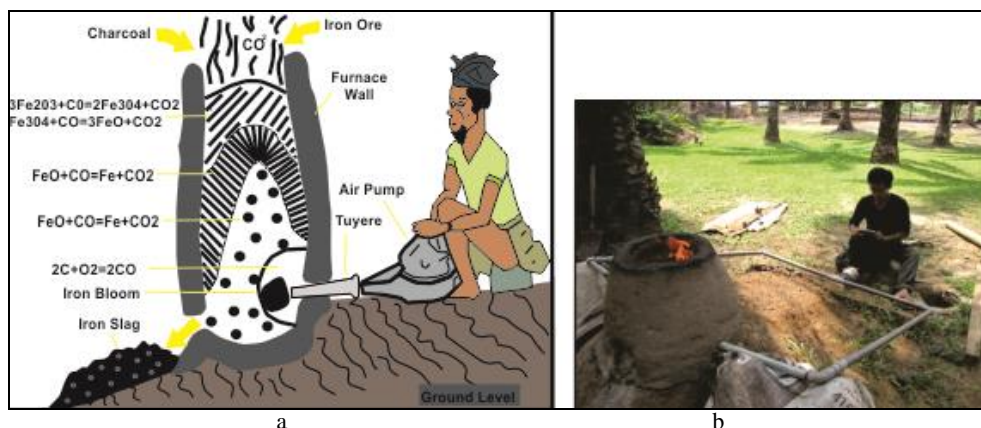


Figure 5. Illustration of iron smelting using a hand pump (a) (Bendama, 2010) and experimental process of iron smelting using an bellow as a air pump (Source: Research data analysis, 2023)

Bellow experiments making

The study of Mokhtar (2019; 2012) and Muztaza (2015) at the Sungai Batu and Jeniang archeological sites did not record any findings of bellow used in iron smelting activities. For the bellow making experiment, the reference from the study of Bandama (2010) has been used as a yardstick related to the shape of the bellow used in iron smelting activities in Africa. Bandama (2010) has provided information that the shape of bellow used in iron smelting activities is circular

in shape, fastened with animal skin and pumped by hand. Such a shape is also described by Gilboa et al. (2018) at the Levant site which is used as a guideline for the bellow making for this archaeological experiment.

Based on that information, bellow made from a combination of plywood, PVC pipe and fabric began to be produced. The air pump is of the pressure type using hands to pump oxygen into the furnace through the tuyere. It is circular shape with a height of about 50 cm, has an air chamber and a handle that acts as a device to pump oxygen into the furnace. For the purpose of this archaeological experiment this bellow is then connected into a tuyere in the furnace wall using PVC pipe (Figure 5) during the iron smelting process.

Survey raw materials of iron smelting

Survey activities were also carried out at the areas of Kampung Batu 5, UiTM Merbok and Bukit Tupah to obtain the raw material for smelting iron, namely iron ore (Figure 6). This area was selected as a survey area based on the survey and mapping of raw materials for smelting activities by Mokhtar (2019; 2012) which provides information related to the potential of the area in supplying iron smelting for the SBAC.

The research of the raw material of iron smelting used the iron ore mineral distribution map by Bradford (1972) and the Sungai Petani Map produced in 1943 because the map still clearly shows the route and flow of the old river compared to the map produced in 1970. According to Mokhtar (2019), distance sampling method based on the area near the SBAC and river flow is a priority in the survey to obtain data related to the location of the raw material of iron smelting. The tools used during the sampling were GPS, notebooks and magnets for the purpose of testing the magnetic properties in the iron ore whose findings were recorded during the survey.

The iron ores that were sampled during the survey activities were of the types of magnetite ($Fe^2+Fe^3+_2O_4$), hematite (Fe_2O_3) and goethite ($\alpha-Fe_3+O(OH)$). This is because the three types of iron ore are dominantly found in the iron smelting workshop at the SBAC (Mokhtar, 2019). The XRF analysis carried out on the iron ore clearly revealed that the mean Fe content of the iron smelting site in this area ranged from 57.86% to 66.40% with the largest standard deviation of 4.53 (Mokhtar, 2019). The mean percentage of silica (SiO_2) is around 2.02% to 5.79% with a standard deviation of 1.74. The percentage of alumina (Al_2O_3) is between 1.12% to 5.33% (Mokhtar, 2019).

Based on the XRF analysis, it is clear that the chemical composition of SBAC iron ore reveals a range that is almost the same as the iron ore in the vicinity of Mount Jerai in the area involved in the survey activities. In addition, XRF analysis of iron ore also recorded the presence of potassium oxide (K_2O), manganese oxide (MnO_2), phosphorus oxide (P_2O_5) and low carbonate oxide ($C(=O)(O-)_2$) elements that matched the iron ore content in the samples in the Gunung Jerai area. This analysis also proves that the iron ore used in iron smelting activities is of high quality based on the high percentage of iron compared to other mineral content (Mokhtar, 2019).

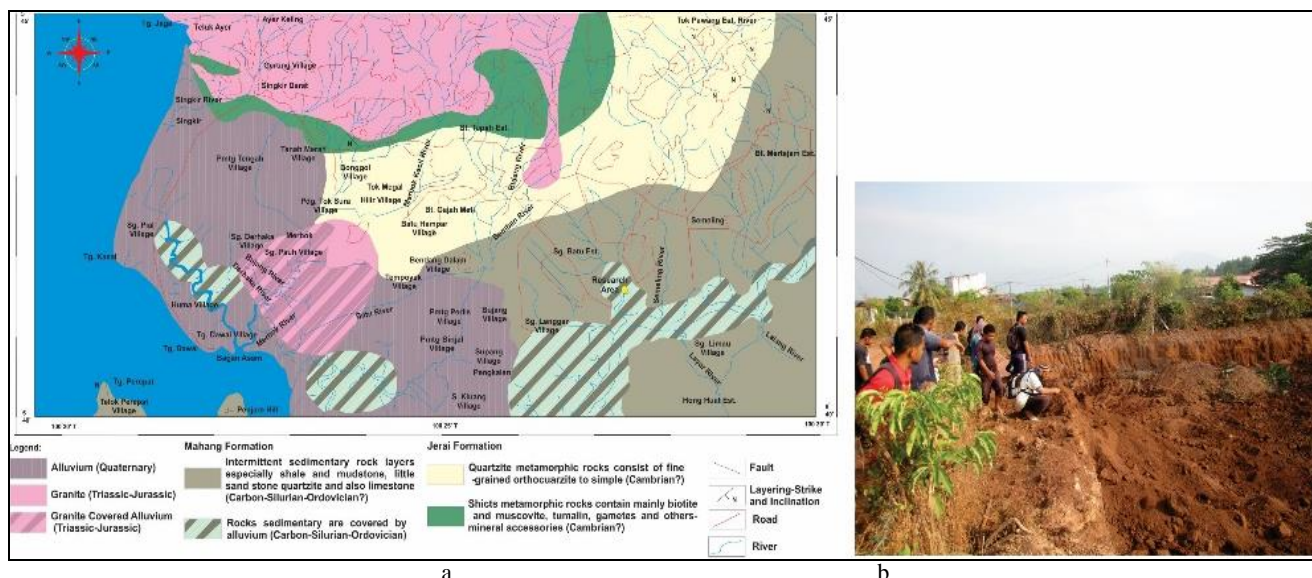


Figure 6. Areas involved in survey activities to obtain the raw material of iron smelting, namely iron ore to meet the needs of iron smelting experiments at the SBAC (a) (Geological Map, Sheets 2-1/2 & 2-1/6, Years 1972) and successful survey activities record the findings of iron ore that used as a raw material for iron smelting experiments at SBAC (b)

Survey of iron smelting flux materials

The study of Zakaria et al. (2018) has been able to record the use of flux materials in the iron smelting process at the SBAC. The flux materials are sand and shells. The use of shells as a flux material was also reinforced by the discovery of shell piles at the iron smelting site at the SBAC itself (Yusof, 2016). Based on the morphology of the shell, which has no burning effect and is peeled for cooking, it is suggested that it be used as a flux in iron smelting activities to allow temperatures as high as 1,200°C to be obtained. This is because by applying bloomery smelting technology along with the use of sand and shell flux enables temperatures as high as 1,200°C to be achieved (Mokhtar, 2019).

In addition, the results of XRF analysis on bases furnace samples also revealed a content of magnesium oxide (MgO) between 0.17-0.06% and calcium oxide (CaO) between 0.25-0.66% also strengthen the possibility of sand and shells after being used as flux in iron smelting activities (Mokhtar, 2019).

In addition, SEM analysis on furnace base samples also revealed the effects of cracking and recrystallization on quartz minerals suggesting the use of flux agents in iron smelting (Mokhtar, 2019). Therefore, survey activities to obtain sand and shells are carried out to complete the materials required in iron smelting activities. The survey activity was conducted in the river area near Sungai Batu Besi village, which is approximately one kilometer from the SBAC (Figure 7). In the area, the shells and sand were sampled for the purpose of iron smelting experiments that will be conducted.

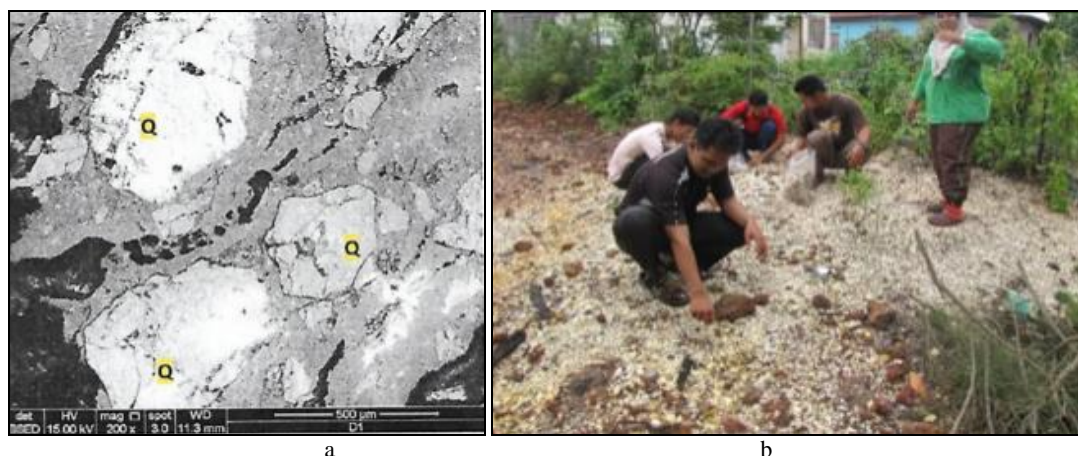


Figure 7. SEM analysis on bases furnace samples showing the presence of quartz recrystallization (Q) which suggests the presence of flux use in iron smelting activities (a) and survey activities were carried out to obtain samples of shells and sand for iron smelting experiments (b) (Source: Research data analysis, 2023)

Iron smelting fuel survey

Mokhtar (2019) has reported the possibility of mangrove wood having been used in iron smelting activities at the SBAC based on SEM-EDX analysis of the moisture of charcoal samples. In addition, the presence of elemental calcium (CaO) in the analyzed charcoal samples is also an indication that the fuel used is from a plant type most likely from the mangrove wood type. The results of the analysis revealed a carbon content of around 50.51-68.81% which is close to good charcoal quality. Photomicrographic analysis of charcoal also clearly shows that it is derived from hardwood based on dense and hollow texture (porosity). This is because good quality charcoal should have at least 70% fixed carbon and less than 15% volatile matter. According to Mokhtar (2019) the low percentage of carbon is because it has been used in iron smelting activities that cause chemical reactions between fuel and iron ore. Apart from using SEM-EDX analysis, the charcoal was also sent to the genetic laboratory of the Forest Research Institute of Malaysia (FRIM) to identify plant species through deoxyribonucleic acid DNA analysis was also conducted to identify the type of charcoal used in smelting activities at the SBAC. Based on the results of SEM-EDX and DNA analysis, the study on the topographic map of shift 16 in 1970 was used to survey the remaining mangrove trees around Sungai Merbok which is expected to be the main fuel for iron smelting in this complex. Although the results of the analysis show that Merbok mangroves are most clearly used as iron smelting fuel in this complex, this survey activity only involved the use of rubber wood as fuel for ethnoarchaeological experiments conducted and did not involve cutting mangrove trees.



Figure 8. Charcoal photomicrograph of an iron smelting workshop site showing iron smelting fuel taken from hardwood (a). Based on the fact survey activities was carried out to obtain fuel for iron smelting experiments (b) and after that a rubber wood is burned in a furnace to produce charcoal (c) for iron smelting experiment (Source: Research data analysis, 2023)

This is done for the purpose of conservation and sustainability of the mangrove trees which at present its area has been reduced to 3,000 ha from its original area of more than 6,000 ha due to development (Ong et al., 2015). After that the rubber tree wood obtained will be cut to a size of about 20-30 cm using a saw and burned in a furnace (Figure 8) to produce charcoal for iron smelting experiments. The rubber wood is burned between 4-5 hours until it turns into charcoal which allows archaeological experimental activities of iron smelting to be carried out.

Archaeological experiments of iron smelting

Once the furnace structure, tuyere, wind pump (bellows), iron smelting material (iron ore), catalyst (shell) and fuel (charcoal) were obtained through survey and reconstruction, then iron smelting experiments were carried out. Mokhtar et al. (2018) stated that iron smelting at SBAC generally involves five main processes such as (1) iron ore mining, (2) ore cleaning and preparation, (3) smelting process, (4) iron ingot forming and (5) production of iron tools by forging. The smelting is carried out directly (bloomery) which involves the extraction of iron directly from iron ore (Rostoker and Bronson, 1990). This iron smelting experiment started with the cleaning and preparation of iron ore because the first stage in the smelting process was carried out through survey activities.

This stage involves the process of cleaning iron ore from soil residues and knocking it into chunks of smaller size before roasting (Figure 9). The purpose of the iron ore being roasted is to get rid of silica and carbon in order to accelerate the chemical reactions occurring during smelting (Rostoker and Bronson, 1990). After that the roasted iron ore will be melted together with catalyst materials such as sand and shells using rubber tree charcoal. These experiments involved charcoal and iron ore mixing volume ratios of 1:3, 1:5 and 1:10 (Figure 10) as suggested by Mokhtar et al. (2018). The smelting process lasts for seven to eight hours and requires a melting temperature around 1,200. After the smelting process takes about seven to eight hours, it is found that the molten iron slag has not yet flowed out.

Therefore, the structure of the furnace was broken to see and examine the condition of the iron ore that has been melted. Research on the results of iron smelting experiments shows that it is still brittle and easily broken if compared to iron blooms at the Sungai Batu Archaeological Complex. This is because the iron blooms are more solid, precise and have good smelting quality and high quality (Figure 11) with over 60% iron oxide (Fe) content (Mokhtar, 2019).



Figure 9. The process of breaking iron ore into small lumps (a) and the roasting process (b) (Source: Research data analysis, 2023)

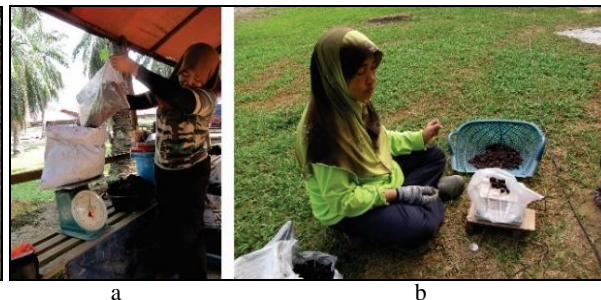


Figure 10. The process of weighing charcoal (a) and iron ore (b) before an experiment is carried out at SBAC

This indicates that iron smelting experiments carried out with the prescribed ratio of iron ore and coal need to be re-examined and modified as well as the optimal combustion temperature needs to be adjusted to obtain better smelting results using a bimetal thermometer temperature measuring device. Non-uniform smelting temperatures are believed to be the cause of molten iron ore not to flow out.

Although the archaeological experiments of iron smelting did not give the same results as the evidence of iron blooms at iron smelting sites, the information obtained is primary data that can be improved in further experiments. The most important thing from the archaeological experiments is that the iron smelting demonstration archeology package is offered to tourists at the SBAC itself which can give tourists an initial understanding of how the iron ore smelting stage was done by the early people in this area who generally represent the iron industry community ancient Kedah.

Development of the archaeotourism sector in Kuala Muda District

Archaeological experiments of iron smelting have been able to provide primary data related to raw materials and smelting procedures which eventually led to the offering of

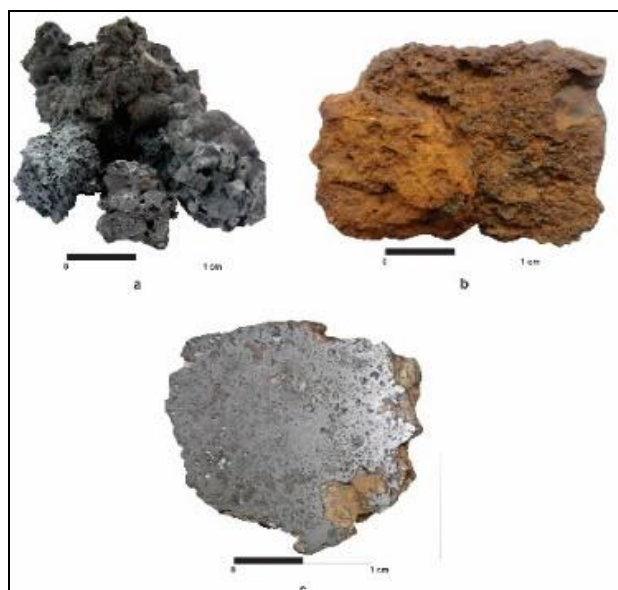


Figure 11. Iron smelting experiments which revealed brittle and hollow results (a) which showed differences with iron ingots found at iron smelting sites (b,c) which showed that they were more solid and high quality (Source: Research data analysis, 2023)

archaeotourism packages at the SBAC. The result is a guided tour package and a full package (Figure 12) which involves activities such as site visits, iron smelting demonstration, brick making and excavation. All these activities involve the cooperation of KTP who has been certified as a nationally recognized tourist guide. Through the tour package offer, KTP participants who have obtained a green badge and are recognized as professional tour guides in the Kuala Muda district can participate directly in all activities offered in the tour package, especially in the SBAC area.



Figure 12. Full tour package offered at SBAC such as guided tour, (a) iron smelting demonstration, (b), excavation, (c) and brick making (d) involving by KTP participants directly (Source: Research data analysis, 2023)

This means that for the first time in the Kuala Muda district, there is a group of local people who are trained and able to be the front line to the empowerment of tourism products that have been mapped in the Kuala Muda district specifically. Apart from being involved in the tourism package activities offered, KTP is also directly involved in assisting in exhibition and festival programs organized by the state government and non-governmental organizations (NGOs). KTP also assists in the process of preparation and work of royal, ministers, chief ministers members of parliament, foreign delegations and media filming visits, that can promote this archeological site to foreign tourists.

