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## INTENTION TO RETURN TO NATIONAL PARK: THE ROLE OF PERCEIVED QUALITY, PERCEIVED VALUE, AND TOURIST SATISFACTION

Nguyen Giac TRI<sup>id</sup>

Faculty of Economics, Dongthap University, Dong Thap, Vietnam, e-mail: ngtri@dtu.edu.vn

Quoc Nghi NGUYEN<sup>\*id</sup>

School of Economics, Can Tho University, Can Tho, Vietnam, e-mail: quocnghi@ctu.edu.vn

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**Abstract:** Understanding and predicting tourists' intention to return to a destination is a fundamental factor for the success of a tourism destination. The objective of this study is to demonstrate the influence of perceived quality, perceived value, and satisfaction on the intention to return to the national park of tourists. The research utilizes a convenient sampling method with direct interview techniques to collect research data. The achieved sample size is 308 tourists who have visited and experienced tourism services at national parks in the Mekong Delta region, Vietnam. Applying a combination of qualitative and quantitative research methods, the study has proven that perceived quality positively influences satisfaction, enhancing the intention to return to national parks of tourists. Additionally, perceived value also has a positive impact on satisfaction, contributing to promoting the intention to return to national parks. Finally, the research has revealed a positive correlation between satisfaction and the intention to return to national parks of tourists.

**Key words:** perceived quality, perceived value, satisfaction, intention to return, national park

\* \* \* \* \*

### INTRODUCTION

Sustainable tourism tends to rely heavily on the return behavior of tourists to tourism destinations (Thuy and Tuan, 2018). To ensure the success of a tourism destination, maintaining tourists' intention to return is an important task for planners (Chen and Tsai, 2007). The return of tourists to a destination is significant for increasing revenue at tourist spots and saving costs. Even a 2% increase in returning tourists can result in a corresponding profit efficiency equivalent to a 10% cost reduction (Som et al., 2011). Located in the southernmost part of Vietnam, the Mekong Delta has an area of 40 thousand km<sup>2</sup>, and diverse ecosystems, serving as the largest rice bowl in Vietnam and offering many attractive tourist destinations. In recent years, eco-tourism in national parks in the Mekong Delta has been a focus of attention, and investment, and has achieved significant results. Some national parks have unique eco-tourism products, such as Mui Ca Mau National Park and U Minh Ha National Park (Ca Mau Province), U Minh Thuong National Park (Kien Giang Province), and Tram Chim National Park (Dong Thap Province). The development of eco-tourism is closely linked to the exploitation and conservation of resources, contributing to the environmental protection of national parks, which is an important task. Additionally, attracting tourists and enhancing the intention to return to the destination are crucial factors in the success of national parks.

In recent decades, there have been many studies on tourists' intention to return to a destination. Researchers have pointed out that tourists' intention to return is influenced by various factors, including perceived value (Allameh et al., 2015; Carla et al., 2017; Khuong and Duyen, 2017; Juliana et al., 2022; Libre et al., 2022; Rasoolimanesh et al., 2023), perceived quality (Allameh et al., 2015; Carla et al., 2017; Pivac et al., 2019; Hermann and Nemaorani, 2023; Sung and Noh, 2023), satisfaction (Loi et al., 2017; An et al., 2019; Nguyen Viet et al., 2020; Atmari and Putri, 2021; Čulić et al., 2021; Chin et al., 2022; Libre et al., 2022; Hermann and Nemaorani, 2023; Shatnawi, 2023), national image (De Nisco et al., 2015; Soonsan and Sukahbot, 2019), destination image (Stylidis et al., 2017; Prayogo and Kusumawardhani, 2017; Soonsan and Sukahbot, 2019), etc. The majority of studies have only focused on demonstrating the relationship between perceived quality and its impact on satisfaction and intention to return to destinations (Pivac et al., 2019; Hermann and Nemaorani, 2023; Sung and Noh, 2023) or perceived value and its impact on satisfaction and intention to return to destinations (An et al., 2019; Juliana et al., 2022; Libre et al., 2022; Rasoolimanesh et al., 2023).

Few studies have demonstrated the simultaneous impact of perceived quality and perceived value on satisfaction, and intention to return to destinations among tourists (Allameh et al., 2015; Carla et al., 2017; Khuong and Duyen, 2017). Specifically, there has been no study demonstrating the influence of perceived quality and perceived value on satisfaction, and intention to revisit national parks among tourists. Therefore, this study is conducted to demonstrate the simultaneous influence of perceived quality and perceived value on satisfaction, and intention to revisit national parks among tourists, in the case of national parks in the Mekong Delta region, Vietnam.

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\* Corresponding author

## **THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES**

### **Theoretical framework**

#### **Perceived quality**

Perceived quality is defined as the customer's evaluation of a product's overall excellence compared to substitute brands (Aaker, 1996). It is the consumer's assessment of the overall quality of a product/service (Zeithaml, 1988). According to Dawa (1999), perception quality encompasses the customer's overall opinions and evaluations regarding the excellence, perfection, or different degrees of a product/service. Grönroos (1984) identified service perceived quality with two aspects: technical quality (what customers receive) and functional quality (the processes or ways customers receive). In tourism, perception quality is formed by service delivery processes (friendliness, politeness, efficiency, reliability, staff competence) and service outcomes (accommodation, dining, entertainment facilities) (Žabkar et al., 2010).

#### **Perceived value**

Perceived value occurs at different stages of the purchasing process, including pre-purchase, during purchase, and post-purchase (Woodruff, 1997; Sweeney and Soutar, 2001). It is the consumer's overall evaluation of the utility of a product/service based on the comparison between the perceived benefits and the costs incurred to obtain the product/service (Zeithaml, 1988). Customers' perceived value is the emotional relationship established between the customer and the provider after the customer has used a product/service and found that it adds value (Butz and Goodstein, 1996). According to Pandža Bajs (2015), perceived value provides a solid theoretical foundation for evaluating an eco-tour from the perspective of tourists. Perceived value is a reliable concept for predicting tourist behaviors (Eid and El-Gohary, 2015) and offers practical meanings for marketing eco-tours (Kim and Park, 2017).

#### **Satisfaction**

Satisfaction is the degree of an individual's emotional state derived from comparing the results obtained from a product/service with their expectations (Kotler, 2001). It results from the fulfillment of a customer's expectations through their experience with a product/service (Hume and Mort, 2010).

According to Chen and Tsai (2008), customer satisfaction measures all levels of a customer's happiness with the service provider after all encounters and interactions. Tourist satisfaction is their emotional state regarding the tourism product/service, determined based on the perception from the experience compared to their expectations before using that product/service (Oliver, 1980; Um et al., 2006; Han et al., 2011). Additionally, tourist satisfaction can be reflected in their retention of beautiful memories after the trip ends (Reisinger and Turner, 2012).

#### **Intention to return**

Intention plays a crucial role in predicting consumer behavior, being a significant expression in the decision-making process (Bagozzi and Phillips, 1982). According to Ajzen (1991), there is a strong connection between intention and actual behavior, making determining intention the best way to predict an individual's actual behavior. Tourists' intention to return can generate a flow of international tourism, providing positive motivation for tourists to revisit the destination in the future (Um et al., 2006). Intention to return to a tourism destination is defined as tourists repeating an activity or revisiting a destination (Baker and Crompton, 2000). It is related to the tourist's evaluation of the likelihood or plan to revisit the same destination (Stylos et al., 2016) or the willingness to recommend the destination to others (Chen and Tsai, 2007). The important premise of the intention to revisit stems from satisfaction, perceived value, and tourism experiences (Pandža Bajs, 2015; Lee et al., 2011).

### **Research hypotheses**

#### **The relationship between perception quality, satisfaction, and intention to return**

When service quality is perceived at a high level, it enhances customer satisfaction (Saravanan and Rao, 2007). Perceived quality is a precursor to customer satisfaction (Rajaratnam et al., 2015; Wang et al., 2017; Ghorbanzadeh et al., 2021; Hermann and Nemaorani, 2023). Several studies have argued and demonstrated the positive impact of perceived quality on customer satisfaction and the intention to return to the destination (Žabkar et al., 2010; Allameh et al., 2015; Carla et al., 2017; Pivac et al., 2019). Therefore, the study poses the following hypotheses: H1: Perceived quality positively influences tourist satisfaction; H2: Perceived quality positively influences the intention to return to national parks.

#### **The relationship between perceived value, satisfaction, and intention to return**

According to Williams and Soutar (2000), there is a positive relationship between emotional perceived value and customer satisfaction. Studies by Pandža Bajs (2015) and Libre et al. (2022) have shown that perceived value positively impacts tourist satisfaction. Recently, many studies have demonstrated a positive relationship between perceived value, satisfaction, and the intention to return to the destination of tourists (Allameh et al., 2015; Carla et al., 2017; An et al., 2019). Thus, the study proposes the following hypotheses: H3: Perceived value positively influences tourist satisfaction; H4: Perceived value positively influences the intention to return to national parks.

#### **The relationship between satisfaction and tourists' intention to return**

One of the crucial factors in the successful marketing of a destination is tourist satisfaction, which influences destination choice and the decision to return (Yoon and Uysal, 2005). Tourist satisfaction is a significant factor influencing the behavioral intention of tourists (Chenini and Touaiti, 2018). In the field of tourism, many researchers have argued and demonstrated the positive impact of satisfaction on the intention to return to the destination of tourists (Carla et al., 2017;

Loi et al., 2017; An et al., 2019; Soonsan and Sukahbot, 2019; Atmari and Putri, 2021; Ćulić et al., 2021; Chin et al., 2022; Libre et al., 2022; Hermann and Nemaorani, 2023; Shatnawi, 2023). Therefore, the study proposes hypothesis H5: Satisfaction positively influences the intention to return to national parks.

Based on the literature review and the hypotheses set, the research model (Figure 1) depicting the influence of perceived quality, perceived value, and satisfaction on the intention to return to national parks is established as follows:

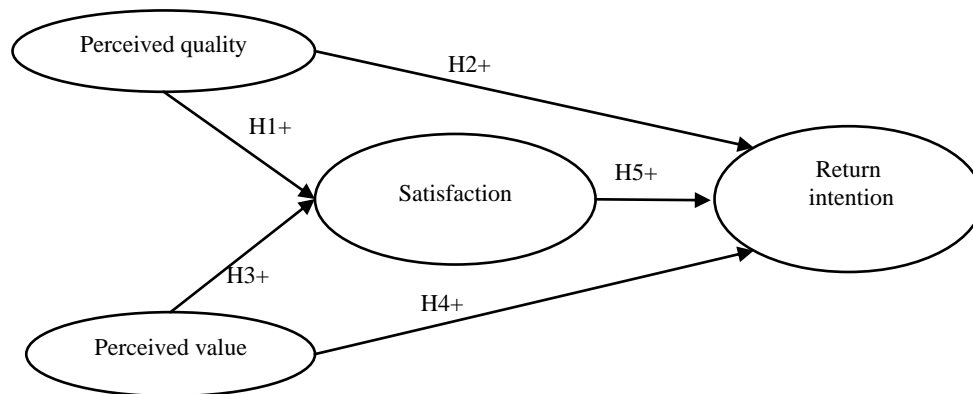


Figure 1. Proposed research model

## RESEARCH METHODOLOGY

### Research scale

The research scales were adjusted through qualitative research to better fit the research context. A group discussion method was employed to identify suitable scales for the research model. A group discussion session was organized with the participation of 8 tourists who visited national parks and 2 tourism research experts. The results of the group discussion led to the refinement on 4 scales with 18 observable variables inherited from previous research authors (Table 1).

Table 1. Interpretation of observed variables in the research model

Factor	Observed variable	Scale	References
Perceived Quality	PQ1: National parks in the Mekong Delta have unique and attractive cuisine.	Likert 1-5	Žabkar et al. (2010), Hai (2022)
	PQ2: National parks in the Mekong Delta have beautiful natural landscapes.	Likert 1-5	
	PQ3: National parks in the Mekong Delta have fresh and cool air.	Likert 1-5	
	PQ4: National parks in the Mekong Delta have interesting activities.	Likert 1-5	
	PQ5: I feel safe and comfortable at national parks in the Mekong Delta.	Likert 1-5	
Perceived Valued	PV1: The trip to national parks in the Mekong Delta gives me a pleasant feeling.	Likert 1-5	Gallarza and Saura (2006), Quintal and Polczynski (2010),
	PV2: I enjoy relaxation during my trip to national parks in the Mekong Delta.	Likert 1-5	
	PV3: I feel what I gave (pay) is in accordance with what I received.	Likert 1-5	
	PV4: The experience of traveling to national parks in the Mekong Delta is what I want.	Likert 1-5	
	PV5: Overall, I appreciate the value of the experience during the trip to national parks in the Mekong Delta.	Likert 1-5	
Satisfaction	SA1: I enjoy the trip to national parks in the Mekong Delta.	Likert 1-5	Chen and Chen (2010), Nguyen Viet et al. (2020)
	SA2: I feel satisfied with my decision to choose national parks in the Mekong Delta.	Likert 1-5	
	SA3: I like traveling to national parks in the Mekong Delta more than other places.	Likert 1-5	
	SA4: For me, a trip to national parks in the Mekong Delta is an interesting trip.	Likert 1-5	
Return intention	RI1: I will come back to national parks in the Mekong Delta in the future.	Likert 1-5	Loi et al. (2017), Soonsan and Sukahbot, (2019)
	RI2: I will choose national parks in the Mekong Delta more often.	Likert 1-5	
	RI3: Traveling to national parks in the Mekong Delta is my most favorite destination.	Likert 1-5	
	RI4: If I had to choose, I would prioritize choosing national parks in the Mekong Delta next time.	Likert 1-5	

### Research data and analytical methods

Analytical method: to validate the research hypotheses, quantitative analytical methods were employed, including testing internal consistency using Cronbach's alpha coefficient, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM). Research sample size: when using the SEM method, a reasonable sample size should be a minimum of 200 observations (Hoelter, 1983). However, a larger sample size increases the study's reliability, and CB-SEM requires a large sample size (Raykov and Widaman, 1995). Therefore, the study determined a minimum sample size of 200. Data collection method: a survey was conducted from July 2023 to September 2023. Due to difficulties in accessing the survey subjects, the study used a convenience sampling method. The direct interview method was employed to gather information from respondents. The surveyed subjects were tourists who visited national parks in the Mekong Delta region (Figure 2), including Tram Chim National Park (85 tourists), Ca Mau Cape National Park (80 tourists), U Minh Ha National Park (75 tourists), and U Minh Thuong National Park (68 tourists). The total number of survey responses collected was 308, which was deemed sufficient for testing the research hypotheses.