Based on KTP's consistent involvement in tourism activities and promotion of district tourism products, it can be considered that the KTP really has a positive impact in providing qualified and knowledgeable tour guides from locals in Kuala Muda district in general and Kedah in particular.

CONCLUSION

The KTP based on archaeological research and tourist guide courses established from 2013 has successfully achieved its objectives and is able to produce many certified tourist guides in the Kuala Muda district. KTP's intellectuality in archeology, history and culture in the Kuala Muda district is the best added value that a natural heritage tour guide should have. Therefore, it is not an exaggeration to suggest that the existence of such a program allows ancient Kedah smelting and manufacturing technology to be identified and classified through archaeological experiments and the results disseminated to the community through tourism packages created.

As a result, successful district tourism ambassadors have been able to be formed through this KTP which will definitely help the state and the country in the development of the archaeotourism sector.

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ASSESSMENT OF RECREATIONAL LOAD ON FOREST LANDSCAPES OF THE KOSTANAY REGION IN THE REPUBLIC OF KAZAKHSTAN

Zhanar OZGELDINOVA 

L.N. Gumilyev Eurasian National University, Department of Physical
and Economical Geography, Astana, Kazakhstan, e-mail: ozgeldinova@mail.ru

Assel BEKTEMIROVA * 

L.N. Gumilyev Eurasian National University, Department of Physical and Economical Geography, Astana, Kazakhstan, e-mail: asel.8.90@mail.ru

Zhandos MUKAYEV 

Shakarim University, Department of Science Disciplines, Semey, Kazakhstan, e-mail: zhandos.mukaev@mail.ru

Altyn ZHANGUZHINA 

L.N. Gumilyov Eurasian National University, Faculty of Natural Sciences, Astana, Republic of Kazakhstan, e-mail: altyn8828@mail.ru

Aizhan MUSSAGALIYEVA 

Al-Farabi Kazakh National University, Department of Geography,
Land Management and Cadastre, Almaty, Kazakhstan, e-mail: mussagaliyeva_a@mail.ru

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Abstract: The purpose of the study is to assess the recreational load on forest landscapes within the Kostanay region. In this study, a landscape-dynamic basis is used to identify the relationship of recreational load in various types of natural complexes. An integral indicator of recreational load was calculated for each studied forest landscape and the stages of recreational digression were determined. The surveyed forests are located in an area with high attendance and are characterized by stages III and IV of digression. Especially high loads are carried by the forests of Arakaragai, which has a very dense network of paths.

Key words: forest landscapes, Kostanay region, recreational activity, recreational load, recreational digression

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INTRODUCTION

Currently, various forms of forest recreation have become a powerful factor of anthropogenic impact on the forest. The forests of the Kostanay region are characterized by uniqueness and favorable conditions for tourism and the organization of various forms of recreation. As the city grows, the population increases the recreational load on the forests of the region. With the growth of recreational loads, natural renewal is disrupted, the process of digression increases. To maintain a stable balance while simultaneously performing sanitary-hygienic and environmental functions by forests, it is necessary to know the levels and duration of recreational exposure. Thus, there is a typical contradiction between the use of this territory for the needs of the local population and the need to preserve forests. To prevent further deterioration of the condition of this facility and reduce environmental risk, it is necessary to give a comprehensive assessment of its condition, determine the degree of its degradation. The works of Dmitriyev, Mustafayev and Agybetova are devoted to the study and assessment of the recreational load on the studied objects with a view to their possible rational use and development. The results obtained characterize the degree and demand for natural and recreational facilities and allow us to identify objects already used or recommended for use as objects of the tourism industry (Dmitriyev et al., 2021; Mustafayev et al., 2023; Agybetova et al., 2023).

Recreational loads are increasing and cause deterioration of the quality condition of the forest, in some cases, it completes irreversible degradation naturally. In suburban forests, sanitary and hygienic, water protection, and soil protection functions are reduced, and their aesthetic value is lost. In places used for recreation, the vegetation cover is damaged, the renewal of forest-forming species is disrupted, the soil is compacted, the forest litter is destroyed, etc.

This has an impact on the quantitative and qualitative composition of forest flora and fauna and leads to a violation of the existing consort relationships. Recreational loads affect forest phylogenies as a complex factor (Canteiro et al., 2018; Asmelash and Kumar, 2019). The presence of a forest area affects the quality of the natural environment and the extent to which this natural environment is suitable for a comfortable and healthy human existence. Issues of forest fund protection are dealt with all over the world and there are many works that are devoted to this topic (Kuwabé and Ohashi, 2023; Hnaung Aye and Shibata, 2023; Sato and Shuin, 2023).

* Corresponding author

The most noticeable effect is the compaction of the topsoil, increasing its bulk weight and hardness. Hence, various violations of the water-air regime arise. Strong compaction of the soil creates conditions close to anaerobic in the root layer and provides great resistance to root growth. In the upper layers of the soil, the number of intensively working parts of the root system – thin roots that absorb water and nutrients – decreases 2-3 times. Trees often have the phenomenon of «lifting the roots up» with a lack of air, while they, rising, are subjected to mechanical destruction.

Due to the compaction of the soil in the forest, the growth of trees in height is inhibited and the increase in trunk thickness decreases, as well as the drying of trees (the phenomenon of «dryness»). Pine and birch are the most resistant to recreational loads, relatively low-demand for soil moisture and aeration. Oak, linden and others suffer more.

Soil compaction slows down the activity of soil microorganisms, violates the conditions of mineral nutrition, reduces the number of nitrates, reduces the amount of total noise, gross and mobile nitrogen, and phosphorus (Zakamsky, 2012).

Vacationers in the forest violate the composition of the forest floor, destroying and grinding its components: branches, cones, needles, leaves, and other organic residues. With the increasing recreational load on the forest, the stocks of forest litter are decreasing. Its destruction leads to a change in the temperature regime of the soil, the litter fertilizes and improves the physical properties of the soil. The collection of litter or its absence leads to impoverishment, compaction, and drainage of the soil. The natural renewal of tree species is also associated with the forest floor because there are tree seeds there (Avila-Robinson and Wakabayashi, 2018). Thus, in the territory experiencing a high recreational load, there is a change in the species composition of the animal and plant world. This can lead to partial or complete changes in the biocenosis and the ecosystem as a whole (Dyrenkov, 1978). One of the tasks of the complex determination of the geocological state of recreational facilities in the Kostanay region was to assess the recreational loads on their components. The state forest fund of the Kostanay region is 1 million 146,087 hectares (official website of the Akimat of Kostanay region). Pine and birch forests of the most widespread mixed-grass group of forest types growing in the Kostanay region («Borovskoye », «Amankaragai», «Arakaragai») were selected as objects of research (Akbar et al., 2020).

«Borovskoye». The area of the territory of KSU «Borovskoye Forestry Institution» is 93.00 hectares, including:

- protection category - green zones of settlements and health-improving institutions - 56.0 hectares;
- protection category - restricted lanes along the banks of rivers, lakes, reservoirs, canals, and other water bodies - 24.0 hectares;
- protection category - field- and soil-protective forests - 13.0 hectares.

The territory of forestry is represented by mixed forests, mainly pine forests. The most common are variegated, bracken, cherry, bone, and horsetail pine forests. The relief forms wide cliffs and sandy hills with gentle slopes.

The sanatorium complex of the municipal-state enterprise «Kostanay Regional Rehabilitation Center named after M.Karabayev» is deployed in a pine forest on the shore of a lake with mineral water. Borovskoeskoye Lake is located in the vicinity of the forest, which is located at an altitude of 167.2 m above sea level. According to the topographic survey of 1958, the surface area of the lake is 1.9 km². The largest length of the lake is 2.4 km, the largest width is 1.3 km (Ozgeldinova, 2022). «Amankaragai». The Amankaragai pine forest is the largest island forest of the Kostanay region – the habitat of one of the oldest animals on the planet – the moose. Trees of mixed breeds grow here: poplar, pine, birch. The forest alternates with small lakes. The Amankaragai forest stretches in the southern part of the Kostanay (North Turgai) plain (45 km long and 14.5 km wide). The area covered by forest is more than 60 thousand hectares. Mostly pine grows here, but significant areas are occupied by birch and aspen. Here, in the Karagash tract, there is a small, 5-hectare, botanical nature monument of regional significance. This boron grows on an array of Aeolian sands (a type of continental geological deposit represented by material brought by the wind). This sand is wavy in places, and bumpy. In the interstitial basins, there are swampy birch and aspen-birch spikes. At the entrance to the pine forest, there are many small lakes, both fresh and salty. It is surrounded by grass-grass steppes (Kropinova et al., 2023).

«Arakaragai». Arakaragai (Arakaragai pine forest, Kaz. Arakaragai) is a mixed forest area, which is located in a steppe zone with dark chestnut soils. The length from north to south is 40 km, and the width is about 20 km. The total area is 616 km², including 271 km² covered with forest. Wood composition: pine, birch, aspen, rosehip, black dogwood, meadowsweet. The most common are early-sedge, early-sedge-ground-collar, spiraling-cherry, mixed-grass-ground-collar, and fescue-lichen pine forests. The relief forms shallow-bumpy dunes and sand hills with gentle slopes.

On the territory of Arakaragai there is a climatobalneological sanatorium «Sosnovy Bor». The main therapeutic factor of the sanatorium is mineral water. By its composition, the mineral water of the sanatorium «Sosnovy Bor» is close to the mineral springs of the famous resort «Pyatigorsk», it is also an analog of the water «Morshin», «Karlovy Vary» and «Essentuki 17» (Chazdon et al., 2016; Cutler et al., 2018; Tokpanov et al., 2021).

MATERIALS AND METHODS

An indicator of the recreational impact on the biocenosis of factors caused by the type of forest recreation, determined through the basic values. The influence of recreational loads was studied using the evaluation scales of recreational digression. As a rule, in the zone of influence of large settlements, intensive recreational load combined with the negative impact of man-made pollution of the air basin inevitably suppress the vital activity of forest landscapes, which leads to the appearance of various stages of digression, determined by the state of living ground cover. And so recreational loads act not only on individual plants but also on the plant community as a whole (Figure 1).

The distribution of recreants within the territory depends on many factors: the landscape structure and characteristics of elementary landscape allotments (locations), the presence or absence of water bodies, accessibility, and landscaping of the territory. In this study, a landscape-dynamic basis is used to identify the relationship between recreational load in various types of natural complexes (Isachenko and Reznikov, 2011).

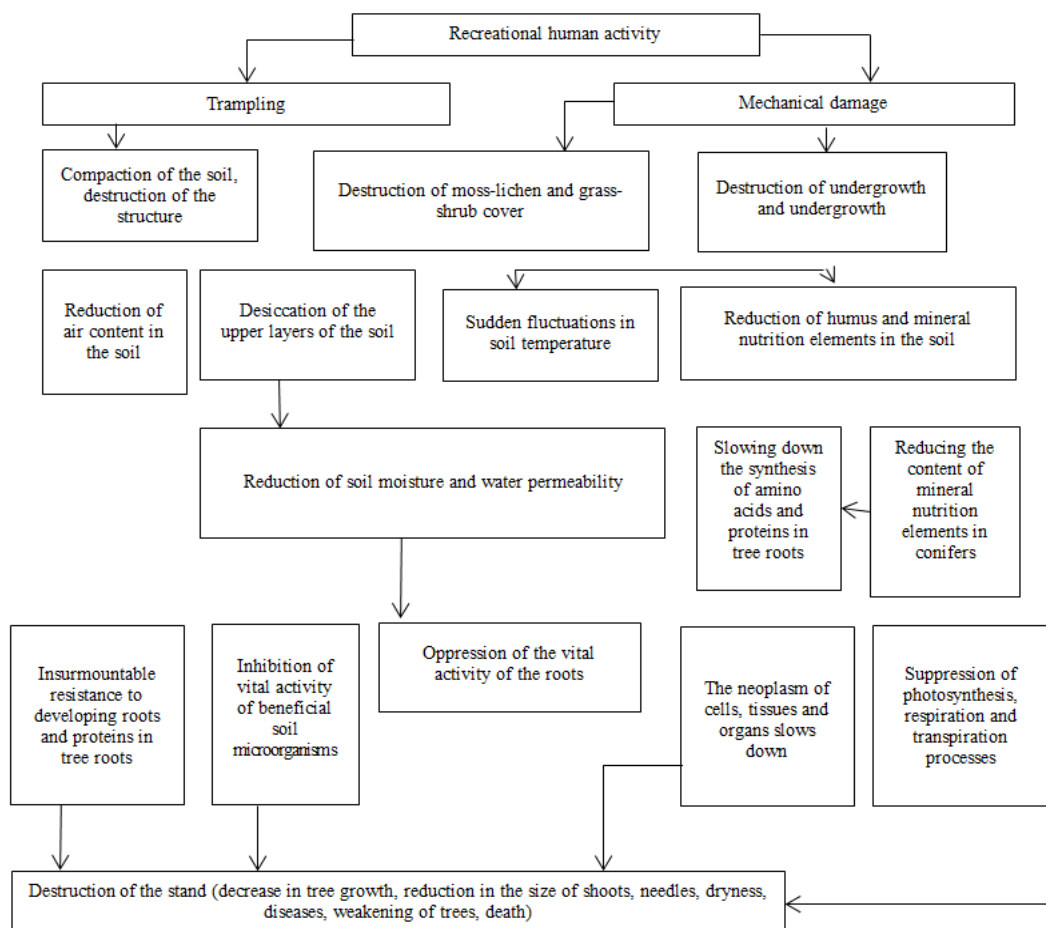


Figure 1. Scheme of conjugate processes occurring during recreational forest degradation (Source: Dyrenkov S.)

Assessment of the recreational load of the territory on a landscape-dynamic basis consists of the following stages:

- selection of recreational load indicators;
- determination of the actual values of the selected indicators;
- development of gradations of selected indicators in relation to the study area;
- calculation of the total recreational load indicator and determination of the stages of recreational digression;
- analysis of the effects of recreation in different types of natural complexes (Figure 2).

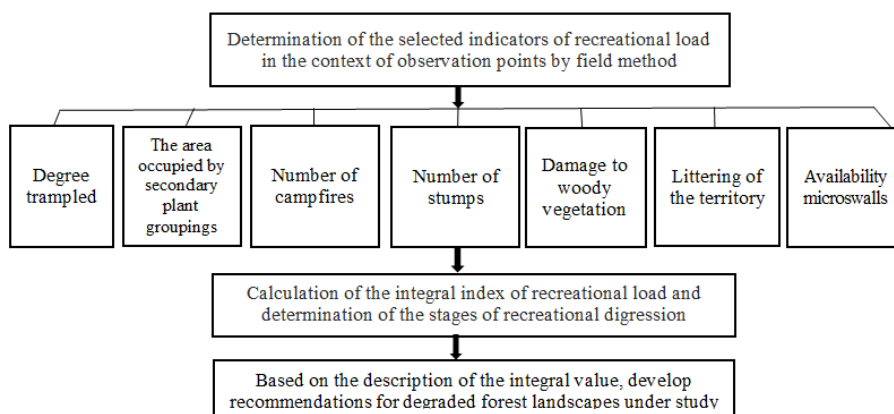


Figure 2. Flowchart «Assessment of recreational load on forest landscapes» (Source: Authors)

To assess the recreational load at each key site, the following indicators were recorded:

K_1 — the degree of trampling of the ground cover (the proportion of the area with exposed soil or soil, %);

K_2 — the share of the area (%) occupied by secondary plant groupings with a predominance of trampling-resistant, mainly ruderal herbaceous species (*Dandelion vulgaris* (*Taraxacum officinale* Wigg. s. l.), plantain large (*Plantago major* L.), creeping clover (*Trifolium repens* L.), common vole (*Agrostis capillaris* L.), annual bluegrass (*Poa annua* L.), lepidotheca odoriferous (*Lepidotheca suaveolens* (Pursh) Nutt.), thin Juncus (*Juncus tenuis* Willd.), yarrow ordinary (*Achillea millefolium* L.), kulbaba autumn (*Leontodon autumnalis* L.) and others.) and some pioneer species of mosses (*Pohlia nutans* (Hedw.) Lindb. and others.);

- K_3 — number of fire pits (pcs./hectares);
 K_4 — the number of stumps of cut and felled trees (pcs./hectares);
 K_5 — damage to woody vegetation (% of damaged trees from their total number);
 K_6 — littering of the territory (total amount of garbage in kg./hectares);
 K_7 — the presence of microswalls of garbage (pcs./hectares).

Based on the comparison of the results obtained with the work on the study of recreational digression of forest communities (Rysin and Lepeshkin, 2011:283), a total indicator of the recreational load of the natural complex (K) was introduced, which was calculated by summing up the scores of partial load indicators for each landscape allotment:

$$K = 2K_1 + 2K_2 + K_3 + K_4 + K_5,$$

where K_1, K_2, K_3, K_4, K_5 are the point gradations of recreational loads.

In the formula for calculating K , the most stable and significant characteristics of digression — the trampling index (K_1) and the proportion of secondary plant groupings (K_2) — were introduced with a weighting factor of 2. Indicators of littering of the territory and the presence of micro-landfills (respectively K_6 and K_7) were not taken into account when calculating K , since these characteristics are subject to changes even during one season and the violations described by them are most easily eliminated. The obtained values of the total recreational load index K (in points) were ranked according to 4 stages:

I (0-9 points) - intact condition: trampling is not noted even in the form of a weakly expressed path network; recreational impact is reduced to cutting down trees whose diameter (meaning the diameter at the level of cutting or felling) rarely exceeds 10-15 cm, and the appearance of single fires; secondary vegetation is practically absent;

II (10-14 points) - disturbed condition: there is a distinct pathway network, the area of which does not exceed 10%; there are single campfires; ruderal plant species are present on the paths and old campfires;

III (15-19 points) - severely damaged condition: the stand is poorly closed, groups of trees are limited to paths, roads, and clearings; the trampling of the contour area is up to 50%; increased density of fire pits (up to 100 pcs./ hectare); a large proportion of damaged trees (up to 50%); secondary plant groupings occupy a noticeable area;

IV (≥ 20 points) - degradation of vegetation cover: trampling of the original plant ground cover up to 100%; the area of secondary plant groupings is often more than 50%; there is almost no undergrowth; undergrowth persists in a small number of curtains; the number of damaged trees reaches 100%, tree roots are often exposed; abundance of fire pits (more than 100 pcs. /hectare) (Haris et al., 2020).

RESULTS AND DISCUSSION

At the initial stage, the objects of research were selected, which included the following forest landscapes within the Kostanay region: «Borovskoe», «Amankaragai» and «Arakaragai» (Figure 3).

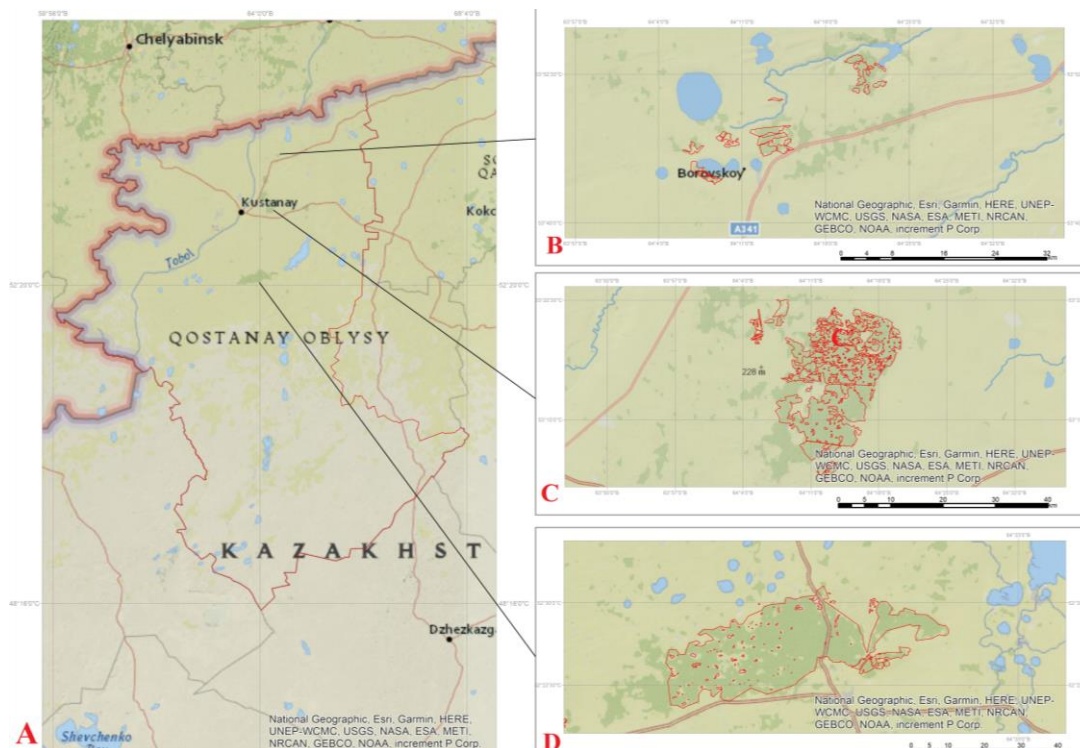


Figure 3. Forests of Kostanay region (Source: Author, created in the program ArcGIS.10.8 using the «National Geographic World Map») A) Kostanay region; B) Forest «Borovskoe»; C) Forest «Arakaragai»; D) Forest «Amankaragai»

Forest plantations perform many protective and recreational functions, therefore, the problem of their conservation is crucial to ensure the sustainable development of the natural environment. With the growth of cities, the recreational impact

increases, causing negative changes in the state of forest parks and suburban forests, which are essential to detect at an early stage. Most of the forest areas of the studied key areas are covered with pine trees and shrubs (Figure 4).

Recreational activities have a negative multilateral impact on forest landscapes and acquire such a scale that they begin to threaten the condition and existence of preserved green areas, especially those located in the vicinity of reservoirs. On the territory of the Arakaragai forestry there is a sanatorium «Sosnovy Bor», which also affects the state of forest landscapes. The sanatorium's wellness procedures use mineral water from healing springs and therapeutic mud (Figure 5, 6).



Figure 4. Amankaragai pine forest (Source: Author, created in the program ArcGIS.10.8 using the «National Geographic World Map»)



Figure 5. Arakaragai pine forest (Source: Author, created in the program ArcGIS.10.8 using the «National Geographic World Map»)

The research was carried out in 2022 in key areas of the forests of the studied region. Within the key area, three selection points were allocated for each of which the recreational load was calculated. Based on the objectives of the study and taking into account the characteristics of the study area, indicators were allocated for each key site, and calculations were carried out. All the above-mentioned indicators were taken into account and then the data obtained were recorded. Thus, a set of recreational load indicators was obtained for each key site (Table 1).

The pine and birch forests surveyed by us are located in an area with high attendance and are characterized by stages III and IV of digression. Especially high loads are carried by stands of Arakaragaya Pine forest, which has a very dense path network. In it, under the influence of recreational loads, the natural mosaic of the living ground cover is strongly transformed. The horizontal structure of the living ground cover is an alternation of different degrees of disturbed and undisturbed areas. The structure of the cover is represented by various grass groupings with a significant share of weed species. Recent studies have established that the total area of trails and trampled areas in pine plantations directly depends on the attendance of these arrays. Currently, the pine forests of the Borovskoe forest area are less susceptible to recreational loads than the plantations of Amankaragai and Arakaragai, the III and IV stages of recreational digression have been identified here.

At the same time, the array is used as a landfill for household and construction waste. As a result of the survey of pine plantations of the Amankaragai and Arakaragai botanical and geographical areas, it was found that the attendance at



Figure 6. Sanatorium «Sosnovy Bor» (Source: the research was conducted by the authors in «Sosnovy Bor», autumn, 2022)

the trial areas is significantly higher than normal. The identified stages of recreational digression in pine forests vary from III to IV, where, as a result of trampling, there is almost no living ground cover.

Table 1. Recreational load indicators for key sites (Source: Authors)

№ selection points	Degree trampled (%)	The area occupied by secondary plant groupings (%)	Number of campfires (pcs./hectares)	Number of stumps (pcs./hectares)	Damage to woody vegetation (%)	Littering of the territory (kg./hectares)	Availability of microswalls (pcs./hectares)
The key section of «Borovskoye»							
1	2	1	3	5	3	-	-
2	2	2	4	4	4	2	-
3	1	2	5	4	3	4	-
Key section «Amankaragai»							
1	2	2	4	3	4	1	-
2	3	2	3	5	4	2	-
3	4	2	3	4	2	2	-
Key site «Arakaragai» («Pine forest»)							
1	3	1	3	4	4	2	-
2	2	3	4	4	5	3	-
3	4	4	3	4	4	2	-

The territory of «Borovskoe» is distinguished by a relatively dense path network (knocked-out areas occupy up to 10-15% of the entire area), light-loving species predominate in the herbaceous cover, meadow grasses begin to appear, the power of the litter decreases, the renewal of the forest is still satisfactory in extra-tropical areas.

Studies of the territory of Amankaragai have shown that the structure of the living ground cover in the plantings is represented by bumpy-ridge sandy landscapes with sandy-grass-sand-and-dust steppes on poorly formed dark chestnut soils and pine forests on poorly formed sod-podzolic soils (forested lands account for 40%). Of the pine forests, early-seeding reed-like-variegated, birch horsetail-bone, and mixed-grass ground-mulberry predominate.

CONCLUSION

In general, the analysis of recreational loads and the response of living ground cover plants to their various impacts in the studied plantings showed:

- under the influence of recreation in areas with a recreational load index from 52% to 65%, the grass cover is greatly changed. Therefore, it should be considered degrading, and the load should be higher.
- with a recreational load of over 70% or more, the grass cover has been completely changed, its structure has been destroyed, and some forest and forest-meadow species have been preserved only at the bases of trees. The grass cover in these areas should be considered degraded, and the anthropogenic load is very high.

Based on the above, it can be stated that the forest landscapes of the Kostanay region are influenced by recreational activities, which are growing every year and leads to the transformation of the natural environment. Pine and birch plantations have been exposed for a long time not only to recreational loads but also to a strong technogenic influence. With increased recreational loads, the species composition of both pine and birch forests changes, which affects both the overall productivity of the grass-shrub layer and the productivity of individual species of herbaceous plants. Under the influence of recreational influence, not only the species composition of the living ground cover changes but also the projective cover and productivity of the lower tiers of vegetation. In pine forests, under significant recreational loads, mosses degrade primarily as part of the ground cover so that they can be used as indicators of the state of vegetation cover of recreational and technogenic disturbed territories. With a continuous increase in the need for «near» recreation and, accordingly, recreational flows within forests, it is necessary to constantly monitor the state of the landscapes of recreational areas, primarily forest landscapes. Further strengthening the associated impact of these loads without carrying out a complex of environmental measures in plantings can weaken their environmental and protective functions and their degradation.

The free use of the territories of the Kostanay region and exceeding the permissible norm of visitors – load per unit area, leads to over-compaction of the soil, violation of the water-air regime, and pollution of the forest, and this, in turn, is the cause of starvation of trees and shrubs in the study region. With the growth of recreational loads, natural renewal is disrupted, and the process of recreational digression increases. In these conditions, complex qualitative and especially quantitative information about the state of forest ecosystems and their components under different recreational loads, necessary for predicting the dynamics of recreational forests and choosing optimal management, is of particular importance.

1. The selected indicators were determined (degree trampled, the area occupied by secondary plant groupings, number of campfires, number of stumps, damage to woody vegetation, littering of the territory, availability of microswalls) of recreational load in the context of observation points by field method;

2. Within the objects of study, the stages of recreational digression used to assess the recreational load of various types of natural components are determined.

3. For each studied forest landscape of Kostanay region, an integral indicator of recreational load was calculated and the stages of recreational digression were determined. The pine and birch forests examined by us («Arakaragai», «Amankaragai») are located in a zone with high attendance and are characterized by stages III and IV of digression. Especially high loads are carried by plantations of Arakaragaya Pine forest, which has a very dense path network.

4. The result of the study developed recommendations for the restoration of damaged areas for each stage of recreational digression of forest landscapes.

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STUDY ON THE TEMPORAL-SPATIAL VARIATION CHARACTERISTICS OF ECOSYSTEM SERVICE VALUE IN TOURISM TYPICAL TOWN AT YANYANG TOWN, GUANGDONG PROVINCE

Zhimin WANG* 

Philosophy School of Tourism, Hospitality & Event Management, University Utara Malaysia, Jitra, Malaysia; Department of Geography, Guangdong University of Petrochemical Technology, Maomin, Guangdong, China, e-mail: 14919344@qq.com

Nurhazani Mohd SHARIFF 

Philosophy School of Tourism, Hospitality & Event Management,
University Utara Malaysia, Jitra, Malaysia, e-mail: hazani@uum.edu.my

Yong LI 

Department of Geography, Guangdong University of Petrochemical
Technology, Maomin, Guangdong, China, e-mail: 25642171@qq.com

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Abstract: The dynamic change of ESV can directly reflect the changes of regional ecosystem under the influence of human activities. In order to explore the nature and mechanism of the impact of rural tourism on rural ecosystem, based on the LUCC data and taking ESV as the evaluation index, the temporal-spatial change of the ecosystem in Yanyang Town, a tourism typical town, was evaluated. Conclusions as following: (1) The total ESV decreased by 7.19 million yuan in the past 16 years, but the ESV showed a trend of decreasing first and then increasing corresponding to different development stages of rural tourism. (2) As rural tourism's intervention on land, especially on forestland, is much lower than that of traditional agriculture, the ESV of most rural tourism villages shows an upward trend, which showed that most rural tourism activities have a positive impact on rural ecosystem. But rural tourism under different development modes also has different impacts because of the different dependence on ecosystem. Those conclusions show that rural tourism is an effective way to realize rural revitalization and sustainable development, but the exploitation of rural traditional culture and rural ecosystem value should be emphasized in the process of development.

Key words: Ecosystem Service Value (ESV), rural tourism, tourism typical town, Land Use and Land Cover Change (LUCC), Yanyang Town

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INTRODUCTION AND BACKGROUND OF THE STUDY

Ecosystem Service Value (ESV) is an index to measure the ecosystem service function, which reflects the contribution of ecosystem to human beings and the income of human beings from ecosystem (Costanza et al., 1997). The temporal-spatial change of ESV can directly reflect the specific change of regional ecosystem under the influence of human activities, which is an important basis for formulating regional sustainable economic development strategies (Ouyang et al., 1999a). There are many factors that affect the ESV, such as human awareness of the importance of ecosystem, scarcity of ecosystem services, dependence of economic and social development on ecosystem, climate change and many other factors (Li et al., 2022; Kang et al., 2023), while the Land Use and Land Cover Change (LUCC) play a decisive role in maintaining ecosystem services (Yao et al., 2009; Zhang et al., 2023). Different land use structures have different ecosystem effects, and the reduction of land use types (such as forests and waters) with high ESV Coefficient can lead a significant reduction of the total ESV of regional ecosystem (Wang and Dun, 2015). Tourism development activities will inevitably change the land use type of tourism destinations, which will lead to changes in ecosystem service functions (Li et al., 2020).

Evaluation of ESV is one of the effective methods for studying the impact of land use change. Since the Millennium Ecosystem Services Assessment (2005), there has been a worldwide upsurge in ESV research. However, existing researches are concentrated on large-scale areas, such as global (Daily, 1997; Costanza et al., 1997, 2014), regional (Xie et al., 2001, 2003; Ouyang et al., 1999b; Xu et al., 2023), and watershed scale (Cheng et al., 2017; Han et al., 2021; Zeng et al., 2022), lacking the research on rural scale (Li and Lin, 2023), especially little research on the influence of rural tourism on rural ecosystem (Ding et al., 2016; Xiong et al., 2020; Liu et al., 2021).

Additionally, several studies have discussed the positive significance of rural tourism pertaining to the social culture and ecological environment (Jiang and Chen, 2010; Wu et al., 2012; Chen et al., 2023). However, many research results show that the ecosystem of rural areas suitable for tourism development are well preserved and also fragile, which can

* Corresponding author

be easily damaged with the entry of large amount capital investment and person under the tourism development (Chi and Cui, 2006; Deng, 2017; Zhang et al., 2019; Li et al., 2020). Thus it can be see that the impact of rural tourism activities on rural ecosystem is very complicated, and it is scientific value to discuss the nature (positive or negative) and the mechanism of the impact. Tourism typical town refers to a small town with superior tourism resources, providing tourism services and products, and leading by the tourism industry (Chen and Yuan, 2016), which is a typical area for tourism development. Yanyang Town, a tourism typical town, has developed rural tourism since 1990s. Based on the remote sensing satellite image data and LUCC data of Yanyang Town, supported by GIS spatial analysis technology, this study analyzed the temporal-spatial variation characteristics of ESV of Yanyang Town under different development stages and modes, in order to explore the mechanism of rural tourism activities affecting rural ecosystem. This re search can not only increase research sample of small-scale ESV research, but also provide a scientific basis for the development of rural tourism and the formulation of land control strategies in tourism destinations.

STUDY AREA AND DATE RESOURCE

1. Study Area Overview

Yanyang Town is located in the northeast mountainous area of Guangdong Province of China. It covers an area of 183 km², governs 27 administrative villages, and with a population of 34,183 in 2020. The terrain is high in the east and low in the west (Figure 1). Meijiang River and Shiku River cross its west. it has a subtropical monsoon climate, mild and rainy. The forest coverage rate is as high as 78.1%, and the air quality has reached the national first-class standard all the year. Agriculture focuses on planting Shatian pomelo and tea. Under the background of vigorously developing rural tourism, there are few traditional agricultural villages characterized by single agricultural production, for example, Hang 'ao, Shangcun, Xiaodu and other villages, which are mainly concentrated in the south of the town. There are many high-quality scenic spots gathered in this little area, including one national 5A scenic spot, three national 4A scenic spots and one national 3A scenic spot (Table 1). Yanyang Town is also the core area of Meizhou Hakka Cultural Tourism Area. Expect for the typical

Hakka residential buildings, the folk customs, language, diet, drama, spirit, clothing, history and other Hakka cultures in Yanyang Town are very typical.

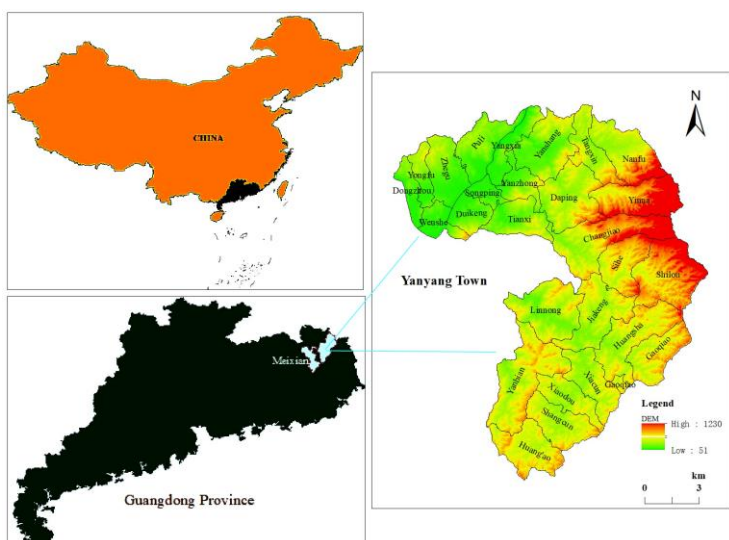


Figure 1. Location and administration map of Yanyang Town, China

Table 1. Advantageous scenic spots in Yanyang Town

Scenic spot grade	Scenic spot name
National 5A scenic spot	Yannanfei Tea Field Scenic Spot
National 4A scenic spot	Ye Jianying Memorial Park
	Yanming Lake Tourism Resort
National 3A scenic spot	Lingguang Temple Scenic Spot
	Wuzhifeng Tourism Resort

Based on good resource endowment, Yanyang Town began to develop tourism in the mid-1990s, and formed four tourism development modes as a result of difference in resources, namely, historical-cultural tourism village, eco-tourism village, agricultural - element tourism villagesand service-oriented tourism village around key scenic spots (Gan and Liu, 2017), their corresponding typical villages are shown in Table 2.

Table 2. Types and typical villages of rural tourism villages (Source: Authors)

Villages types	Tourist attraction	Typical villages
Historical-cultural tourism village	Rural cultural heritage with high historical and cultural value	Yanshang
Eco-tourism village	Original rural natural ecological environment	Nanfu
Agricultural-element tourism village	Theme characteristic agriculture	Daping, angxin
Service-oriented tourism villages	Around key scenic spot, special catering, accommodation and shopping	Changjiao, Yinna

The development of rural tourism in Yanyang Town has roughly experienced three stages, namely initial stage (1997-2004), high-speed development stage (2005-2013) and mature stage (2014- present). In the initial stage, the rural tourism form of Yanyang Town was mainly agricultural-element tourism based on its own advantages in agricultural resources, with fewer tourism products. While at the beginning of 2005, Yanyang Town made the planning of Yanyang International Tourism Typical Town. The government increased the investment in rural tourism, and vigorously improved the construction of tourism supporting facilities. The number of tourists reached 3.37 million, and the total tourism revenue was 2.79 billion Yuan, accounting for 38% of the town's GDP in 2012. In this stage, the tourism was in a high-speed development, which caused certain pressure on the ecological environment. Then Yanyang government focused on building Yanyang Eco-Tourism Park, emphasizing the connotative development of rural tourism and the protection of rural ecosystem from 2013, the development of rural tourism entered the mature stage. Yanyang Town has become a tourism typical town and a tourism hotspot town in eastern Guangdong. The lower threshold of tourism significantly provides opportunities for employment and entrepreneurship. There were 2,576 people (about 18% of the

total employment) employed in tourism in Yanyang Town in 2020, which not only increased their economic income, but also enhanced their sense of identity in developing tourism and raised their awareness of ecosystem protection.