Survey respondent characteristics: out of the 308 valid survey responses, domestic tourists accounted for 64.41%, while international tourists made up the remaining 35.39%. Regarding gender distribution, male respondents constituted 49.35%,

and female respondents were 50.65%. In terms of age distribution, the majority of respondents were aged 31 to 45 (40.58%), followed by the age group 16 to 30 (25%), the age group 46 to 60 (21.1%), and the age group 60 and above (13.31%). Regarding education, the majority had college and university degrees (51.95%), followed by high school graduates (31.49%), secondary school graduates (11.04%), and postgraduate degree holders (5.52%). In terms of occupation, officers had the highest proportion (35.06%), followed by laborers in industrial areas (24.68%), management/executive group (20.45%), and finally, freelancers (19.81%).

## RESEARCH RESULTS AND DISCUSSION

### Evaluating scale reliability

The development of scales was carried out following a standardized two-step process to assess the reliability of the measures (Narasimhan and Jayaram, 1998), including the Cronbach's alpha test and Exploratory Factor Analysis (EFA). As shown in Table 2, the results of the tests indicate that all scales have Cronbach's alpha values greater than 0.8, ensuring internal consistency reliability (Nunnally and Bernstein, 1994). Additionally, the results of the Exploratory Factor Analysis (EFA) achieved the following statistical indices: (1) Factor loadings of observed variables  $> 0.5$ ; (2) Adequacy of the model confirmed ( $0.5 < \text{KMO} = 0.881 < 1.0$ ); (3) Bartlett's test of sphericity ( $\text{Sig.} = 0.000 < 0.05$ ). Cumulative variance test = 69.832%, exceeding the prescribed threshold of 50% (Hair et al., 1998). This indicates that the research scales achieved internal consistency, convergent validity, and discriminant validity.



Figure 2. Location map of the survey area

Table 2. The testing result of research scale reliability

Scale	Sign	Cronbach's alpha	Factor			
			1	2	3	4
Perceived Quality (PQ)	PQ1	0.862	0.700			
	PQ2		0.765			
	PQ3		0.769			
	PQ4		0.809			
	PQ5		0.677			
Perceived Valued (PV)	PV1	0.886		0.806		
	PV2			0.779		
	PV3			0.771		
	PV4			0.811		
	PV5			0.728		
Satisfaction (SA)	SA1	0.872			0.701	
	SA2				0.804	
	SA3				0.843	
	SA4				0.807	
Return Intention (RI)	RI1	0.876				0.760
	RI2					0.817
	RI3					0.812
	RI4					0.788
KMO (Kaiser-Meyer-Olkin) = 0.881; Sig. = 0.000; Cumulative % = 69.832%						

Table 3. Correlation matrix between conceptual constructs

	CR	AVE	PQ	PV	SA	RI
PQ	0.863	0.558	0.747			
PV	0.887	0.610	0.351***	0.781		
SA	0.873	0.634	0.357***	0.340***	0.796	
RI	0.877	0.641	0.427***	0.392***	0.537***	0.800
Chi-square/df = 1.789; P-value = 0.000; TLI = 0.959; CFI = 0.965; RMSEA = 0.051; Note: *** statistical significance level of 1%						

According to the results of Confirmatory Factor Analysis (CFA) in Figure 3 and Table 3, statistical indices were as follows: Chi-square/df = 1.789  $< 2.0$  with P-value =  $0.00 \leq 0.05$ ; TLI and CFI indices with values of 0.959 and 0.965, respectively, both  $> 0.9$ ; RMSEA coefficient =  $0.051 < 0.08$ . This demonstrates that the model fits well with the research data (Anderson and Gerbing, 1988). Based on Table 3, both Composite Reliability (CR) and Average Variance Extracted (AVE) met the conditions, with the minimum CR value being 0.863 and the minimum AVE value of 0.558 (Fornell and



Larcker, 1981). Additionally, the test results indicated that the correlation between conceptual structures achieved discriminant validity (Fornell and Larcker, 1981). Thus, the research data aligns with market data, demonstrating convergent validity, unidimensionality, discriminant validity, and reliability.

### Testing research hypotheses

Based on the results of hypothesis testing in Figure 4 and Table 4, all research hypotheses were accepted at a significance level of 1%. This indicates that perceived quality positively influences satisfaction and the intention to revisit national parks. Besides, perceived value positively influences satisfaction and the intention to revisit national parks. Moreover, tourist satisfaction positively affects tourists' intention to revisit national parks.

### DISCUSSION

The study has demonstrated the positive influence of perceived quality on tourist satisfaction and the intention to revisit national parks with 99% confidence. This indicates that when tourists perceive the beautiful natural landscapes, fresh air, interesting activities, and distinctive cuisine of the national parks, their satisfaction will be enhanced. The study's results further affirm that perceived quality is a crucial precursor to tourist satisfaction (Rajaratnam et al., 2015; Wang et al., 2017; Ghorbanzadeh et al., 2021; Hermann and Nemaorani, 2023). Additionally, perceived quality contributes to enhancing satisfaction and promoting the intention to revisit the tourist destination. The research findings align with several studies proposed by Žabkar et al. (2010), Allameh et al. (2015), Carla et al. (2017), and Pivac et al. (2019).

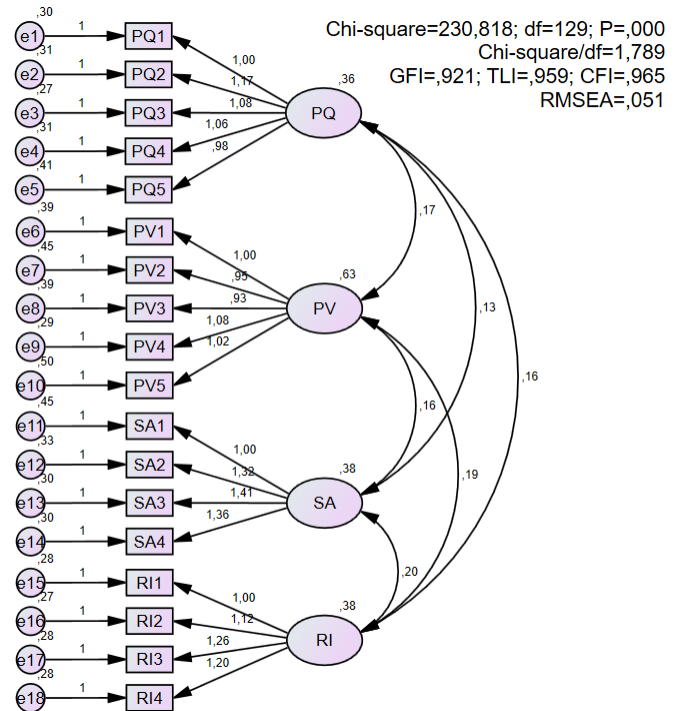


Figure 3. Confirmatory factor analysis diagram  
(Source: researcher's own creation, 2023)

Table 4. Testing research hypotheses

Relationship	Unstandardized			Standardized Estimated Value	Significance	Hypotheses
	Estimate	Standard Error S.E	Critical Ratio C.R			
PQ → SA	0.285	0.073	3.879	0.272	0.000	H1: accepted
PQ → RE	0.283	0.082	3.462	0.222	0.000	H2: accepted
PV → SA	0.189	0.052	3.625	0.244	0.000	H3: accepted
PV → RI	0.168	0.058	2.911	0.179	0.004	H4: accepted
SA → RI	0.482	0.082	5.864	0.397	0.000	H5: accepted

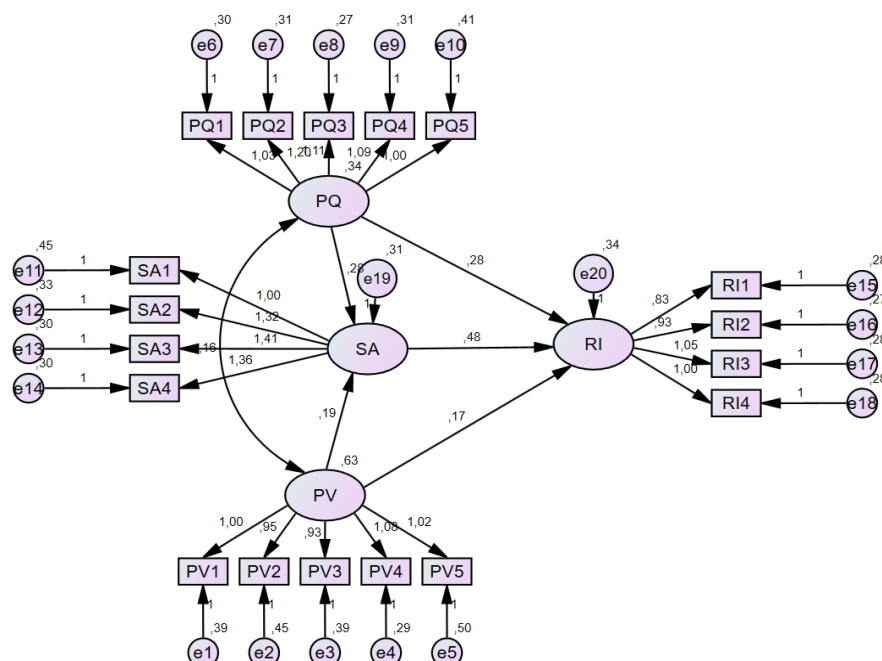


Figure 4. SEM result (Source: researcher's own creation, 2023)



The study has proven that perceived value positively influences tourist satisfaction and the intention to revisit national park tourist destinations with 99% confidence. Indeed, if the national park tourism program provides tourists with exciting, relaxing, and comfortable experiences that meet their expectations, tourist satisfaction will be improved. Perceived value is a driving factor for customer satisfaction; in other words, satisfaction is the result of perceived value (Sánchez-Fernández and Iniesta-Bonillo, 2007; Eid and El-Gohary, 2015). The research results confirm that perceived value positively contributes to tourist satisfaction (Pandža Bajs, 2015; An et al., 2019; Libre et al., 2022) and the intention to revisit the tourist destination (Allameh et al., 2015; Carla et al., 2017; Alkhawaldeh, 2022).

Finally, the study has demonstrated a positive correlation between tourist satisfaction and the intention to revisit national parks with 99% confidence. This indicates that if tourists highly evaluate the service quality, their intention to revisit national parks will be higher. The research results have shown that tourist satisfaction plays a crucial role in the success of the tourist destination (Kozak and Rimmington, 2000) as it influences the intention to revisit the tourist destination (Nguyen and Mai, 2021). In the field of tourism, these research findings align with studies proposed by Carla et al. (2017), Loi et al. (2017), An et al. (2019), Soonsan and Sukahbot (2019), Atmari and Putri (2021), Čulić et al. (2021), Chin et al. (2022), Libre et al. (2022), Hermann and Nemaorani (2023) and Shatnawi (2023).

## CONCLUSION

The study has proven that perceived quality positively influences tourist satisfaction and the intention to revisit national parks. Additionally, perceived value has a positive impact on satisfaction and the intention to revisit the tourist destination. Moreover, the study has revealed a positive correlation between satisfaction and the intention to revisit national parks. The research results contribute to suggesting policy implications for enhancing perceived quality, perceived value, and tourist satisfaction, and improving the intention to revisit national parks in the Mekong Delta region, Vietnam. Although the study has achieved its objectives, it still has limitations.

First, the study's sample size is limited in terms of the diversity of tourist subjects, focusing only on surveying English-proficient international tourists.

Second, the study has not examined the role of moderating variables (gender, education level, occupation, type of tourist) in the relationship between perceived quality, perceived value, satisfaction, and the intention to revisit national parks.

Third, there are still some factors that could influence tourists' intention to revisit but have not been included in the research model, such as the country's image and the destination's image.

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## POST-PANDEMIC DIGITAL TRANSFORMATION: MITIGATING TECHNOSTRESS AND INCREASING WELL-BEING IN THE HOSPITALITY INDUSTRY VIA THE PERSON-TECHNOLOGY FIT MODEL

**Muhammad M. ALFEHAID** 

Imam Mohammad Ibn Saud Islamic University (IMSIU), Department of Geography and GIS, College of Social Sciences,  
Riyadh, Saudi Arabia, e-mail: mmalfehaid@imamu.edu.sa

**Thowayeb H. HASSAN**\* 

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

**Ahmad A. ALFISAL** 

Imam Mohammad Ibn Saud Islamic University (IMSIU), Department of Geography and GIS, College of Social Sciences,  
Riyadh, Saudi Arabia, e-mail: Aaalfisal@imamu.edu.sa

**Mahmoud I. SALEH** 

Tourism Studies Department, Faculty of Tourism and Hotel Management, Helwan University,  
Cairo, Egypt, e-mail: mahmoudibraheam580@gmail.com

**Silviu Vasile BUMBAK** 

Babeş-Bolyai University, Faculty of Geography, Sighetu Marmăției Extension,  
Sighetu Marmăției, Romania, e-mail: silviu.bumbak@ubbcluj.ro