2. Date Sources and Data Pre-processing

The main data used in this study is the LUCC data. This study selected 2004, 2014 and 2020 as sample years according to the three development stages of tourism in Yanyang Town, and collects the remote sensing data of these three years. Because the study area is small, in order to ensure the accurate identification of ground objects and the monitoring of LUCC changes, the WorldView-II image data of January 30th, 2020 and January 24th, 2014 with better cloud cover (the data comes from the source images of Google Earth, including quickbird of Digital Globe Company) are selected respectively, and the spatial resolution after the fusion of multispectral and panchromatic bands is 0.5m.

In addition, the Landsat 7 ETM image of May 7, 2004 (the data comes from the <http://www.gscloud.cn/> of the geo-spatial data cloud) is selected, and the spatial resolution after the fusion of multispectral and panchromatic bands is 15m. The above data are all projected by WGS84 coordinate system and UTM, and each image is geometrically corrected precisely to ensure the accurate correspondence of the coordinate positions of the objects with the same name. According to National Standard for Classification of Land Use Status (GB/T21010-2017) and considering the actual situation of land use in Yanyang Town, the land use can be categorized into seven types, known as the farmland, forestland, water land, construction land, shrub land, grassland, and bare land, then the land use classification system of Yanyang Town is established (Table 3). Based on multi-source remote sensing data and basic geospatial data, land use change monitoring in Yanyang Town was completed under the support of high-precision remote sensing image interpretation, GIS spatial analysis and spatial statistics technology.

STUDY METHOD

This study adopts a variety of technical methods and means, and the specific technical route is shown in Figure 2.

1. Analysis method of Land use dynamic change

The land use change was measured by the land use dynamic index, which refers to the quantitative change of land use types in a certain period of time in a research area (Gao et al., 2013). In this study, single land use dynamic index and comprehensive land use dynamic index were introduced. The meaning of each index and the specific calculation formula were as follows.

(1) Single land use dynamic index

$$K = \frac{(U_b - U_a)}{U_a} \times \frac{1}{T} \times 100\% \quad (1)$$

where **K** is the dynamic index of a certain land use type in the study period; U_a , U_b are respectively the number of a certain land use type at the beginning and end of the study; **T** is the research period, in this study, it is set as year (Bai, 2019).

(2) Comprehensive land use dynamic index

$$L_c = \left(\sum_{i=1}^n \Delta Lu_{i-j} / 2 \sum_{i=1}^n Lu_i \right) \times \frac{1}{T} \times 100\% \quad (2)$$

where Lu_i is the area of the land use type *i* at the beginning; ΔLu_{i-j} is the absolute value of the area of land use type *i* transformed into other type during the study period; **T** is the time span of the study (year); L_c is the comprehensive change rate of land use in the whole study area (Bai, 2019).

2 Evaluation Method of ESV

2.1. Evaluation Model

Because the research area of this study was small, the regional physical and geographical characteristics were relatively consistent, and the ecosystem attributes were basically consistent, so the equivalent valuation method could be used to calculate the regional ESV. According to the following formula (Costanaza, 1997), the ESV of main land use types could be calculated:

$$ESV = \sum(A_k \times VC_k) \quad (3)$$

where **ESV** is the total value of the ecosystem service of the study area (Yuan); VC_k is the ESV of land use type *k* per unit area (Yuan /hm²); A_k is the area of each land use type (hm²).

Table 3. Classification and definitions of land use types in Yanyang Town (Source: Based on the standard and actual situation, it be made by the author)

Land Use Type	Definition
Farmland	Paddy field, glebe field, and other agriculture lands
Forestland	Broad-leaved forest, and mixed forest
Water land	River, lakes, and pools
Construction land	Lands used for residential, industrial, commercial, and transportation
Shrub land	Fruit garden and tea garden
Grassland	Grass and meadows
Bare land	Bare rocks, riparian zones, and unused land

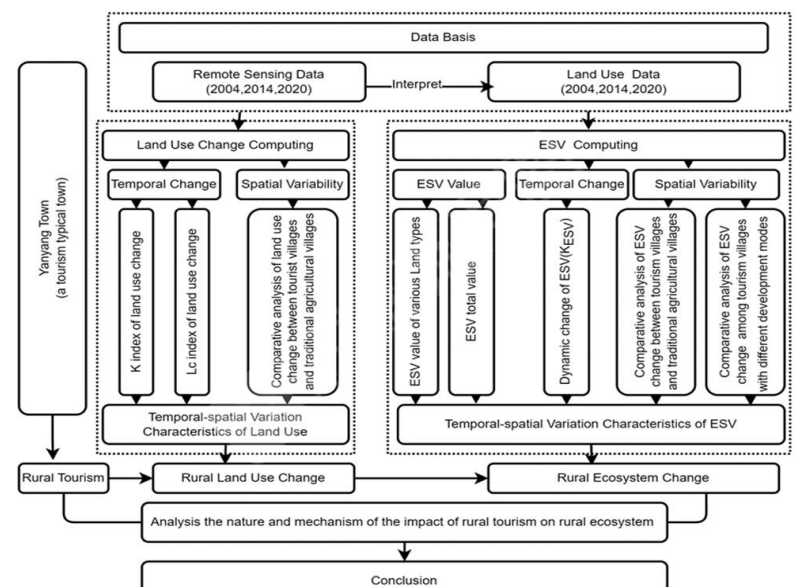


Figure 2. Technical Route of the Study (Source: author)

In order to study the variation differences and trends of regional ESV, this paper introduced the dynamic change of $ESV(K_{ESV})$ (Zhao et al., 2004), and the calculation formula was as follows:

$$K_{ESV} = \frac{ESV_b - ESV_a}{ESV_a} \times \frac{1}{T} \times 100\% \quad (4)$$

where ESV_a and ESV_b are ESV of a certain land type at the beginning and the end of the research respectively. T is the research period. If $K_{ESV} > 0$, the ESV showed an increasing trend; $K_{ESV} < 0$, the ESV showed a decreasing trend; $K = 0$, the ESV remained unchanged (Yan et al., 2014).

2.2. Adjustment of the value coefficient

To determinate the value coefficient (VC_k), this study adopted the value equivalent conversion method which was proposed by Xie Gaodi (2008) for China's terrestrial ecosystem. This method proposed that the value provided by the ecosystem was 1/7 of the value of natural grain production per unit area in the region, and the correction coefficient of Guangdong Province was 1.40. According to the statistical yearbook data of the prefecture-level cities where the study area was located, the annual average grain yield in Yanyang Town from 2004 to 2020 was 5753.989kg/hm², which was about 1.07 times that of Guangdong Province in the same period. Therefore, this study further revised the service value coefficient of farmland ecosystem in Yanyang Town to 2.07 times of the national level. At the same time, the average grain price in China from 2004 to 2020 was calculated at 2.03 yuan /kg, and the economic value of natural grain yield in Yanyang Town was 1,669.276 yuan/hm². Finally, according to the correction coefficient of Yanyan Town, and based on the ESV equivalent per unit area proposed by Xie Gaodi (2015), the VC_k of each land use type in Yanyan Town was calculated (table 4). According to Table 4, the ESV of construction land was not considered in this study, and its value was set to zero. Among the other six land use types, the forestland has the highest VC_k , followed by water land, grassland and shrub land. However, the VC_k value of farmland is small. It is precisely because of the different VC_k of different land types that the change of land types will inevitably lead to the change of regional ESV values.

Table 4. Table of ESV coefficient corresponding to each land type of Yanyang Town (yuan /hm²) (Source: Authors)

First-class type	Second-class type	Farmland	Forestland	Shrub land	Class land	Water land	Bare land	Construction land
supply services	Food production	3835.50	1002.07	656.53	1313.05	2764.32	0	0
	Raw material production	846.57	2280.56	1485.82	1935.02	794.74	0	0
	Water supply	-4509.30	1174.84	760.19	1071.17	28645.27	0	0
Regulation services	Gas regulation	3075.31	7498.22	4872.12	6807.14	2660.66	69.11	0
	Climate regulation	1606.76	22460.11	14616.35	18002.64	7912.87	0	0
	Purify environment	466.48	6668.92	4422.91	5943.29	19177.48	345.54	0
	Hydrological regulation	5165.82	16378.60	11575.59	13199.63	353280.20	103.66	0
Support services	Soil retention	1796.81	9156.81	5943.29	8292.96	3213.52	69.11	0
	Nutrient cycling	535.59	691.08	449.20	621.97	241.88	0	0
	Biodiversity conservation	587.42	8327.52	5424.98	7532.77	8811.27	69.11	0
Culture services	Aesthetic landscape	259.16	3662.73	2384.23	3317.18	6530.71	34.55	0
Total		13666.11	79301.45	52591.20	68036.85	434032.92	691.08	0

RESULT ANALYSIS

1. Spatial Distribution Characteristics of Land Use Types

Under the technical support of RS and GIS, the land use status data of Yanyang Town in 2004, 2014 and 2020 were classified and counted, then the area and proportion of various land use types in each year were obtained (Table 5). By using the mapping function of ArcGIS10.6 software, the spatial distribution maps of land use types in Yanyang Town in 2004, 2014 and 2020 were obtained (Figure 3). Table 5 and figure 3 showed that: As a small mountain town, forestland always is the most important land use type, accounting for 72.52%, 69.04% and 73.27% of the total area in the three years respectively. Which is the foundation of the ecosystem in Yanyang Town, and it also is the main provider of the ESV in Yanyang Town. The second area is farmland, which distributed linearly in valleys. Other land use types are small and scattered.

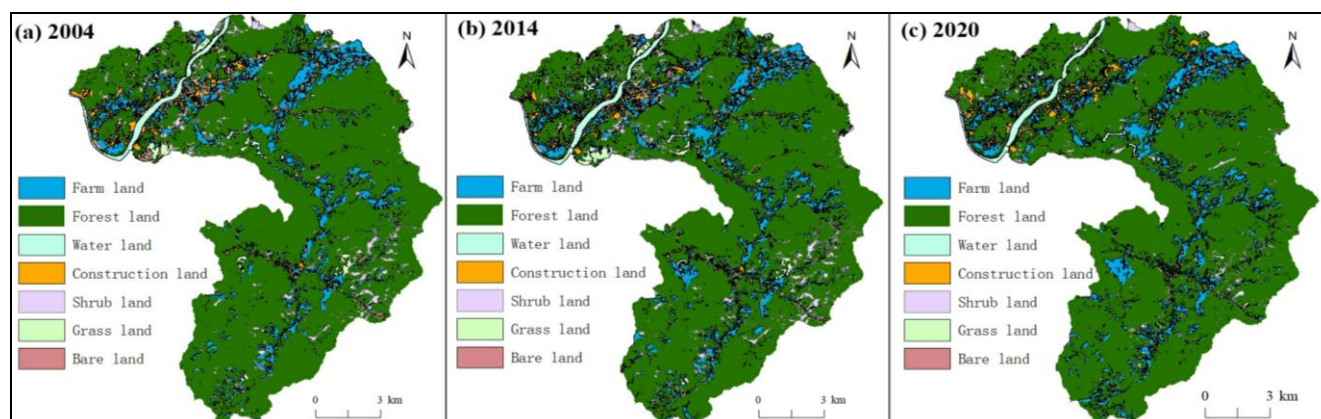


Figure 3. Spatial Distribution Map of Land Use Types in Yanyang Town from 2004 to 2020

2. Analysis of Land Use Change

2.1. Temporal variation characteristics of land use types

Based on the area data of land use types in the three years and related formulas (1) and (2), the area variation, single dynamic index (K) and comprehensive dynamic index (Lc) of land types in different periods were obtained, as shown in Table 6.

Table 5. Area and Proportion of Land Use Types in Yanyang Town in Different Periods (Source: Authors)

year	Land type	Farmland	Forestland	Water land	Construction land	Shrub land	Grassland	Bare land
2004	Area/km ²	24.32	132.62	4.16	9.19	7.31	3.54	1.73
	Proportion/%	13.30	72.52	2.27	5.03	4.00	1.93	0.95
2014	Area/km ²	28.07	126.20	4.31	8.80	8.94	4.48	2.02
	Proportion/%	15.35	69.04	2.36	4.81	4.89	2.45	1.11
2020	Area/km ²	27.34	133.98	4.16	9.18	4.30	2.56	1.33
	Proportion/%	14.95	73.27	2.28	5.02	2.35	1.40	0.73

Table 6. Table of dynamic changes of land use in Yanyang Town from 2004 to 2020 (Source: Authors)

Period	Land Type	Farm land	Forestland	Water land	Construction land	Shrub land	Grass land	Bare land	Lc
2004-2014	Area Variation/m ²	3744527	-6412283	156817	-395565	1625306	938094	292405	0.371
	K/%	1.540	-0.484	0.377	-0.430	2.223	2.652	1.692	
2014-2020	Area Variation /m ²	-729842	7779401	-149298	383533	-4635493	-1911280	-689994	0.742
	K/%	-0.433	1.028	-0.577	0.727	-8.648	-7.119	-5.692	
2004-2020	Area Variation /m ²	3014685	1367118	7518.67	-1032.6	-3010187	-973168	-397590	0.400
	K/%	2.066	0.172	0.030	-0.022	-6.864	-4.586	-3.835	

Table 6 shows that the overall land type change in Yangyan Town is the increase of farmland, forestland and water land, and the decrease of other land types during the 16 years from 2004 to 2020. However, in different periods of the development of rural tourism, the dynamic change trend of land types showed an obvious stage characteristic, such as all land types had increased except forestland and construction land decreased during the decade from 2004 to 2014. But the change trend of each land use type is just the opposite to that of the previous period from 2014 to 2020. As far as the area variation of land use types in each stage is concerned, the area change of forestland is the largest, followed by farmland, and farmland is the main direction of forestland transformation. From the perspective of the comprehensive dynamic index of land type (Lc) indicators, the Lc was 0.742% in 2014-2020, which was twice as much as that of 2004-2014. It indicated that the dynamic change intensity of land use types in Yanyang Town has been greatly intensified. The increase of land intervention intensity is consistent with the strengthening of various local economic activities. According to the government work report of Yanyang Town, the Gross National Product (GDP) of Yanyang Town increased from 2.69 billion yuan to 10.72 billion yuan, and the per capita annual income also increased from 4,860 yuan to 28,780 yuan in these 16 years.

2.2 Spatial difference of land type change

In order to observe the spatial difference of land type change, and analyze the difference of intervention intensity of traditional agriculture and rural tourism on rural land, this study selected six tourism villages and six traditional agricultural villages respectively, and calculated the Lc of each village in different periods. The results were shown in Figure 4. On this basis, the average value of Lc for the tourism villages, traditional agricultural villages and all villages in Yanyang Town in different periods were calculated and compared, and the results were shown in Figure 5. It could be seen from Figure 4 and Figure 5 that the Lc for six tourism villages in each period were lower than that of six traditional agricultural villages. As far as the average value of Lc was concerned, tourism villages were lower than the average level of all villages in each period, while traditional agricultural villages were higher. Additionally, based on the area data of forestland and farmland in each village from 2004 to 2020, it is calculated that the forestland area of six tourism villages has only decreased by 0.119% in the past 16 years, and the farmland has increased by 9.541%, while the forestland area of six agriculture villages has decreased by 4.998% and the farmland area has increased by 51.143%. All these showed that the interference intensity of tourism activities on land, especially the damage to forest land, is far less than that of traditional agricultural activities in Yanyang Town.

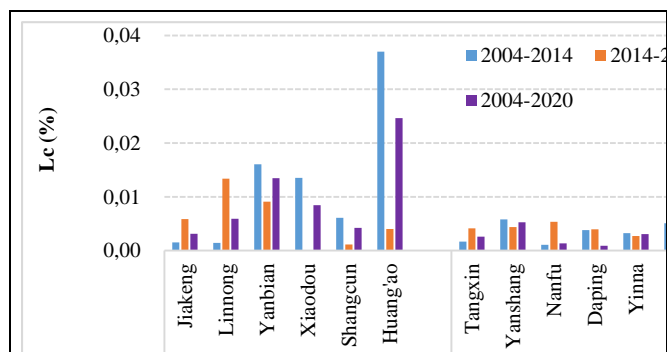


Figure 4. Comparison chart of the Lc between agricultural villages and tourism villages in different periods

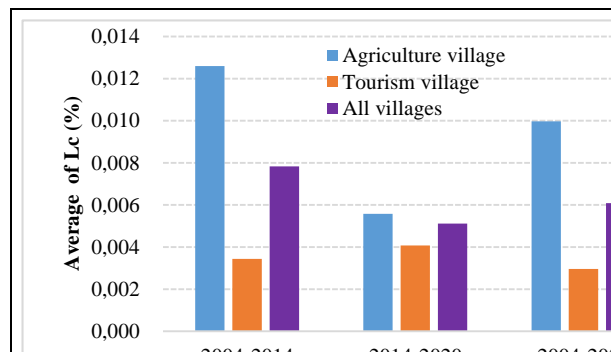


Figure 5. Comparison chart of average of Lc between agricultural villages and tourism villages in different periods

3. Dynamic changes of ESV

3.1. Temporal variation characteristics of ESV

The change of land use types, especially the change of forest lands, water areas, and grass lands with high VC_k , have greatly affect the ESV of Yanyang Town. According to the formula (3) and (4), the ESV and the dynamic change rate of ESV (K_{ESV}) of Yanyang Town in different years was calculated (Table 7).

It could be seen from Table 7 that the total ESV of Yanyang Town decreased by 7.19 million yuan in the 16 years, with a trend of first decreasing and then increasing. In terms of each land type, the ESV of forest land decreased significantly (50.85 million yuan), when the ESV of farmland, shrub land, grasslands and water land showed an increasing trend from 2004 to 2014. While from 2014 to 2020, the ESV of forest land showed an increasing trend, when other land types decreased to some extent. All those showed that the change trend of total ESV was consistent with that of forestland, forestland has the greatest influence on the change of total ESV in Yanyang Town.

Table 7. ESV and K_{ESV} of Different Land Use Types in Yanyang Town from 2004 to 2020 (Source: Authors)

Year	Item	Land Type						Total
		Farm land	Forest land	Shrub land	Class land	Water land	Bare land	
2004	ESV/million yuan	33.24	1051.67	38.45	24.07	180.42	0.12	1327.96
	Proportion/%	2.50	79.19	2.9	1.81	13.59	0.01	100
2014	ESV/million yuan	38.36	1000.82	46.99	30.45	187.23	0.14	1303.98
	Proportion/%	2.94	76.75	3.6	2.34	14.36	0.01	100
2020	ESV/million yuan	37.36	1062.51	22.61	17.45	180.75	0.09	1320.77
	Proportion/%	2.83	80.45	1.71	1.32	13.69	0.001	100
2004-2014	ESV Variation/million yuan	5.12	-50.85	8.55	6.38	6.81	0.02	-23.98
	K_{ESV} /%	1.54	-0.48	2.22	2.65	0.38	1.69	-0.18
2014-2020	ESV Variation/million yuan	-1.00	61.69	-24.38	-13.00	-6.48	-0.05	16.78
	K_{ESV} /%	-0.43	1.03	-8.65	-7.12	-0.58	-5.69	0.21
2004-2020	ESV Variation/million yuan	4.12	10.84	-15.83	-6.62	0.33	-0.03	-7.19
	K_{ESV} /%	0.77	0.06	-2.57	-1.72	0.01	-1.44	-0.03

3.2. Spatial Variation Characteristics of ESV

Based on the land use data of each village in Yanyang Town, the ESV and its variation of each village in 2004-2020 were calculated by using the calculation formula (4). Then, according to the changes of ESV, the villages were classified as follows, eco-preservation areas (ESV did not change), eco-increment areas (ESV increased) and eco-impairment areas (ESV decreased) (Figure 6).

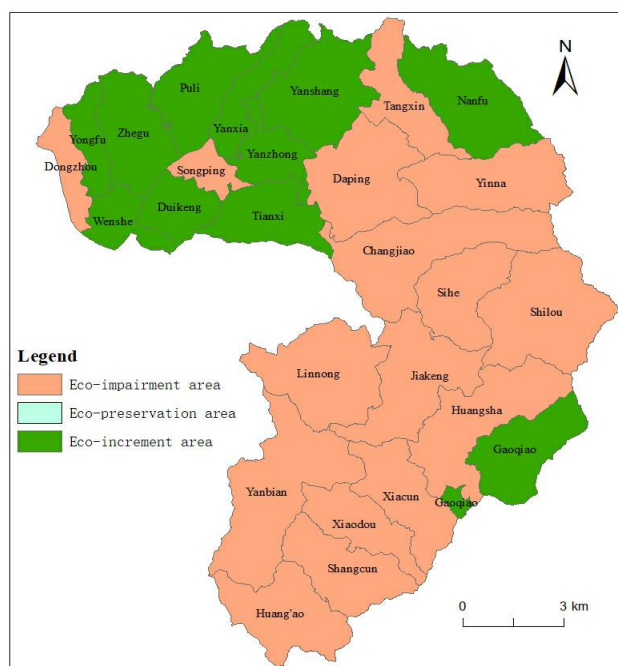


Figure 6. Spatial distribution map of ESV change in Yanyang Town from 2004 to 2020

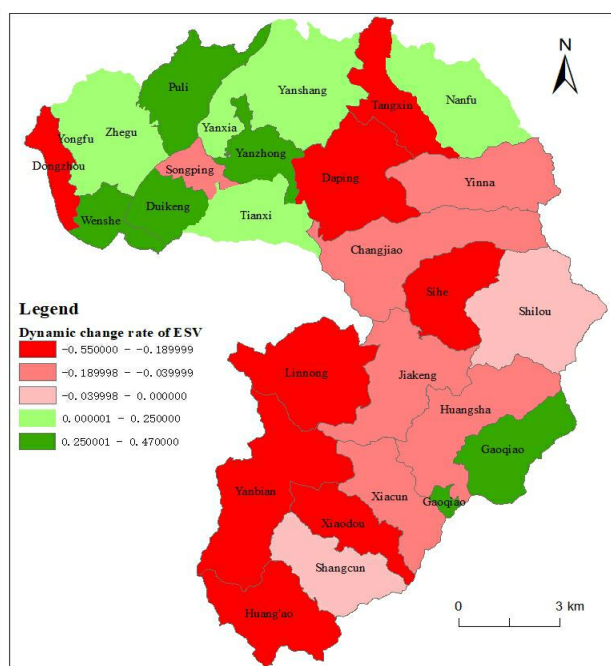


Figure 7. Spatial distribution map of K_{ESV} level in Yanyang Town

The Figure 6 showed that 16 villages were eco-impairment areas among the 27 villages in Yanyang Town, accounting for 67.2%, which also proved the conclusion that the total ESV of Yanyang Town had decreased. To further study the spatial distribution characteristics of the dynamic change rate of ESV from 2004 to 2020, the K_{ESV} was divided into five grades by using the natural breakpoint method of GIS based on the K_{ESV} value of each village (Wu

and Wan, 2020), and the spatial distribution map of the KESV was obtained (Figure 7). The figure 7 showed that there were obvious differences, such as the ESV of tourism villages located in the northwest tends to increase, while that of traditional agricultural villages in the southeast tends to decrease. In order to analyse the mechanism of the spatial difference of ESV, this paper made a comparative study on the changes of ESV between tourism villages and traditional agricultural villages, as well as among tourism villages with different development models. The research is as follows:

3.2.1. Comparative analysis of tourism villages and agriculture villages

To study the impact of different production modes on rural ecosystem, based on the average K_{ESV} of six traditional agricultural villages, six tourism villages and all villages in Yanyang Town in the 16 years from 2004 to 2020, Figure 8 was drawn. This figure showed that the average K_{ESV} of all villages decreased first and then increased. The dynamic change trend of ESV in tourism villages was consistent with that of Yanyang Town, but the traditional agricultural villages kept a decreasing trend all the time. Generally speaking, although rural tourism has different impacts on rural ecosystem at different stages of development, the negative impact of tourism activities on the ecosystem is far lower than that of agriculture. In addition, rural tourism at this stage has a positive impact on the ecosystem in Yang Yan town.

3.2.2. Comparative analysis of tourism villages with different development modes

To further analyze the impact of different tourism development modes on rural ecosystem, Figure 9 was drawn based on the K_{ESV} and its average of six tourism villages from 2004 to 2020. Figure 9 showed that the average K_{ESV} of six rural tourism villages was -0.07% during the 16 years. The ESV of the historical-culture tourism village (such as Yanshang) and eco-tourism village (such as Nanfu) showed a positive growth, with K_{ESV} of 0.18% and 0.07% respectively.

However, the ESV of agricultural-element tourism villages (such as Daping and Tangxin) showed a large negative growth, with K_{ESV} of -0.28% and -0.19% respectively. The ESV of service-oriented tourism villages around key scenic spots (such as Changjiao and Yinna) also showed a negative growth, but the rate was obviously lower than that of agricultural-element tourism villages. Generally speaking, rural tourism activities with different development models had different impacts on rural ecosystem. The main reason is that the rural tourism villages in different development modes depend on the ecosystem differently.

Historical-cultural tourism villages and eco-tourism villages are the most dependent on the ecological environment, and their core competitiveness lies in their profound traditional culture and excellent ecological environment, so they pay special attention to the protection and construction of forest. The data show that the forest areas of Yanshang Village and Nanfu Village have increased by 9.994% and 4.656% respectively in the past 16 years, which are the two fastest growing villages among the six tourism villages, and the increase of forest area has improved ESV.

However, agricultural-element tourism villages need to develop characteristic agriculture and scale agriculture, the area of farmland is constantly expanding. For example, in Daping Village, the farmland has increased by 25.785% and the forestland has decreased by 6.483% in 16 years, large number of forestland have been reclaimed into farmland, resulting the ESV rapid declined. Service-oriented tourism villages not only need corresponding basic service facilities for scenic spots, such as transportation, parking lots, shops, hotels, etc., but also need their own tourism attractions, such as beautiful environment. Therefore, although the forest area and the ESV of such villages have decreased, the decline is obviously smaller than that of agricultural-element tourism villages.

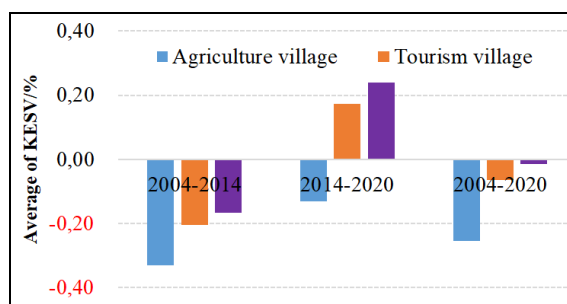


Figure 8. Comparison chart of average K_{ESV} among different type villages (Source: Authors)

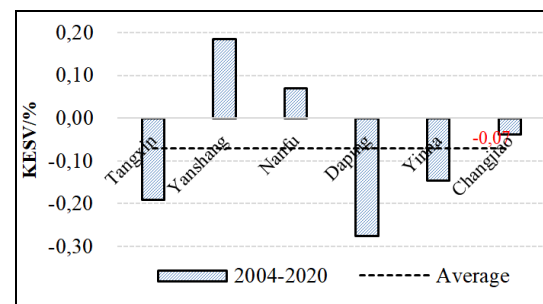


Figure 9. Comparison chart of K_{ESV} among tourism villages under different development modes

CONCLUSIONS

In order to explore the nature and intensity of the impact of rural tourism activities on rural ecosystem, the temporal and spatial variation characteristics of ESV in Yanyang Town were analyzed based on the LUCC data. The results showed as follows:

(1) Being a mountain town, forestland is the most important land use type in Yanyang Town, and it is the foundation of Yanyang Town's ecosystem and the main supplier of ESV. The change of forestland will determine the changing trend of Yanyang Town's ecosystem. As far as the dynamic change of ESV in Yanyang Town was concerned, the total ESV decreased by 7.19 million yuan in the 16 years, but it showed a trend of decreasing first and then increasing in time, which is consistent with the change trend of forestland area in the corresponding period. Those results show that the primary problem for the sustainable development of the ecosystem in Yanyang Town is to protect the forest.

(2) From the comparative study on the changes of land use types between rural tourism villages and traditional agricultural villages in Yanyang Town, it can be seen that the impact intensity of rural tourism activities on land, especially on forestland, is

much less than that of agricultural activities. Additionally, because the mature rural tourism development activities can realize the ecosystem value with less intervention on the land, thus increasing the rural income and enhancing the environmental awareness of residents and the government, which has positive impact on rural ecosystem. Therefore, rural tourism is an effective development path for rural revitalization and sustainable development if there are conditions for tourism development.

(3) According to the data comparison of K_{ESV} among tourism villages, it can be seen that the nature of the impact of tourism activities under different development modes on the ecosystem is also different because of the different dependence on the ecosystem. The historical-culture tourism village and eco-tourism village showed a positive effect. However, both agricultural-element tourism villages and service-oriented tourism villages showed negative effect. This result shows that, in order to achieve sustainable development of rural tourism, the tourism value of rural traditional culture and rural ecosystem must be deeply explored, land intervention should be reduced, and more attention should be paid to the protection of local ecosystem.

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GEOGRAPHIC ACCESSIBILITY ANALYSIS USING THE E2SFCA MODEL IN HOSPITALS LOCATED IN ARMENIA, QUINDÍO

Johnatan Estik BARRÍOS* 

Universidad Nacional de Colombia, Sede Manizales, Facultad de Ingeniería y Arquitectura, Departamento de Ingeniería Civil, Grupo de Investigación en Movilidad Sostenible, Manizales, Colombia, e-mail: jebarriosr@unal.edu.co

Carlos Alberto 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

Diego Alexander ESCOBAR 

Universidad Nacional de Colombia, Sede Manizales. Facultad de Ingeniería y Arquitectura, Departamento de Ingeniería Civil, Grupo de Investigación en Movilidad Sostenible, Carrera, Manizales, Colombia, e-mail: daescobarga@unal.edu.co

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Abstract: This research applies the Enhanced Two-step Floating Catchment Area method to determine the accessibility conditions of to the health care network in an intermediate Colombian city. This research aims to evaluate the medical personnel supply concerning the geospatial position of health care services in Armenia, Colombia, considering the operational and geometric particularities of the private transportation network. As a method, the Enhanced Two-step Floating Catchment Area is proposed, complemented with socio-demographic analyses. The most important result is about the level of medical coverage for socioeconomic strata 1, 2, and 3, which are below the average established by the World Bank.

Key words: E2SFCA, health, planning, accessibility, coverage

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INTRODUCTION

Hospital coverage in terms of physicians availability, points of care and available beds (Escobar et al., 2020), as well as the level of service complexity in the care center, as a result of the capacities and available elements of each city. This coverage behavior has a functional design associated with population growth and social development, in addition to the resources available to the public administration and private entities operating in the sector, resulting in a coverage level following the population's requirements. Despite these functional designs, some atypical events generate an excess demand for health services, which must be faced and assumed by the existing infrastructure eventuality. A clear example of this is the health services collapse due to the COVID-19 pandemic, in which the limit of supply allowed for ICU (Intensive Care Unit) eventualities in Colombia was reached. It required governmental decisions to mitigate the pandemic, forcing the population's preventive isolation and applying other necessary control measures (Presidencia de la República de Colombia, 2020). This eventuality generated an impact in matters of health services available at a worldwide level, thus giving the necessary justification for the current research, which is intended to diagnose accessibility to health care services concerning the physicians available in the population's area of influence. It also contrasts the indicators published by the OECD and the World Bank regarding the number of doctors per 1000 inhabitants in different cities of the world (OECD and World Bank, 2020).

At the local level, alerts were made to the attention of medical services in Colombia. These are related to the high levels of contagion that had to be reported continuously on the Ministry of Health's website, which showed the population figures affected by Coronavirus at a national and local level (Ministerio de Salud, 2022), allowing to know the pandemic's behavior and status. Likewise, it was necessary to restrict the number of facilities, improve equality in healthcare services and provide easy access to the population (Wang, 2012). Coverage maximization is achieved with this research using geostatistical analysis such as accessibility, which considers that interaction is relevant to the potential of opportunities (Hansen, 1959). This case would focus on the users' interaction with Armenia's city health system. Considering the capacity of care in the potential demand and the proximity of the services provided, it is crucial to implement the methodology in spatial accessibility, which seeks to assess the potential access of patients to health services (Garrocho and Alanís, 2006). The concept of accessibility is determined by a series of assumptions and data inputs, where the level of opportunities in immediate accessibility is achieved under a predefined threshold for travel impedance. Dual accessibility seeks to establish travel impedance, where it is necessary to reach a predefined threshold level using the number of opportunities (Wu and Levinson, 2020). As a structure and planning guide in transport, accessibility is of great importance for a consensus opinion, which for the concept

* Corresponding author

of transport is considered the demand as a derivation of the population's needs about reaching their destinations (Levine, 2020). Accessibility in our case study is a service access measure, where various modes and calculation methods have been found that demonstrate its wide use. Among these are demographic analysis (Kotavaara et al., 2011), economic development that is associated with the quality of transport infrastructure within a given region (MacKinnon et al., 2008), and the concept of transport infrastructure (MacKinnon et al., 2008), and the operational concept of transport modes (Younes et al., 2016), commerce (Montoya et al., 2017), education (Walsh et al., 2015), tourism (Pathmanandakumar et al., 2023; Abdeljawad et al., 2023) among others. Considering the importance and breadth of the methodology used, our case study seeks to ensure accessibility based on transport for essential facilities such as medical centers in a city, aiming to provide healthcare services to the population regardless of different socioeconomic levels (Freeman et al., 2020), in addition to the assessment of some characteristics such as mode of transport, land use, travel patterns, objectivity and habits presented by specific communities regarding their travel practice (Gutiérrez, 2012).

Based on the above, the most appropriate accessibility evaluation procedure is determined for the research, where the Enhanced Two-step Floating Catchment Area - E2SFCA (Luo and Wang, 2003) method was chosen, seeking that the travel time obtained with the distance decrement function focuses on the spatial accessibility of the municipality (Aziz et al., 2022). This method is applied with basic steps such as: Data preprocessing, accessibility measurement, correlation analysis and inequality assessment (Park et al., 2023). It aims to establish the sectors or communities that are not considered and located in places of a greater distance to the center of the city of analysis, i.e., the city's periphery. On this method it is important to consider that the characteristics in service levels and their medical resources in hospitals are fundamental to solve critical illnesses, where a factor related to the type of road infrastructure network of the study sector is included, seeking to analyze the potential demand that can improve its medical care service (Li and Wang, 2022). With the location of hospitals, the method above has been used to calculate their spatial accessibility and to be able to measure the accessibility of primary care and hospitals regarding their georeferencing (Huang et al., 2019). Considering the importance in the different accessibility studies in developed countries where they have determined in the decay function the travel time of 60 minutes for emergency care in injured or sick people to achieve their displacement (Chen et al., 2023). However, in other studies, they determine that the distance decay starts after 10 minutes, but the maximum travel time threshold for spatial accessibility using the E2SFCA method is 30 minutes, evaluating primary care centers with blocks within a 50 km radius (Hong et al., 2023). Notably, some studies conducted in Colombia were identified and evaluated with the E2SFCA method focused on accessibility in the health sector, with great importance for the research development and focused on the provision of hospital service to meet the emergencies suffered by the population in the ICU (Intensive Care Unit). For this, the access assessment to services located in the capital of the department of Caldas is considered, taking into account the travel times (Escobar et al., 2020), as well as the accessibility of rabies vaccination posts with a robust analysis method of (Monsalve et al., 2016), in addition to similar research by Infante for the city of Bogotá (Infante, 2013). In our case the objective of the research is to determine the conditions of territorial accessibility offered by the road network in the capital of the department of Quindío to the health care service delivery nodes. The study area of this research focuses on Armenia, located in central-western Colombia and georeferenced in the coordinates between 04° 04' 41" and 04° 43' 18" north latitude and between 75° 23' 41" and 75° 53' 56" west longitude, i.e., its location is on the left side of the Central mountain range (Gobernación del Quindío, 2022). This municipality has an area of 121 km² and is at an average altitude of 1,551 masl (meters above sea level), with a population of 295,208 inhabitants (DANE, 2022). The study area is shown in Figure 1.