**Mohamed Y. HELAL** 

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

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**Abstract:** Understanding how to reduce employee tech stress is crucial for improving workforce well-being and maximizing operational efficiency in the tourism and hospitality sectors due to the post-COVID-19 digital transformation. Therefore, this study aims to investigate the impact of enhancing restaurant employees' digital transformation readiness and technological device readiness on reducing employees' technostress. The study employed a qualitative methodology of semi-structured interviews, primarily addressing the paucity of scholarly investigations within this specific research area. The interviewee cohort encompassed both managerial and staff members from two distinct categories of restaurants (i.e., fast-food and casual dining restaurants). The study found eight factors related to the readiness of restaurant employees for digital transformation, as well as four factors related to the readiness of restaurant technological devices. According to interviewees, these factors have been found to reduce restaurant employees' techno stressors. Theoretically, this study extends the digital transformation readiness model from three to eight factors, and the study extends the person technology fit model from three to four factors to reduce employees' technostress. From a managerial perspective, restaurant managers can use the study framework to enhance employees' technological skills, foster a positive attitude toward digital transformation, and invest in user-friendly technology, which can ultimately reduce technostress and improve employee well-being and performance in the dynamic hospitality industry.

**Keywords:** digital transformation readiness, person-technology fit model, employees technostress, hospitality industry, qualitative research

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### INTRODUCTION

The COVID-19 pandemic has accelerated the pace of technology adoption in the restaurant industry, driving the implementation of digital solutions for contactless ordering, payment, and delivery to meet evolving customer preferences and safety concerns (Helal, 2023). Digital transformation has become essential for operational efficiency (Baiyere et al., 2020), enhancing the customer experience (Cichosz et al., 2020), and increasing competitiveness within modern hospitality businesses (Hassanin et al., 2023). Digital transformation is a complete process involving integrating digital technology, data, and automation into different elements of a hospitality business's operations, strategies, and business models to improve performance, efficiency, and competitiveness (Helal, 2023; Kumar et al., 2023). Nevertheless, combined with the

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\* Corresponding author

benefits digital transformation provides, the increasing reliance on technology within the hospitality industry has also presented a significant obstacle (Helal and Saleh, 2024), for example, technostress among employees (Shi et al., 2024). Technostress is a phenomenon that encompasses the experience of anxiety, dissatisfaction, and overwhelm arising from using technology in the workplace (Hassanin et al., 2023; Khedhaouria et al., 2024).

The study by Christ-Brendemühl and Schaarschmidt (2020) delved into the complexities of technology-induced job demands and their ripple effect on Frontline Employees (FLEs) technostress, revealing a negative cascade that impacted customer satisfaction and FLEs' sense of delight in the service environment. In parallel, Högberg (2021) shed light on the adverse effects of techno stressors, such as work overload and the ever-evolving algorithms, experienced by employees within an international hotel chain. Similarly, Wu et al. (2022) conducted an in-depth examination of the consequences of technostress among employees in technologically advanced hotels, unveiling its detrimental influence on employee well-being and performance. However, these previous studies did not analyze restaurant employees' digital transformation and technological device readiness in minimizing technostress.

Restaurant employees' digital transformation readiness, such as positivity, technological affinity, and technical skills (Ng, 2012), could be crucial in their adaptability to technology, reducing resistance-related stress and facilitating their proficiency. Similarly, the person-technology fit model proposed three usability features: information quality, interface quality, and technical features (Massey et al., 2007), which could impact how employees interact with technology, enhancing the user experience and reducing stress associated with complexity and inefficiency. Furthermore, addressing techno stressors, including information overload, constant connectivity, techno-invasion, techno-complexity, and techno-uncertainty (Wu et al., 2022), becomes more manageable when employees are well-prepared for digital transformation and equipped with technology that supports their needs. Consequently, this research aims to address this gap by pursuing two primary objectives: first, investigating the impact of improving restaurant employees' digital transformation readiness, recognizing its significance in the rapidly evolving technological landscape, and second, exploring the relevance of the person-technology fit model in reducing technostress. The study proposed two hypothesis questions to reach the study's aim:

- Does enhancing restaurant employees' digital transformation readiness reduce their levels of technostress, thereby improving their overall well-being and job performance in the restaurant sector?
- To what extent does the person-technology fit model influence restaurant employees' technostress levels, including usability, information quality, interface quality, and technical features?

This study makes several significant theoretical and managerial contributions to the hospitality industry. The study expands the person-technology fit model by incorporating technical features and investigates how usability, information quality, interface quality, and technical features collectively impact reducing employees' technostress experiences. In addition, the study extends Ng's (2012) digital transformation readiness model from three to eight factors, shedding light on how these employees' digital transformation readiness factors impact reducing their technostress levels. Hence, restaurant managers can use the study framework to improve employees' technological skills, foster a positive attitude towards digital transformation, and invest in user-friendly technology, thus reducing technostress and enhancing employee well-being and performance in the dynamic hospitality industry.

## LITERATURE REVIEW

### 1. Technostress in tourism and hospitality

Technostress refers to the adverse physiological reactions' individuals experience from using technology at the workplace (Hassanin et al., 2023). According to Christ-Brendemühl and Schaarschmidt (2020), technostress is a common negative in today's digital world. Technostress can negatively impact employees' job performance and well-being (Shi et al., 2024). Employees may feel overwhelmed by the multitude of software programs or apps they are expected to use, struggle to keep up with updates and changes to existing systems and feel pressured to be available and responsive at all times due to the use of mobile devices and other digital communication tools (Christ-Brendemühl, 2022; Nastjuk et al., 2023). Additionally, malfunctioning technology can cause frustration or anxiety, mainly if it negatively affects the customer's experience (Shi et al., 2024). Also, lack of support or training for using new technologies in the workplace can contribute to technostress (Hassanin et al., 2023).

Tourism and hospitality research on technostress has identified several types of technostress (e.g., information overload, constant connectivity, techno-invasion, techno-complexity, and techno-uncertainty) (Christ-Brendemühl, 2022; Hassanin et al., 2023; Shi et al., 2024). First, information overload occurs when individuals are exposed to too much information, making it difficult to process and prioritize what is essential (Wu et al., 2022). Second, constant connectivity refers to the expectation that individuals are always available and connected through technologies, even outside work hours (Ayyagari et al., 2011; Christ-Brendemühl, 2022). Third, techno-invasion occurs when technologies invade an individual's personal space or time, such as receiving work-related emails or messages during non-work hours (Högberg, 2021).

Fourth, techno-complexity refers to the difficulty individuals may experience in using complex technologies or adapting to new technologies (Hassanin et al., 2023). Fifth, techno-uncertainty occurs when individuals feel uncertain about using new technologies or how they will impact their work tasks or responsibilities (Shi et al., 2024). These techno stressors can lead to feelings of overwhelm, anxiety, reduced productivity, insecurity, stress, and reduced confidence in employees' abilities (Christ-Brendemühl, 2022). Therefore, to tackle these technostress challenges, the present study has proposed a conceptual model consisting of two independent variables, namely the person-technology fit model and employees' digital transformation readiness, which can influence technostress as the dependent variable (Figure 1).

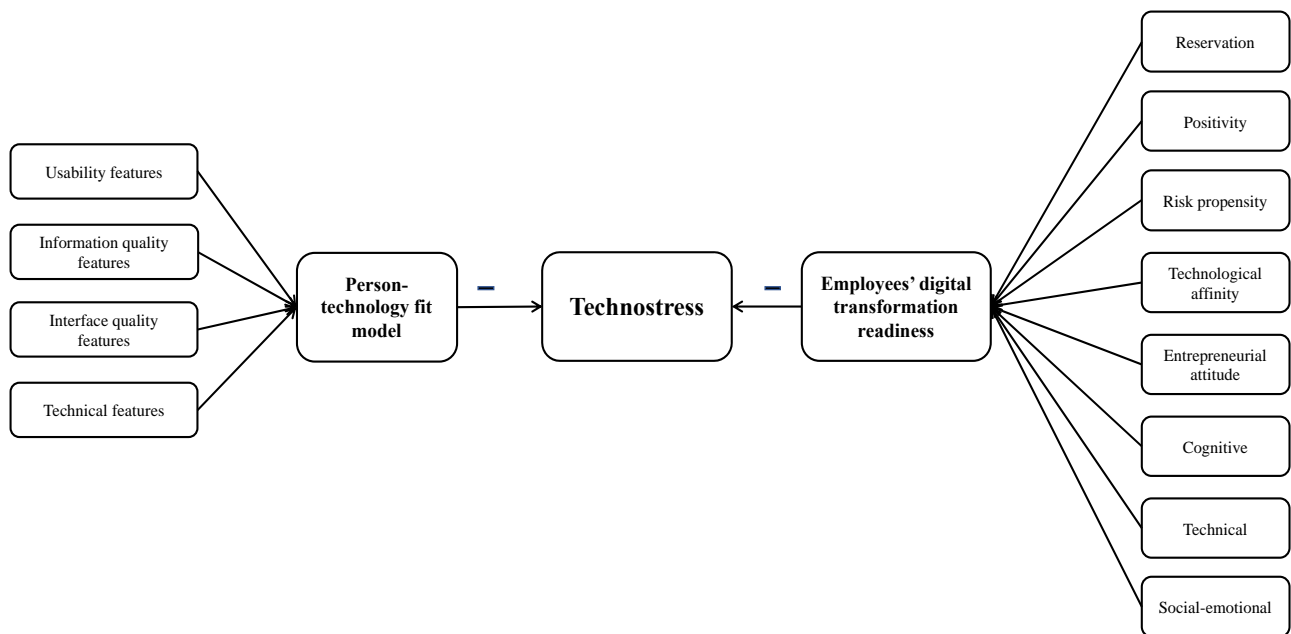


Figure 1. Conceptual model

## 2. Conceptual development

### 2.1. Person-technology fit model and technostress

The person-technology fit model is a framework aimed at determining the causes of workplace stress associated with information technology devices (Ayyagari et al., 2011). The model proposed three technological features (i.e., usability, information, and interface quality). First, usability features refer to the ease with which employees can interact and utilize technology in their daily tasks (Qi, 2019). Second, information quality features pertain to the accuracy and reliability of technology-provided data (Mahadin et al., 2020). Reliable information ensures that employees can make informed decisions and provide customers with accurate information (Massey et al., 2007). Third, interface quality features focus on technology interfaces' visual and interactive aspects (Alves et al., 2020). A well-designed interface enhances the user experience and can streamline restaurant operations, including features like touchscreen menus, mobile ordering apps, and digital table management systems (Daradkeh et al., 2023).

The person-technology fit model emphasizes user interactions but ignores technical features. Technical features are the specific attributes and functionalities of a technical system or device associated with its hardware, software, and network capabilities (Qi, 2019). Ignoring these elements can disrupt restaurant operations and affect the customer and employee experience. Additionally, technical features like reliable hardware, up-to-date software, and security considerations are crucial in maintaining smooth and secure operations (Christ-Brendemühl, 2022). Neglecting these aspects can lead to inefficiencies, unforeseen costs, and reputational damage. Thus, the restaurant's technical features can either alleviate or exacerbate employees' technostress, as the smooth operation of technology can significantly impact their work experience. Therefore, this study extends the person-technology model to a holistic model that ensures employees a positive experience, maintaining efficient and secure restaurant operations.

### 2.2. Employees' digital transformation readiness and technostress

Digital transformation refers to utilizing modern digital technologies to transform and improve various aspects of a restaurant's operations, such as its business models, services, and products (Daradkeh et al., 2023). Digital transformation entails integrating digital technologies into every aspect of a restaurant to boost efficiency, productivity, and competitiveness (Kumar et al., 2023). The readiness of employees for digital transformation is essential for restaurants to adapt successfully to the rapidly changing digital landscape (Helal, 2023). Digital transformation readiness refers to the degree to which employees are prepared to adopt and utilize digital technologies in the workplace (Ng, 2012). Developing skills, knowledge, and attitudes that enable employees to use and adopt digital technologies effectively, efficiently, and safely at work constitutes digital transformation readiness. Hence, digitally ready employees are more likely to embrace change and be receptive to novel working methods and challenges, ultimately leading to a more prosperous and less stressful transition.

Ng (2012) proposed a digital literacy model for assessing employees' readiness for digital transformation. Ng's (2012) framework for digital literacy identifies three key dimensions: technical, cognitive, and social-emotional. The technical dimension entails the skills to effectively utilize digital technologies, such as connecting devices, troubleshooting, and managing data (Helal, 2023). The cognitive dimension pertains to critical thinking and the ability to search for, evaluate, and ethically create digital content (Tohara, 2021). The social-emotional dimension entails utilizing digital technologies for communication, collaboration, and day-to-day tasks while maintaining a safe and responsible online presence (Ng, 2012). However, this study proposes five additional factors that focus on the psychological and behavioral characteristics that influence an individual's readiness for digital transformation (i.e., reservation, positivity, risk propensity, technological affinity, and an entrepreneurial attitude). The "reservation dimension" relates to individuals' concerns and attitudes about technology, particularly its potential drawbacks (Tate et



al., 2015). Conversely, the "positivity factor" gauges employees' cheerful disposition toward technology, a key driver for successful digital implementation (Helal, 2023). "Risk propensity" measures an individual's willingness to embrace risk despite potential failures, requiring courage and self-motivation (Makki et al., 2016).

"Technological affinity" reflects one's outlook on emerging technologies, influencing their readiness to adopt and expertise in utilizing new tools (Franke et al., 2019). Lastly, an "entrepreneurial attitude" encompasses a proactive, innovative, and risk-taking mindset vital for leveraging digital technology to drive organizational change and value creation, with components like adaptive performance and self-reported initiative contributing to this entrepreneurial mindset (Daradkeh et al., 2023; Helal, 2022). Hence, the proposed eight factors can significantly reduce employees' technostress by addressing digital readiness's technical and psychological dimensions.