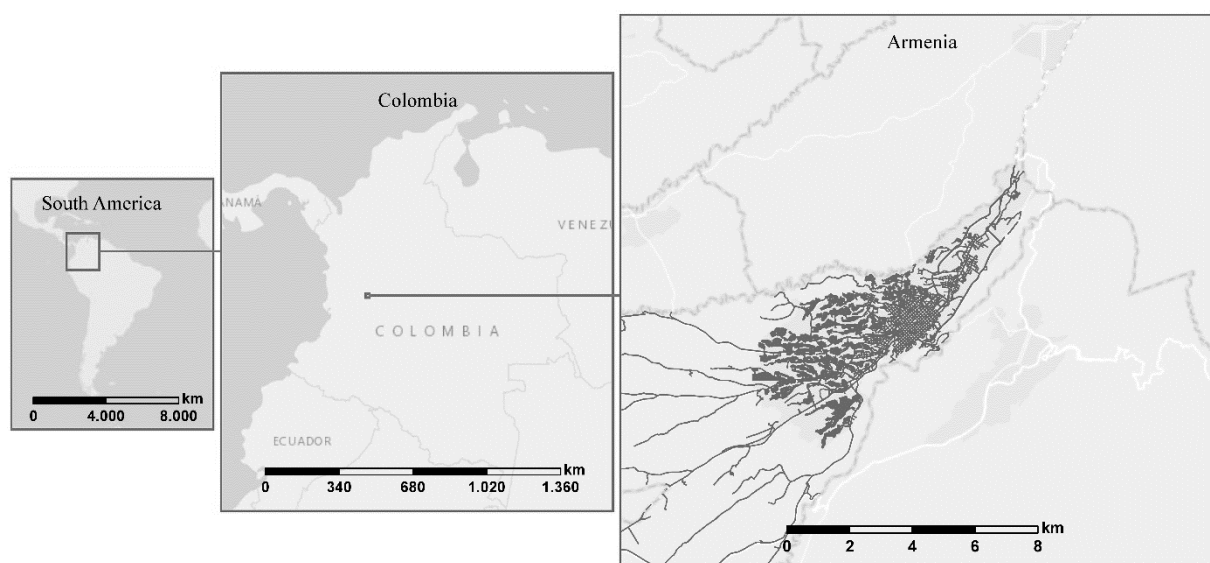


Figure 1. Armenia Location (Source: authors)

MATERIALS AND METHODS

The methodological component comprises a total of 3 sections, starting from the data collection to the discussion of the E2SFCA method.

Phase 1 - Data update and validation. This research is based on the Armenia road network in shapefile duly georeferenced with their corresponding speeds for private vehicles, as well as node and arc attributes with the characteristics of each operating section, such as length, slope, and directionality. Likewise, the calculation was performed by applying the Enhanced Two-step Floating Catchment Area - E2SFCA method to obtain detailed accessibility at the block level, seeking to identify the sectors that present areas with high and low impact on accessibility concerning the demand for hospitals (Ghorbanzadeh et al., 2021). Additionally, as relevant information on hospitals, it was necessary to consult what has been published on the (REPS, 2021) web page matrix containing the "Special Registry of Health Service Providers", where the levels of the health care nodes and the number of health care services per hospital were found. It was also necessary to seek information consulted directly at the Quindío Government's Planning Secretariat, where they provided the shapefile with the georeferencing (longitude, latitude) of the hospitals in the municipality of analysis. In the National Administrative Department of Statistics (DANE, 2022), the population information was obtained georeferenced in polygons at the level of detail by block with its corresponding code.

Phase 2- Geospatial analysis scenario. In this phase, the comprehensive accessibility calculated for each hospital was developed, considering the ease of reaching each desired destination node based on the number of opportunities available to the resources used to travel from a place of origin in the sector to the urban destination in the city (Bocarejo and Oviedo, 2012). With the data mentioned in phase 1, the statistical modelling is performed with the attributes available to the network (Network dataset). It proceeds to plot the integral accessibility isochrones with periods of 5 minutes in each hospital of the municipality, considering the road network conditions for private vehicles. The calculations and modelling carried out in this document were performed with ArcGIS® software and internal modelling tools such as Spatial Analyst® and Geostatistical Analyst®, which are classified as ESRI ArcMap® software applications. The population polygon per block was overlapped on the isochrone curves of each hospital to determine the number of inhabitants with accessibility in periods of 5, 10 and 15 minutes to find the population coverage in the mentioned time periods, as shown in Table 4.

Phase 3 - Calculation of E2SFCA. Step No. 1 of the E2SFCA method is calculated, considering the number of physicians and the population data per hospital to apply Equation 1 (Luo and Qi, 2009) in the established periods, being 5, 10 and 15 minutes for this research. R_j : Supply-demand ratio for each hospital; S_j : number of physicians in each hospital; P_k : population located in each travel time subarea (C_j); C_j : travel time j .

$$R_j = \frac{S_j}{\sum_{k \in (d_{kj} \leq C_j)} P_k W_{kj}} \quad (1)$$

Subsequently, step 2 of the Enhanced Two-step Floating Catchment Area - E2SFCA methodology is applied, where the calculation of an origin-destination (OD) matrix containing the travel times from the centroid of each block to each hospital in the area of analysis is performed considering the arcs and directions that make up the municipality's road network. With this, it was necessary to establish the criterion of travel times below 15 minutes. The R_{ij} factor of doctors obtained in step 1 is applied; this is supported by adequate time to travel and attend to an emergency in an accident at a health center, which is essential considering that trips outside this time range are classified as inaccessible in an emergency (Luo and Wang, 2003). In this step, d has been considered to calculate its travel time regarding the W_r weights, where it is established in subzones, and the Gaussian equation is used, starting from three common forms of $f(d)$ (Kwan, 2010; Pan et al., 2015), presented in Equation 2 and 3 (Luo and Qi, 2009), Weight calculation formula.

$$W_r = f(d_{ij}) = e^{-\frac{d_{ij}^2}{\beta}} \quad (2) \qquad A_i^F = \sum_{j \in \{d_{ij} \leq D_r\}} R_j W_r \quad (3)$$

d_{ij} : Travel time between i and j ; β : Friction coefficient of distance; A_i^F : Accessibility for the population through the location concerns i ; R_j : Physician -to- population ratio at physician location j within the catchment area in population i ; W_r : Distance weighting for the travel time zone calculated from the Gaussian function, reflecting the deterioration of the access distance to the physician j . Equation 2 of the E2SFCA method is calculated to obtain the number of physicians per 1,000 inhabitants and proceed to calculate the average between the factors of these variables in the blocks of the municipality of analysis and, thus, calculate the accessibility in the current scenario and make an alternative that improves the conditions in a future scenario. For Colombia, the World Bank, together with the OECD, publishes a value of 2.2 physicians per 1,000 inhabitants, which is based on comparative analyses with around 100 indicators on the Health system of the "Health at a Glance: Latin America and the Caribbean 2020" (OECD and World Bank, 2020). Regarding the above, an important criterion is the indicator for physicians in Latin American countries (Table 1), as reference values and highlights the following.

Table 1. Medical indicators overview of countries with similar conditions to Colombia (Source: authors)

Country	Physicians (Per 1,000 inhabitants)
33 latin American and Caribbean (LAC) countries	2.00
Chile	2.50
Bahamas	2.00
Barbados	2.50
Mexico	2.40
Venezuela	1.90
Brazil	1.80

RESULTS AND DISCUSSION

This research consists of two scenarios analyzed, where the actual situation of the municipality is the current scenario and a proposal for improving access to health care services in the sector of analysis referred to as the future scenario. For

this purpose, Figure 2 shows the isochronous curves for travel times of 5, 10, and 15 minutes collected for seven (7) hospitals and health care services. The calculations of average travel times under the hypothesis that travel from each neighborhood to each hospital node, where the number of inhabitants within the time ranges was determined, and the variable (R_j) was calculated, regarding the supply of physicians. Likewise, areas that are not covered by the mentioned ranges were found. The isochronous curves were modeled in the future scenario in Figure 3, where the impact generated with two (2) new hospital nodes is displayed. Its benefits of greater coverage are presented in the isochrones with ranges of 0 - 5 minutes and 5 - 10 minutes. However, this decreases for the isochrones of 10 minutes, as shown in Table 2.

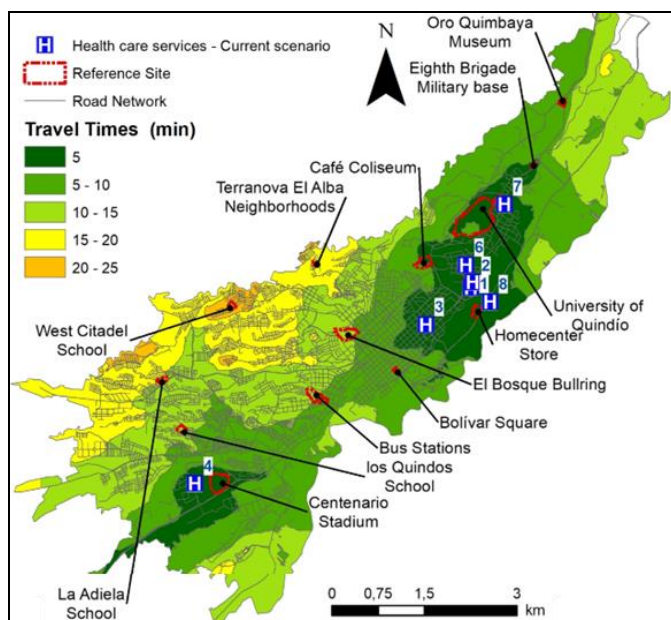


Figure 2. Isochronous curves calculated for the current scenario of health care services in Armenia (Source: authors)

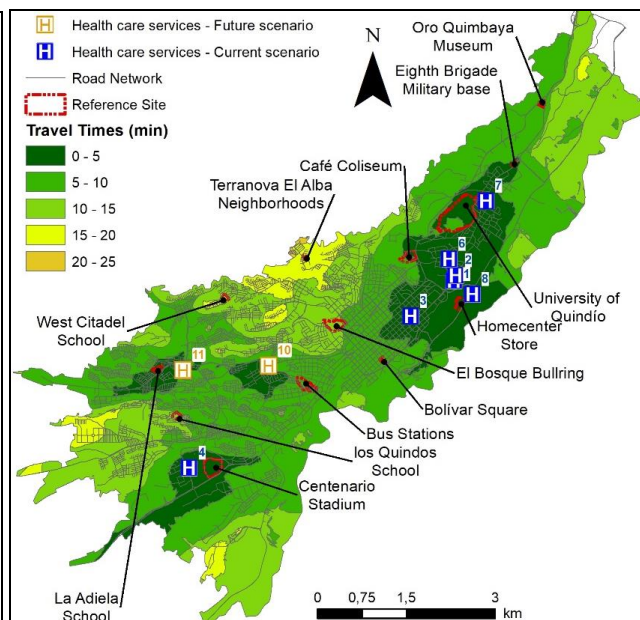


Figure 3. Isochronous curves calculated for the future scenario of health care services in Armenia (Source: authors)

Table 2. Coverage area and population comparison based on travel time isochrones (Source: authors)

Travel Time (min)	Current Scenario				Future Scenario			
	Isochrone area (hectares)	Isochronous coverage (%)	Number of inhabitants	Coverage Population (%)	Isochrone area (hectares)	Isochronous coverage (%)	Number of inhabitants	Coverage Population (%)
0-5	508.46	15.42	42,799	15.95	593.00	17.98	60,266	22.45
5-10	1,136.86	34.47	78,870	29.39	1,525.90	46.26	126,188	47.02
10-15	1,123.63	34.07	86,616	32.27	1,020.14	30.93	67,049	24.98
>15	529.35	16.05	60,102	22.39	159.45	4.83	14,884	5.55
Total	3,298.30		268,387		3,298.49		268,387	

Table 1. Step 1 calculation of the E2SFCA R_{ij} method in Armenia's current scenario (Source: authors)

ID	Hospital Name	Number of Inhabitants Period of 0 - 5min	Number of inhabitants Period of 5 - 10	Number of inhabitants Period of 10 - 15 min	R _j (physicians x 1000 inhabitants)
Current Scenario - Hospitals Classified in Low Complexity					
4	Red Salud Armenia	9,469	36,550	71,428	0.32
6	Sociedad Cardiovascular del Eje	11,697	43,912	40,498	0.27
Current Scenario - Hospitals Classified as Medium and High Complex Hospitals					
1	Clínica Café Dumian Medical	6,591	42,029	44,856	1.79
2	Clínica Central del Quindío SAS	3,637	40,623	44,121	2.05
3	Clínica La Sagrada Familia SAS	12,188	46,226	56,005	2.00
7	Hosp. Univ. San Juan De Dios	14,135	30,320	34,127	3.24
8	Oncólogos de Occidente S.A.S.	3,673	30,984	54,281	1.57

Based on the indicators published in the document "Health at a Glance: Latin America and the Caribbean 2020" of the World Bank Group (OECD and World Bank, 2020) where the parameters obtained in the current scenario were relatively low in physicians as found in Table 3 and an alternative was structured to determine a future scenario in the municipality to meet the indicator established for Colombia or in the indicators of Latin American countries presented in Table 1, it seeks to improve the coverage of the inhabitants in the municipality, that for the future situation with an alternative that shows the same conditions in the current hospitals and proposing to implement two (2) new hospitals that are classified in service levels of medium and high complexity with parameters that are not high and is to attend emergencies and hospital issues similar to the Clínica Central del Quindío SAS. Results are in Table 4. Subsequently, the parameters for physicians in Armenia's health services were obtained by the E2SFCA method considering the importance of accessibility to medical centers, by

generating the R_{ij} parameters as step 1 of the method for a current scenario of seven (7) hospitals with 710 beds and where it has a capacity of 170 physicians as shown in Table 2, posing a future scenario with 573 physicians as shown in Table 3.

Table 4. Step 1 calculation of the E2SFCA R_{ij} method in Armenia's future scenario (Source: authors)

ID	Hospital Name	Number of inhabitants Period of 0 - 5 min	Number of inhabitants Period of 5 - 10 min	Number of inhabitants Period of 10 - 15 min	Rj (physicians x 1000 inhabitants)
Current Scenario - Hospitals Classified in Low Complexity					
4	Red Salud Armenia	9,469	36,550	71,428	0.96
6	Sociedad Cardiovascular del Eje	11,697	43,912	40,498	0.49
Current Scenario - Hospitals Classified as Medium and High Complex Hospitals					
1	Clínica Café Dumian Medical	6,591	42,029	44,856	5.22
2	Clínica Central del Quindío SAS	3,637	40,623	44,121	5.78
3	Clínica La Sagrada Familia SAS	12,188	46,226	56,005	5.68
7	Hosp. Univ. San Juan De Dios	14,135	30,320	34,127	9.38
8	Oncólogos del Occidente S.A.S.	3,673	30,984	54,281	4.62
10	Hospital Nuevo 1	3,134	26,132	63,650	5.34
11	Hospital Nuevo 2	8,978	34,203	59,214	3.01

The above applies the results obtained in Equation 1 of the method, which is related to the supply-demand of each hospital R_j and the value S_j with the information of total general practitioners in Tables 2 and 3. These tables also show the number of inhabitants in ranges of travel time represented in the variable P_k . The periods C_j in this research were established with values of 5, 10, and 15 minutes considering travel times for care of any medical emergency.

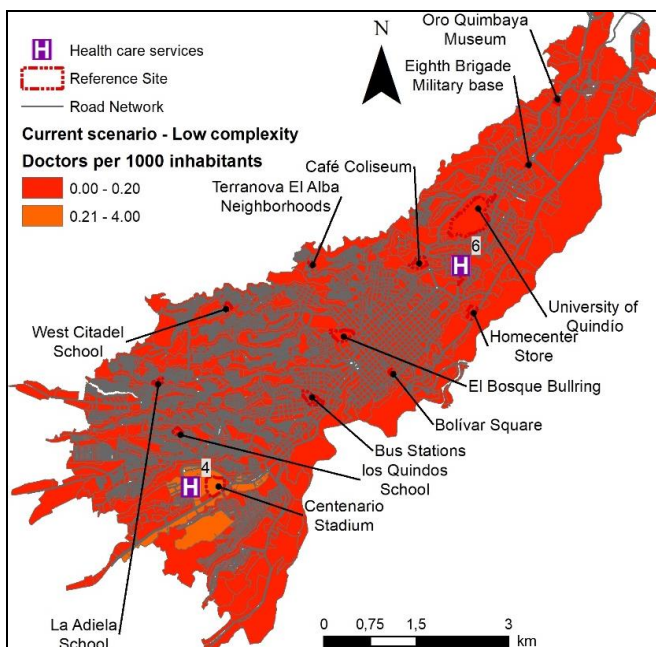


Figure 1. Accessibility to low complexity medical services per 1000 inhabitants in the current scenario based on the E2SFCA method

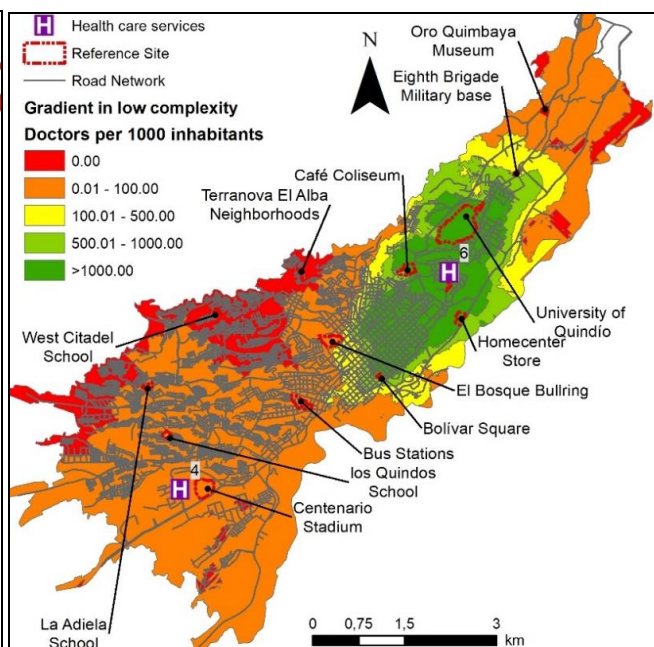


Figure 2. Savings gradient in low complexity hospitals per 1000 inhabitants applying the E2SFCA method (Source: authors)

Concerning Equation 2, it is intended to determine the decrease in accessibility related to care in a given number of physicians. For this purpose, it relates the weight variable W_r , where the Gaussian function is represented for the travel time by the weight of the distance. In this study, β has been calculated, which is equivalent to a value of 34, considered in the hypothesis that a critical weight (W_r) of 0.01. Additionally, on the factors of the variable d_{ij} in the ranges of weights for periods of 0-5 minutes is a factor of 2.5, in the time range of 5-10 minutes is a value of 7.5, and in the time range 10-15 minutes a value of 12.5 is established. In the second step of the E2SFCA method, the Origin and Destination matrix was structured with the travel time calculation in the nodes detail represented in each city block that analyzes each existing medical care node and those projected in the future scenario. The research defines the sector of influence for each hospital in a period determined in the matrix with a maximum value of 15 minutes, which indicates that it is the maximum time to attend an emergency in these hospitals. With the mentioned concept, it is necessary to adjust the travel time matrix leaving the travel times below 15 minutes, which are the ones to which the R_{ij} factor determined in Equation 3 is applied. The E2SFCA methodology was calculated for the nodes of hospitals that provide low complexity medical care services where they represent the accessibility of physicians per thousand inhabitants, whose result is shown in Figure 4, with a value in the current scenario equivalent to 4 physicians per thousand inhabitants and represents the maximum value to cover the areas surrounding the medical center nodes in Armenia located in Red Salud Armenia Unidad Intermedia del Sur and Clínica Cardiovascular del Eje Cafetero S. A. A. Concerning the nodes of low complexity hospitals in the future scenario, the aim was to improve their accessibility conditions, as shown in Figure 5,

which contains the Gradient where more excellent coverage and positive impact is observed in the Clínica Cardiovascular del Eje Cafetero S.A. and the Red Salud Armenia Unidad Intermedia del Sur hospital.