## MATERIALS AND METHODS

The study uses a qualitative approach, where semi-structured interviews are the principal research method. Semi-structured interviews refer to data collection where open-ended questions and topics guide the conversation while allowing for unplanned inquiries and participant-driven discussion (Sparkes and Smith, 2013).

The research methodology encompassed various components, including the use of selection interviews, the application of specific interview techniques, and the employment of methods for analyzing the collected interview data. The amalgamation of these methodological elements yielded a substantial and diverse data pool. This data was subsequently analyzed to explore the impact of enhancing restaurant employees' digital transformation readiness and technological device readiness on reducing employees' technostress.

### 1. Selection Interviews

The research team set two main inclusion criteria to select the sample. First, the research team emphasizes the importance of selecting employee candidates for interviews who have suffered from technostress for several reasons. Employees who have personally experienced technostress can provide valuable insights into the challenges and sources of stress associated with digital transformation initiatives within restaurant settings.

Their first-hand experiences can provide a deeper, more nuanced understanding of technology fatigue. Furthermore, these employees are likely to possess a more empathic perspective, which can help formulate effective strategies for relieving technostress among employees. Second, participants must fully understand their restaurant's digital transformation initiatives and technologies to address the research questions effectively. Therefore, to identify suitable candidates for the interview, the research team contacted restaurant managers directly to measure their willingness to participate in the study and the willingness of their employees. Ultimately, the study included interviews with 11 restaurant managers and 30 restaurant employees from two different types of restaurants in Cairo, Egypt (i.e., fast-food and casual dining restaurants) who met the criteria set for participation.

The study used convenience sampling, a non-probability sampling technique predicated on selecting research participants based on their accessibility and immediate availability (Stratton, 2021). Convenience sampling was adopted due to its practicality and efficiency, offering a rapid and cost-effective means of recruiting participants, consequently conserving valuable time and resources. It is worth noting that there is no official list of Egyptian restaurants to select from, further underscoring the pragmatic choice of convenience sampling in such circumstances (Helal, 2022).

In fast-food restaurants, employees encounter various digital transformation technologies that can be potential sources of technostress. One such technology is the point-of-sale system, a cornerstone for order processing and payment, and it can be a source of technostress if it is complex or error-prone, leading to order mix-ups or customer dissatisfaction (Qi, 2019). Additionally, online ordering apps and websites commonly used in the fast-food industry can create stress when dealing with a high volume of online orders during peak hours, increasing pressure and the likelihood of mistakes in food preparation (Helal, 2023). In casual dining restaurants, digital reservation systems play a crucial role in managing table assignments and customer requests, and technostress may emerge if these systems crash or fail to seamlessly integrate walk-in customers, leading to chaos during peak dining hours (Nilsson et al., 2021).

### 2. Interview Techniques

The interview process was structured into two delineated sections. In the initial section, the interviewees were presented with fundamental queries to elicit information about their backgrounds and characteristics. The participants are divided into two main categories: restaurant managers and employees (see Table 1). Notably, the participants' ages range from 20 to 54, with a diverse age distribution. Gender representation is relatively balanced, as both male and female participants are in both work roles. All participants underwent face-to-face interviews and were employed in international or local chain restaurants, further categorized as casual dining or fast-food establishments. Interview durations varied from 42 to 85 minutes.

Furthermore, the second section of the interview was dedicated to exploring inquiries specifically concerning the structural model. The study employed a set of interview questions meticulously crafted in alignment with the overarching research framework (Appendix). These questions were thoughtfully tailored by incorporating insights gleaned from an extensive body of prior research encompassing digital transformation, technostress, digital transformation readiness, and the person-job fit model to address the research objectives.

### 3. Interview Analysis

The study opted for a thematic approach to analyze their data, drawing inspiration from the principles Braun and

Clarke (2019) articulated in their thematic analysis description. Thematic analysis is a qualitative research method that systematically identifies, analyzes, and reports patterns or themes within a dataset. Further, the initial step in the data analysis process involved acquainting themselves with the collected data.

This step involved transcribing the interviews, conducting repeated listens to the recordings, and systematically reading through the resulting transcripts to comprehend the dataset thoroughly. Subsequently, preliminary codes were generated from the data, highlighting aspects of particular interest related to the study's research questions.

The study framework was a guiding tool, ensuring that all pertinent themes were consistently identified and rigorously examined. Tables were employed as a practical tool within the data analysis process to facilitate the organization and summarization of information derived from the interviews. This thorough analytical process identified key themes, including restaurant employees' techno stressors, digital transformation readiness among restaurant employees, and employees' technology fit readiness, contributing significantly to the research findings.

Table 1. Participants profile (Source: Created by authors)

Restaurant number	Code	Pseudonym	Work Role	Age	Gender	Interview Type	International or Local Chain	Restaurant type	Interview Length
1	1	Amira	Restaurant manager	34	Female	Face-to-face	Local	Casual dining restaurant	62 min
	2	Tarek	Restaurant employee	24	Male				58 min
	3	Amina	Restaurant employee	30	Female				45 min
2	4	Fatma	Restaurant manager	54	Female		International	Fast-food restaurant	55 min
	5	Ahmed	Restaurant employee	25	Male				85 min
	6	Yasmin	Restaurant employee	23	Female				45 min
	7	Dalia	Restaurant employee	30	Female				48 min
3	8	Samira	Restaurant manager	46	Female		International	Casual dining restaurant	44 min
	9	Mahmoud	Restaurant employee	31	Male				48 min
	10	Nour	Restaurant employee	24	Female				52 min
	11	Hana	Restaurant employee	29	Female				61 min
4	12	Hossam	Restaurant manager	44	Male		Local	Casual dining restaurant	52 min
	13	Karim	Restaurant employee	28	Male				63 min
	14	Leila	Restaurant employee	28	Female				81 min
	15	Lina	Restaurant employee	31	Female				49 min
5	16	Adel	Restaurant manager	38	Male		International	Fast-food restaurant	71 min
	17	Sherif	Restaurant employee	23	Male				57 min
	18	Amal	Restaurant employee	29	Female				59 min
	19	Nada	Restaurant employee	21	Female				49 min
6	20	Mona	Restaurant manager	39	Female		International	Fast-food restaurant	44 min
	21	Sameh	Restaurant employee	30	Male				61 min
	22	Yasmine	Restaurant employee	31	Female				71 min
	23	Karm	Restaurant employee	27	Male				48 min
7	24	Tawfeek	Restaurant manager	46	Male		Local	Casual dining restaurant	69 min
	25	Anter	Restaurant employee	26	Male				55 min
	26	Hagar	Restaurant employee	26	Female				57 min
	27	Omar	Restaurant employee	29	Male				47 min
8	28	Nermine	Restaurant manager	31	Female		International	Fast-food restaurant	42 min
	29	Khaled	Restaurant employee	23	Male				61 min
	30	Salma	Restaurant employee	29	Female				64 min
	31	Amr	Restaurant employee	24	Male				51 min
9	32	Ashraf	Restaurant manager	37	Male		International	Fast-food restaurant	68 min
	33	Youssef	Restaurant employee	20	Male				55 min
	34	Hoda	Restaurant employee	30	Female				61 min
	35	Hisham	Restaurant employee	32	Male				49 min
10	36	Samir	Restaurant manager	42	Male		International	Fast-food restaurant	56 min
	37	Emad	Restaurant employee	25	Male				53 min
	38	Tamer	Restaurant employee	26	Male				64 min
11	39	Nadia	Restaurant manager	44	Female		Local	Casual dining restaurant	51 min
	40	Mohamed	Restaurant employee	29	Male				56 min
	41	Nasr	Restaurant employee	24	Male				55 min