Figure 6 shows the detailed accessibility of medical services in medium and high-complexity hospitals in Armenia that have coverage in sectors of the city, such as Homecenter, Universidad del Quindío, and Plaza de Bolívar. With these results, an alternative is calculated to improve accessibility conditions for the population by adding two nodes with a classification to attend emergencies in Medium and High Complexity. As a result, it improves accessibility in the northwest of the city. Figure 7 shows the Gradient map where the most significant impact is on the New Hospitals where the coverage of the isochronous curves has impacts greater than 1000%, as expected. The proposed improvements in the current health nodes of Medium and High Complexity are evident, with coverage of up to 500%.

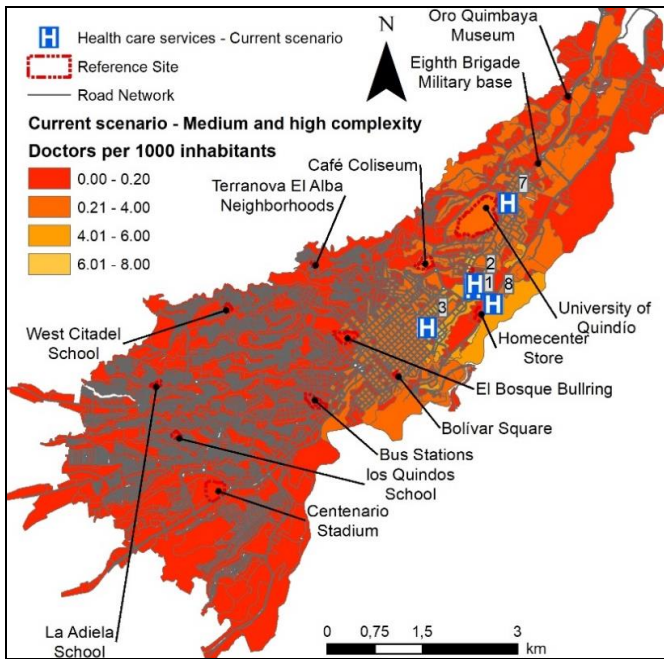


Figure 3. Accessibility to medium and high complexity medical services per 1000 inhabitants in the current scenario based on the E2SFCA method

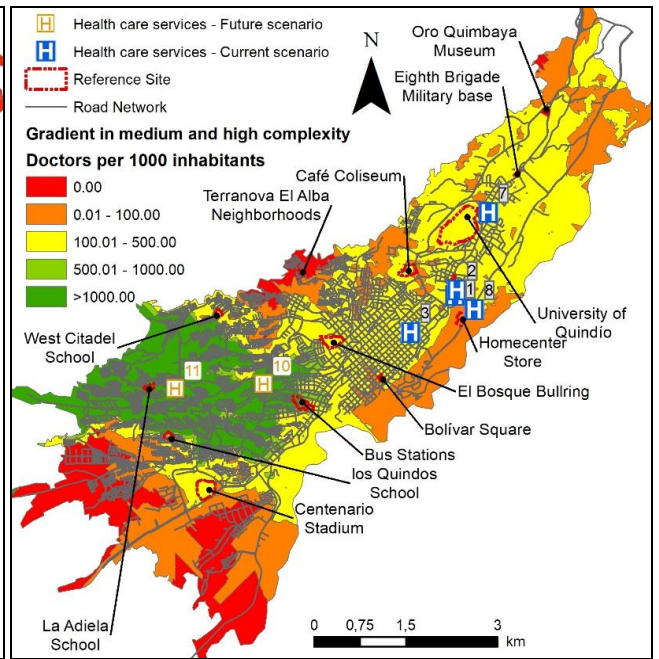


Figure 4. Savings gradient in medium and high complexity hospitals per 1000 inhabitants applying the E2SFCA method (Source: authors)

Table 2. the maximum and average value of physicians applying the E2SFCA method calculation in hospitals in Armenia for current and future scenario (Source: authors)

E2SFCA Average Physicians	E2SFCA Maximum Value Physicians	E2SFCA Physicians Average Physicians - Low complexity	E2SFCA Maximum Value Physicians - Low Complexity	E2SFCA Average Physicians Medium and High Complexity	E2SFCA Maximum Value Physicians - Medium and High Complexity
CURRENT SCENARIO					
0.56	6.45	0.02	0.49	0.54	7.58
FUTURE SCENARIO					
2.22	22.98	0.07	0.80	2.15	22.58

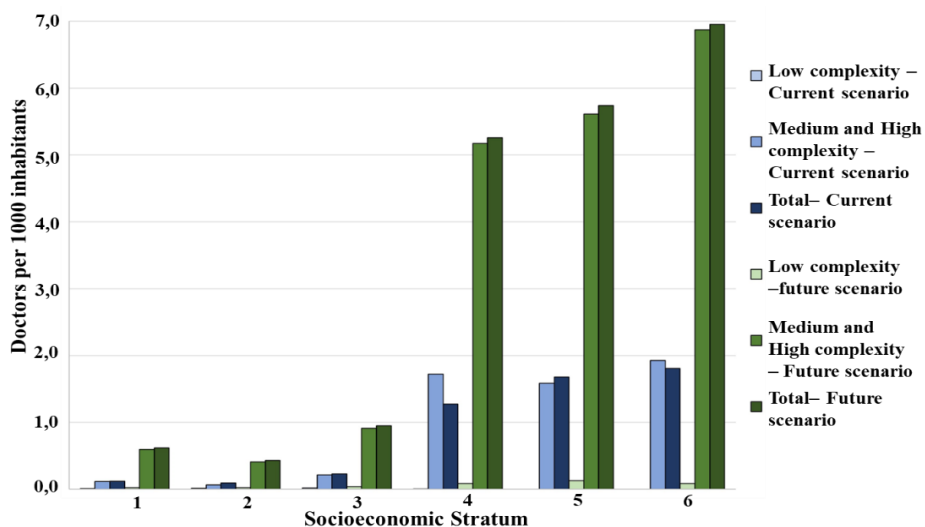


Figure 5. The number of physicians according to the complexity of care, based on socioeconomic status in current and future scenarios (Source: authors)

In compliance with the indicator of doctors published for Colombia (OECD and World Bank, 2020), in Armenia, the result obtained in the current scenario was the average accessibility of 0.56 physicians per 1,000 inhabitants. Likewise, with the alternatives proposed and more excellent coverage in the future scenario, the method used in this research yielded a future scenario of accessibility of 2.22 physicians per 1,000 inhabitants, complying with the conditions in Colombia based on the indicator published as shown in Tables 5.

Applying the E2SFCA method, the information obtained was classified by socioeconomic stratum. Figure 8 shows that the most significant coverage in medical accessibility is in strata 4, 5, and 6. Similarly, the research planning method with the alternative presented and its georeferencing would benefit the vulnerable strata 1, 2, and 3, which are located mainly in the northwestern sector of the city.

In Tables 2 and 3, the diagnosis of accessibility to physicians in the city is established, where the current scenario displays average values that do not comply with those published for Colombia (OECD and World Bank, 2020). In this research's planning method, the alternatives proposed in this document have considerable increases on the indicator of accessibility of physicians, aimed at not exceeding the number of beds that hospitals have in the city of Armenia.

CONCLUSION

The following main conclusions can be drawn from the arguments, their discussion, and the background literature exposed throughout the article.

The importance of the E2SFCA method is reflected in evaluating the status and behavior of accessibility in the healthcare nodes, where it was determined that Armenia, disregarding accessibility in the current scenario, does not comply with the established indicator published by the OECD and World Bank in Colombia.

Interventions or adjustments in health have a positive impact on the accessibility indicator of doctors per 1,000 inhabitants, providing greater access to users in addition to ensuring better care services. All this is under the operating conditions of the current road network, which has favorable mobility that provides adequate access to current and future hospitals. Regarding the access condition by socioeconomic stratification, the current situation does not favor the lower strata of the city, causing higher travel costs and health problems for the most vulnerable population. However, the proposed analysis makes it easier for the administration to meet the population's requirements by including new hospital centers that guarantee more significant equity for the lower-income population.

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Conflicts of Interest: The authors declare no conflict of interest.

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THE IMPACT OF SOCIAL MEDIA INFLUENCER'S CREDIBILITY ON THE TRAVEL INTENTIONS OF THE EGYPTIAN MILLENNIALS: APPLIED TO DOMESTIC TOURISM

Marianne RAAFAT* 

Helwan University, Tourism Studies Department, Faculty of Tourism
and Hotel Management, Cairo, Egypt, e-mail: maryan.raafat.post@fth.helwan.edu.eg

Nancy MONTASER 

Helwan University, Tourism Studies Department, Faculty of Tourism
and Hotel Management, Cairo, Egypt, e-mail: nancy.montaser@fth.helwan.edu.eg

Dalia SOLIMAN 

Helwan University, Tourism Studies Department, Faculty of Tourism
and Hotel Management, Cairo, Egypt, e-mail: dalia.mohamed@fth.helwan.edu.eg

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Abstract: This study aims to fill the gap in the current influencer marketing literature by analyzing the impact of social media influencers (SMIs) credibility on the domestic travel intentions of Egyptian millennials. An online questionnaire was distributed to a convenience sample of 581 Egyptian millennials to collect primary data. The results indicate that the three dimensions of a SMI's credibility (trustworthiness, attractiveness, and expertise) have a positive impact on the domestic travel intentions of Egyptian millennials. Moreover, the findings point out that all of SMI's credibility elements have a significant effect on domestic travel intentions except for SMI's expertise, which is considered the credibility dimension least affecting the domestic travel intentions of Egyptian millennials. The findings of this study enrich the influencer marketing field in the context of tourism as well as help the destination management organizations (DMOs) and travel agencies select the most persuasive SMIs that can positively influence millennials' travel intentions, specifically in light of the current emphasis on integrating SMIs as one of their marketing techniques.

Key words: social media, influencers, credibility, travel intentions, millennials, Egypt, domestic tourism

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INTRODUCTION

As a result of the popularity of social media platforms among internet users, social media influencers (SMIs) have emerged and started to be considered an effective marketing tool (Xu and Pratt, 2018). SMIs refer to the daily internet users who can gain a large base of followers on blogs and social media by presenting their personal lives and engaging with their followers, which can lead them to be able to display paid advertisements alongside their content (Ye et al., 2021). SMIs have become significantly involved in the tourism sector and play a vital role in connecting with potential tourists (Mokhare et al., 2021). Millennials, individuals born between 1980 and 2000, are regarded as one of the most significant sectors for the tourism industry (Chatzigeorgiou, 2017). Moreover, millennials are considered the generation most exposed to SMIs (Grafström et al., 2018). The power of SMIs as well as the attractiveness of the millennial generation in the tourism industry forms a research interest in investigating the effectiveness of SMIs on Egyptian millennials' travel intentions. Tourism-related studies of SMI's credibility are currently limited.

Further research is needed to determine how the credibility of SMIs may affect the attitudes and travel intentions of social media users (Han and Chen, 2022). Consequently, this study will build upon the minor studies previously conducted in order to measure the influence of SMIs credibility on the travel intentions of Egyptian millennials, specifically in light of Egypt's current emphasis on integrating SMIs as one of its marketing techniques (Egyptian Ministry of Tourism and Antiquities, 2021). The authors formulated three research in order to guide the data collection and analysis process, as follows: Q1: To what extent can the perceived trustworthiness of a SMI affect the domestic travel intentions of Egyptian millennials? Q2: To what extent can the perceived attractiveness of a SMI affect the domestic travel intentions of Egyptian millennials? Q3: To what extent can the perceived expertise of a SMI affect the domestic travel intentions of Egyptian millennials? The findings of this study will help the marketers of DMOs and travel agencies in Egypt select the most persuasive SMIs that can positively influence Egyptian millennials' travel intentions.

LITERATURE REVIEW

Social Media Influencers (SMIs)

Globally, both social media and SMIs play significant roles in people's daily lives (Fayez et al., 2022). SMIs are defined

* Corresponding author

as "online personalities with large numbers of followers, across one or more social media platforms (e.g., YouTube, Instagram, Snapchat, or personal blogs), who have an influence on their followers" (Lou and Yuan, 2019, p. 58). SMIs can be known by different names, such as social media stars, creators, micro-celebrities, and online stars (Gaenssle and Budzinski, 2020). Scholars arranged SMIs into various categories and groupings based on audience size (WOMMA, 2017; Ge and Gretzel, 2018; Kostic et al., 2018; Wielki, 2020); content (WOMMA, 2017; Wielki, 2020); used-platform (Wielki, 2020); activity type (Wielki, 2020); and professional experience level (Ge and Gretzel, 2018). SMIs have been widely utilised in the travel and tourism sectors, especially by international hotel chains (Mokhare et al., 2021), as well as various destination management organizations (Ong and Ito, 2019). SMIs can positively enhance the image of a tourist destination. Thus, tourist satisfaction will rise, leading to an increase in repeat visits and word-of-mouth advertising (Jaya and Prianthara, 2020).

SMIs' Credibility

The term "credibility" is described as a perceiver's judgment of the communicator's believability (Kwiatek et al., 2021). The persuasiveness of a communication message is greater when it originates from a source with high credibility as opposed to a low-credibility source (Sundermann and Raabe, 2019). A tri-component scale, known as the source credibility model, is developed by Ohanian (1990) in order to investigate the credibility of celebrity endorsers through assessing their perceived expertise, trustworthiness, and attractiveness. Recent studies have started to employ the components of the source credibility model to measure the credibility of SMIs (Fred, 2015; Lou and Yuan, 2019; Nascimento, 2019; Saima and Khan, 2020; Kalu, 2021). Credibility is essential for SMIs as it helps them be more effective, specifically in promoting brands, and helps build a stronger media image (Kwiatek et al., 2021). SMIs' credibility is one of the most important factors for followers (Fayez et al., 2022). The perceived credibility of SMIs positively influences their followers' purchase intentions, attitudes towards the recommended brand, and loyalty (Hussain and Ali, 2021).

Trustworthiness is one of the elements of the source credibility model, which is referred to as the perceived honesty, sincerity, or truthfulness of a source by its receiver (Lou and Yuan, 2019). The more trustworthy a communicator is, the more persuasive their message will be to their recipient (Fred, 2015). SMIs typically invest effort into building and maintaining favorable relationships with their followers in order to obtain high levels of trustworthiness in their followers' perceptions (Al Qatamai, 2019). SMIs who share content entirely about one main topic are perceived as more trustworthy by their followers than those who share content on various different topics (Rahmah and Ren, 2019). Also, the ethnicity of an endorser has an impact on SMIs' trustworthiness (Nascimento, 2019). Consumers' attitudes towards blogger recommendations are significantly influenced by their trustworthiness, which in turn affects consumers' intention to purchase the recommended products (Grace and Ming, 2018). Attractiveness is another element of the source credibility model. It encompasses all of a person's positive characteristics, whether physical, personal, or athletic (Al-Qatami, 2019). It is believed that attractiveness plays a significant role in determining an endorser's effectiveness (Van der Walldt et al., 2009). Being real and posting high-frequency content with followers are two tactics that SMIs can follow to gain more attraction (Håkansson et al., 2020). SMI's attractiveness plays a vital role in stimulating consumers' positive attitude (Lim et al., 2017). The perceived attractiveness of SMIs positively impacts the audience's word-of-mouth, purchasing intention, and attitude towards influencers (Taillon et al., 2020). Instagram influencers who are viewed as attractive have a great impact on their followers' online impulsive purchasing (Koay et al., 2021). Another component of the source credibility model is expertise. It refers to the communicator's ability to make truthful claims in a certain field of knowledge based on their gained familiarity, comprehension, and experience through ongoing work in that field of knowledge (Saima and Khan, 2020). A more influential endorser is determined to have a higher degree of expertise and would influence greater buying intentions (Chekima et al., 2020). Influencers on social media who are perceived as having a high level of expertise are viewed as having a greater effect on their followers' behaviors (Lim et al., 2017). Both brand attitudes and buying intentions are positively influenced by SMI's expertise (Lim et al., 2017; Hussain and Ali, 2021).

Travel Intentions

Numerous academic definitions were proposed to accurately describe the term "travel intentions." Luo and Lam (2020) proposed a simple definition referring to "travel intentions" as an individual's desire to travel. Furthermore, Makhdoomi and Baba (2019) described the intention to travel as the outcome of a mental process that result in an action and translates motivation into behavior, emphasizing that it is a key intermediary between motivation and future travel behavior. Badreldin and Elbaza (2016) stated that the desire to travel (travel intention) is regarded as the initial phase in the travel decision-making process, confirming that electronic word-of-mouth (eWOM) is considered a major factor in influencing travel intentions to Egypt. In the same context, Hung and Khoa (2022) indicated that eWOM has a positive effect on travellers' perceptions, attitudes, and travel intentions towards destinations. Moreover, Caraka et al. (2022) mentioned that the travel intentions of potential tourists could be influenced by the social media accounts of SMIs, confirming that SMIs can have a significant influence on travel intentions.

The Impact of SMIs' Credibility on Travel Intentions

The credibility of SMIs is positively correlated with the social media users' travel intentions to the recommended destination (Han and Chen, 2022). The attractiveness and trustworthiness of SMIs are proved by Negm and El Halawany (2020) to have an effect on consumers' intentions to plan a vacation. The attractiveness of vloggers has a significant positive effect on the viewers' travel intentions (Chen et al., 2021). The perceived trustworthiness and quality of the information shared by a blogger are two factors that can highly influence their followers' intention to accept a travel recommendation (Magno and Cassia, 2018). Followers' travel intentions are influenced by the SMI's trustworthiness and

content quality (McNair, 2021). SMI's trustworthiness positively influences decision-making while selecting a tourist destination (Chatzigeorgiou, 2017). According to Grafström et al. (2018), the age range of "1980-2000" is the most commonly observed period for individuals known as millennials. Léa et al. (2018) pointed out that millennials comprise around 25 percent of the global population. Locally, with a population consisting of 43%, millennials are playing a crucial role in the revitalization of the travel industry in Egypt (El-Demerdash, 2019).

Dabija et al. (2018) clarified that there is a significant influence of social media on millennials' selection of tourist services. Similarly, Kasim et al. (2019) stated that social media has a crucial role in influencing millennials' destination choice. In the same context, The American Chamber of Commerce in Egypt (AmCham Egypt) (2018) stated that millennials are not likely to be influenced by travel brochures in making their travel decisions, but rather by their online friends and SMIs. Consequently, the following hypotheses are proposed:

H1: The perceived trustworthiness of a SMI positively affects the domestic travel intentions of Egyptian millennials

H2: The perceived attractiveness of a SMI positively affects the domestic travel intentions of Egyptian millennials

H3: The perceived expertise of a SMI positively affects the domestic travel intentions of Egyptian millennials

As shown in Figure 1, a theoretical framework is presented in order to clarify the variables of the study and their interconnections.

MATERIALS AND METHODS

The current study aims to identify the impact of the SMI's credibility on the domestic travel intentions of Egyptian millennials. In order to achieve this aim, a series of procedures were implemented, as illustrated in Figure 2. This study employs a quantitative methodology that comprises the usage and analysis of numerical data utilizing specialized statistical approaches to answer questions such as who, how much, what, when, where, and how (Apuke, 2017). The study population is Egyptian millennials. The current study uses a convenience sampling technique, also called "haphazard sampling" or "accidental sampling", which is identified as a type of non-probability or non-random sampling in which

members of the target population who meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate, are included for the purpose of the study (Etikan et al., 2016).

During the month of December 2022, a Google Form questionnaire was shared on different social media sites in Egypt, such as Facebook groups and WhatsApp chat groups relating to tourism in Egypt which include Egyptian millennials members, named "Traveller Experience," "4Travellers Club," "TravellerAdvisor," and "Nomads." In order to proceed with the shared questionnaire, participants were required to indicate their nationality, age range, whether they have a social media account or not, and whether they follow social media influencers or not.

The collected surveys were 581, and out of them, 150 questionnaires didn't meet the sample's criteria, and another 30 questionnaires were classified as outliers. All these respondents (180 questionnaires) were excluded from the study.

The questionnaire used included four parts. The first part of the questionnaire included demographic questions about the participants. The demographic questions included gender, age, education (highest degree completed), marital status, and employment status. The second part of the questionnaire included questions about the participants' social media usage. The respondents were asked about the average time they spend daily on social media, the social media platforms they mostly use, the number of influencers they follow on social media, and the time that they started following their favorite influencer on social media. The third part of the questionnaire measured the participants' perceptions of SMI's credibility. This part had three different constructs; the first, titled "SMI's trustworthiness," included five questions concerning the respondents' perceptions of the SMI's trustworthiness. The second construct, titled "SMI's attractiveness," included five questions concerning the respondents' perceptions of the SMI's attractiveness. The third and final construct, titled "SMI's expertise," included five questions concerning the respondents' perceptions of SMI's expertise.

The fourth and final part of the questionnaire measured the impact of SMI's credibility on the domestic travel intentions of the Egyptian millennials, and it included three questions focusing on the intention to travel.

The statements included in the questionnaire were adapted from Shan et al. (2018), Caraka et al. (2022), Tille (2020), and Hsieh et al. (2016). The questionnaire employed a five-point Likert scale of agreement, and the results were analyzed using version 20.0 of the Statistical Package for the Social Sciences (SPSS) for Windows.

Before performing the fundamental analysis, it was important to decide on a checklist for screening the data to find out what effect the characteristics of the data may have on the results. The treatment of outliers was an important step in the data

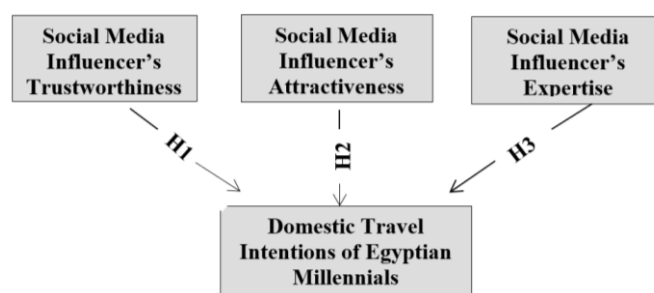


Figure 1. Theoretical Framework

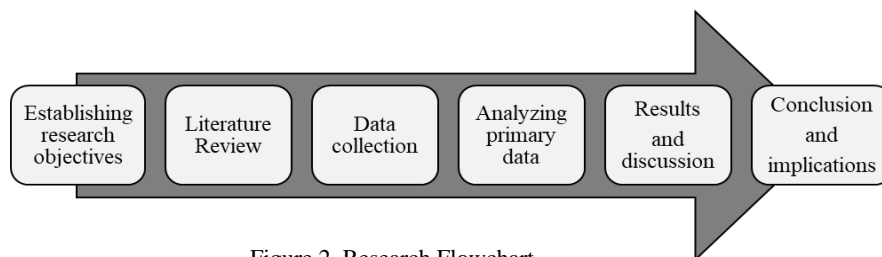


Figure 2. Research Flowchart

screening process. Outliers are defined as observations that deviate significantly from the norm and often result in significant changes to the findings' substance. The Mahalanobis distance is one of several techniques for identifying outliers (Aguinis et al., 2013). The criterion for identifying multivariate outliers is the Mahalanobis distance with a p-value greater than 0.001. In this study, Mahalanobi distance is evaluated with a degree of freedom of 27 items. Any case with a Mahalanobis distance higher than 55.476 is considered a multivariate outlier and is subsequently removed from the database. 30 cases having a Mahalanobis distance greater than 55,476 were excluded from the database before the analysis was conducted.

RESULTS AND DISCUSSION

As shown in Table 1, the majority of the participants were female, accounting for 79.6%, while only 20.4% were male. Millennials’ age segments between 22 and 31 years had the highest proportion of responders (67.8%), followed by millennials between 32 and 42 years (32.8%). Half of the respondents (50.4%) had a post-graduate degree, while the other half (50.6%) held less than a post-graduate degree; 44.1% obtained a university degree, 5.2% got a high school or equivalent degree, and only.2% had less than a high school degree. In terms of the respondents’ marital status, 57.4% were single, 39.7% were married, and 3% were divorced. The employment status among the respondents was as follows: 46.4% had full-time jobs, 31.7% were unemployed, 20.4% had part-time jobs, and 1.5% were self-employed.

Regarding the sample’s average daily time spent on social media, the greatest number of respondents (44.4%) spends between 1 and 3 hours, followed by (32.4%) who spend between 4 and 6 hours, followed by (18.0%) who spend more than 6 hours, and only (5.2%) who spend less than one hour. In terms of the most-used social media platforms, Facebook was selected by the majority of the respondents (89.3%), followed by Instagram, which was chosen by 38.7%, then YouTube, which was selected by 34.8%, then Tik-Tok, which was selected by 19.7%, and Twitter, which was selected by the least number of the respondents (8.4%). Concerning the number of influencers followed by the participants, 46.6% followed fewer than 5 influencers, 33.2% followed between 5 and 10 influencers, 11.2% followed more than 20 influencers, and 9.0% followed between 11 and 20 influencers. With regard to the period of time that the respondents have been following their favorite influencer on social media, 36.4% indicated between 6 months and 1 year, 25.4% stated for less than 6 months, 24.2% said between 2 years and 4 years, and 14.0% have been followed longer than 4 years.

Table 1. Demographic Profile of Survey Respondents

Variable	Frequency	Percent
Gender		
Male	82	20.4
Female	319	79.6
Total	401	100.0
Age		
From 22 to 31	272	67.8
From 32 to 42	129	32.2
Total	401	100.0
Educational Level (Highest degree completed)		
Less than High school	1	.2
High school or equivalent	21	5.2
University degree	177	44.1
Post-graduate degree	202	50.4
Total	401	100.0
Marital status		
Single	230	57.4
Married	159	39.7
Divorced	12	3.0
Total	401	100.0
Employment Status		
Unemployed	127	31.7
Part-time	82	20.4
Full-time	186	46.4
Freelance	6	1.5
Total	401	100.0

Table 2. Construct Measurements and Reliability (n=401) α : Cronbach alpha - SD: standard deviation

Items	Mean	SD	attitude	(α)
Social Media Influencer’s Trustworthiness	4.10	0.747	Agree	.939
I perceive the social media influencer that I follow as a trustworthy person.	4.11	0.850	Agree	
I perceive the social media influencer that I follow as a reliable person.	4.10	0.856	Agree	
I perceive the social media influencer that I follow as an honest person	4.12	0.805	Agree	
I perceive the social media influencer that I follow as a dependable person.	3.94	0.905	Agree	
I perceive the social media influencer that I follow as a believable person.	4.28	0.739	Strongly agree	
Social Media Influencer’s Attractiveness	4.00	0.708	Agree	.874
I perceive the social media influencer that I follow as an attractive person.	4.14	0.789	Agree	
I perceive the social media influencer that I follow as a classy person.	4.31	0.731	Strongly Agree	
I perceive the social media influencer that I follow as a beautiful/handsome person.	3.94	0.880	Agree	
I perceive the social media influencer that I follow as an elegant person	4.10	0.784	Agree	
I perceive the social media influencer that I follow as a sexy person.	3.55	1.108	Agree	
Social Media Influencer’s Expertise	4.40	0.624	Strongly agree	.929
I perceive the social media influencer that I follow as an expert person.	4.42	0.692	Strongly agree	
I perceive the social media influencer that I follow as an experienced person	4.36	0.743	Strongly agree	
I perceive the social media influencer that I follow as a knowledgeable person.	4.40	0.708	Strongly agree	
I perceive the social media influencer that I follow as a qualified person.	4.38	0.725	Strongly agree	
I perceive the social media influencer that I follow as a skilled person.	4.47	0.667	Strongly agree	
Travel Intentions	3.60	0.971	Agree	.896
Within 24 months, I intend to make time and save money to travel to the Egyptian tourist destinations recommended by the social media influencer that I follow.	3.63	1.058	Agree	
Within 24 months, I will travel to the Egyptian tourist destinations recommended by the social media influencer that I follow with my friends/family.	3.56	1.062	Agree	
The tourist destinations recommended by the social media influencer that I follow are my first choices for traveling inside Egypt in the future.	3.62	1.085	Agree	

Cronbach's alpha coefficient is the most commonly used technique to evaluate the reliability and stability of the scale (Chen et al., 2021). The Cronbach's alpha coefficient is a numerical value that ranges from 0 to 1. A reliability score that meets the acceptable criterion is one that is equal to or greater than 0.7 (Heale and Twycross, 2015). Cronbach's alpha was calculated for this study, and results showed that all constructs had reliability coefficients greater than 0.7, indicating that all constructs used in this study are all sufficiently reliable, as shown in Table 2.

Pearson's Correlation

Table 3 shows that the sig. value for SMI's trustworthiness is less than .05, indicating that there is a statistically significant relationship between SMI's trustworthiness and travel intentions. The table also showed that the correlation between SMI's trustworthiness and travel intentions was positive, with a correlation coefficient value of .113.

The results show that the sig. value for SMI's attractiveness is less than .05, indicating that there is a statistically significant correlation between SMI's attractiveness and travel intentions. The table also showed that the correlation between SMI's attractiveness and travel intentions was positive, with a correlation coefficient value of .267.

The results highlight that the sig. value for SMI's expertise is greater than .05, which means there is not a statistically significant correlation between SMI's expertise and travel intentions. The table also showed that the correlation between SMI's expertise and travel intentions was positive, with a correlation coefficient value of .096.

Table 3. Pearson's Correlation (n=401)

		Travel intentions
SMI's trustworthiness	Correlation Coefficient	.113*
	Sig. (2-tailed)	.024
SMI's attractiveness	Correlation Coefficient	.267**
	Sig. (2-tailed)	.000
SMI's expertise	Correlation Coefficient	.096
	Sig. (2-tailed)	.056

Hypotheses Test

The current study utilized a simple linear regression in order to analyze the impact of the independent variables (the trustworthiness, attractiveness, and expertise of a SMI) on the dependent variable (domestic travel intentions of Egyptian millennials), as presented in the study model in Figure 3.

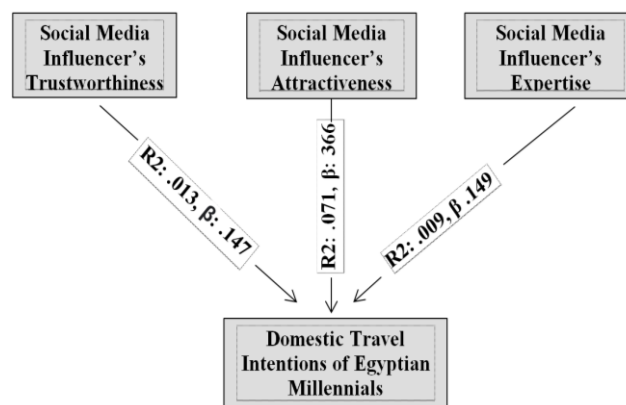


Figure 3. The Study Model (Source: Authors)

Table 4. The Result of Hypotheses Test (* P-value < 0.05)

Variables	Coefficients (B)	t	Sig.	R ²	F	Sig	result
SMI's Trustworthiness → Domestic Travel Intentions of Egyptian Millennials	.147	2.268	.024	.013	5.143	.024*	Supported
SMI's Attractiveness → Domestic Travel Intentions of Egyptian Millennials	.366	5.527	.000	.071	30.546	.000*	Supported
SMI's Expertise → Domestic Travel Intentions of Egyptian Millennials	.149	1.920	.056	.009	3.687	.056	Supported

Regarding the effect of SMI's trustworthiness on the domestic travel intentions of Egyptian millennials, Table 4 shows that R2 was 0.013, indicating that SMI's trustworthiness affects the domestic travel intentions of Egyptian millennials by 1%. Accordingly, H1: "The perceived trustworthiness of a SMI positively affects the domestic travel intentions of Egyptian millennials" is verified. This finding agrees with the findings of McNair (2021), who identified that followers' travel intentions are influenced by the SMI's trustworthiness. In addition, the above finding aligns with the findings of Chatzigeorgiou (2017), who stated that SMI's trustworthiness positively influences decision-making while selecting a tourist destination. Also, the above findings support the findings of Negm and El Halawany (2020), who stated that the consumer's vacation-planning intentions can be influenced by the SMI's trustworthiness. Moreover, the above finding agrees with the findings of Magno and Cassia (2018), who pointed out that the trustworthiness of Italian bloggers is positively correlated with the travel intentions of their followers. In addition, the finding is consistent with the study results of Grace and Ming (2018), who affirmed that consumers' attitudes towards blogger recommendations are significantly influenced by their trustworthiness, which in turn affects consumers' intentions to purchase the recommended products.

Regarding the effect of SMI's attractiveness on the domestic travel intentions of Egyptian millennials, Table 4 shows that R2 was .071, which means that SMI's attractiveness affects the domestic travel intentions of Egyptian millennials by 7%. Accordingly, H2: "The perceived attractiveness of a SMI positively affects the domestic travel intentions of Egyptian millennials" is verified. This finding supports the findings of Ragab (2022), who highlighted that attractiveness is one of the major factors influencing Digital Natives 2.0's attitude towards travel influencers on social media. Furthermore, the above finding is in line with the findings of Kalu (2021), who demonstrated that an influencer's physical attractiveness is one of the most significant elements influencing consumer purchasing behavior.

Moreover, the above finding asserts the findings of Chen et al. (2021), who stated that attractiveness of the vlogger is one of the characteristics that can have a substantial positive effect on potential tourist's travel intentions, indicating that a good vlogger's image and personal charisma are more likely to influence the audience. In contrast, the above finding disagrees with Lim et al. (2017) and Håkansson et al. (2020), who noted that SMI's attractiveness can't have an impact on the purchasing intentions of consumers.

Regarding the effect of SMI's expertise on the domestic travel intentions of Egyptian millennials, Table 4 shows that R^2 was 0.009, which means that SMI's expertise affects the domestic travel intentions of Egyptian millennials by 0.09%. Accordingly, H3: "*The perceived expertise of a SMI positively affects the domestic travel intentions of Egyptian millennials*" is verified. The above finding aligns with the findings of Lim et al. (2017), who confirmed that influencers on social media who are perceived as having a high level of expertise are viewed as having a greater effect on their followers' behaviors. The above finding disagrees with the findings of Negm and El Halawany (2020), who stated that there is no correlation between the expertise of social media influencers and an individual's travel intentions. Moreover, it differs with the findings of Lee and Eastin (2021), who clarified that SMI's expertise doesn't have an effect on buying intentions. Additionally, it contradicts the findings of Gong and Li (2017), who pointed out that there isn't a correlation between expertise and individuals' intentions to buy clothes and mobile phones endorsed by microbloggers.

CONCLUSION

Currently, social media platforms are inundated with SMIs, who are considered traditional users possessing significant influence over the user base on social media, particularly among the millennial generation. The characteristics of SMIs have been demonstrated to play an essential role in shaping the attitudes and behaviors of their audience. Academic researchers consider SMIs' credibility as a noteworthy attribute that calls for further investigation. The evaluation of SMIs' credibility can be conducted using the source credibility model, which comprises three fundamental elements, namely trustworthiness, attractiveness, and expertise.

Accordingly, the current study expands the source credibility model to the tourism context in order to fill the gap in the existing literature by examining the influence of SMIs' credibility on travel intentions among Egyptian millennials. The study adds to the current knowledge of SMI marketing by proposing the significance of credibility as one of the characteristics a SMI should possess. Additionally, the study indicates that the three dimensions of a SMI's credibility (trustworthiness, attractiveness, and expertise) have a positive impact on the domestic travel intentions of Egyptian millennials. Moreover, the study points out that all the SMI's credibility elements have a significant effect on the domestic travel intentions except the SMI's expertise; the SMI's expertise is the least significant credibility dimension affecting the domestic travel intentions of Egyptian millennials, while in contrast, a SMI's attractiveness is the most significant credibility dimension affecting the domestic travel intentions of Egyptian millennials.

Implications

The findings of this study can help the marketers of DMOs and travel agencies in Egypt select the most persuasive SMIs that can positively influence Egyptian millennials' travel intentions. Marketers ought to prioritize the selection of SMIs who possess characteristics such as attractiveness, trustworthiness, and expertise.

SMIs who exhibit physical attractiveness, stylishness, and high standards of personal conduct are often regarded as great examples of attractive influencers. Moreover, SMIs that transparently disclose their sponsored content on social media and also provide genuine feedback (both positive and negative) regarding the products and services they endorse in the tourism industry provide great examples of trustworthiness. Additionally, SMIs who have completed their education at tourism-related colleges and have gained over five years of work experience in the tourism sector, along with extensive travel within Egypt, are considered to possess a significant level of expertise.

In the selection process of SMIs targeting Egyptian millennials, attractive influencers are the most effective influencers that should be considered by the travel marketers. While, expertise is the least element that SMIs should be selected upon.

Limitations and Future Study

The findings of this study have to be seen in light of some limitations, as the data are limited to only one generation (millennials, who are born between 1980 and 2000) as well as one nationality (Egyptian). Therefore, future researchers are recommended to analyze the same topic for other generations and nationalities. Additionally, this study is focusing on credibility as one of the SMIs' characteristics that can impact travel intentions. Future researchers are advised to investigate the impact of other SMIs' characteristics on travel intentions, such as authenticity and similarity.

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