## RESULTS

### 1. Technostress in the restaurant industry

The study investigated technostress meaning among employees in two different types of restaurants (i.e., fast-food and casual dining restaurants). 'According to a fast-food restaurant employee technostress describe the anxiety, frustration, and difficulties employees face when dealing with workplace technology' (Tamer). Fast-food restaurant employees encountered challenges adapting to new digital tools, such as order processing software and self-service kiosks. 'Karm expressed frustration with a new touchscreen ordering system, which he found confusing and time-consuming.' 'Nada, on the other



hand, struggled with the implementation of a mobile app for managing inventory, as it required unfamiliar technical skills.' In the casual dining restaurant context, employees also faced technostress when quickly adapting to the latest technological advancements. *'Mohamed mentioned that he found it challenging to adapt to a new table reservation system, which required him to learn new software and workflows quickly.'* Also, *'Omar echoed these sentiments, emphasizing the steep learning curve associated with the restaurant's new digital menu system.'*

Further, employees in both fast-food and casual dining restaurants experienced technostress to varying degrees when it came to quickly adapting to new technological advancements implemented in their workplaces. *'A fast-food restaurant employee showcased adaptability by actively seeking guidance from his tech-savvy coworkers and using online resources to enhance his proficiency with a new touchscreen ordering system to cope with its technostress'* (Khaled). *'On the other hand, Salma, another fast-food employee, faced more significant challenges adapting to the digital tools.'* In the casual dining restaurant context, *'Nasr exemplified adaptability by taking the initiative to familiarize himself with a new reservation system through self-directed learning.'* Conversely, *'Hagar encountered technostress when adapting to the restaurant's digital menu system and found the learning process more time-consuming than expected.'*

Technology is vital for simplifying and facilitating work procedures in fast-food restaurants. For instance, *'a cashier in a fast-food establishment described how digital ordering systems allowed for efficient order processing, leading to reduced wait times for customers'* (Sherif). Conversely, responses from casual dining restaurant employees exhibited greater diversity. For instance, a server at a casual dining restaurant mentioned *'his proficiency in using a tablet-based ordering system'* (Mahmoud). In contrast, another server from a different casual dining restaurant described *'his occasional difficulties with the same system'* (Karim). The availability of communication tools between employees and the workplace has led to technostress among restaurant workers. The employees' answers showed they had to remain constantly available through technology outside work hours. *'Fast-food restaurant employees generally report clear technostress from frequent communications from colleagues and managers'* (Amal and Yasmine). Similarly, casual dining restaurant employees described feeling pressured to respond to work-related calls, messages, and emails during their personal time, emphasizing the blurring of work-life boundaries. For example, *'a hostess in a casual dining restaurant detailed the challenge of receiving last-minute shift changes via telephone, leading to anxiety about work invading her personal life'* (Amina). Hence, technology had encroached upon their space or time.

Restaurant managers in fast-food and casual dining establishments have acknowledged the presence of technostress among their employees. *'A fast-food manager emphasized the importance of structured training and clear task delegation to mitigate technostress'* (Fatma). In the casual dining setting, *a manager noted that her employees exhibited a higher level of tech-savviness, necessitating less managerial intervention to perform their duties effectively'* (Amira). The manager's strategy was to provide employees with resources and the autonomy to use technology best, contributing to reduced technostress. Further, restaurant managers also raised worries about the idea among their employees that they should always be accessible through technology beyond working hours, potentially intruding upon personal space and time. In the fast-food context, *'the manager acknowledged that employees sometimes felt compelled to be available beyond their shifts, leading to concerns about work-life balance'* (Mona). In the casual dining restaurant, *'a similar perception was observed among employees who reported feeling obliged to respond to work-related messages promptly'* (Hossam).

## 2. Technostress and the person-technology fit model

The study evaluated employees' perspectives from fast-food and casual dining restaurants regarding the relationship between technology characteristics and technostress. Implementing complicated point-of-sale systems in fast-food restaurants can give rise to technostress, particularly during periods of high order volume. *'During peak hours characterized by lengthy queues and numerous intricate orders, the system is susceptible to experiencing technical glitches'* (Tamer). Conversely, in the environment of casual dining establishments where technological tools such as point-of-sale systems are extensively employed, the usability of these tools assumes great significance in mitigating technostress. *'For instance, an employee at a casual dining restaurant benefits from the simplicity of touch interfaces on order-taking systems'* (Lina). These user-friendly features facilitate the efficient processing of orders and, in turn, diminish the likelihood of technostress stemming from usability-related issues.

Information quality features also contribute to the technostress experienced by restaurant employees. *In fast-food restaurants, where standardized menus and limited customization options are familiar, the information provided on technology tools is typically accurate and reliable, enhancing employee confidence* (Emad and Hisham). In contrast, in casual dining restaurants, complex menus and diverse order options can lead to data quality issues, like incorrect prices or menu descriptions, eroding employee confidence in the information presented, and increasing technostress. *'For example, one of our customers had a nut allergy and depended on the technology tool to make an informed decision regarding their meal choice. Unfortunately, due to data quality issues, the system at that time failed to deliver accurate allergy information, ultimately jeopardizing the customer's health'* (Anter).

Additionally, the interface quality features of technology tools substantially impact technostress. Fast-food restaurant technology tools often feature intuitive and visually appealing interfaces, which are designed with clarity and simplicity in mind. *Device icons and navigation are straightforward, contributing to higher efficiency and reduced technostress among employees* (Sameh). In contrast, casual dining restaurants may employ more intricate interfaces to accommodate diverse menus, which can lead to employee overwhelm and technostress due to interface complexity. *The intricate interface requires me to navigate through multiple screens and submenus to process orders accurately* (Leila).

Hence, this interface complexity may result in potential errors, delays, and increased frustration among employees, adding to their demanding workload. Lastly, the performance and reliability of technical features significantly influence technostress. Fast-food restaurants have more extensive technical features like order processing systems and payment terminals, which, if not properly maintained, can lead to technical issues and increased technostress. *'Frequently, during periods of high demand, customers indicate a desire to utilize self-service kiosks for placing orders. However, they encounter an issue wherein the screen becomes unresponsive, so impeding their ability to personalize their order or complete the payment process'* (Ahmed). In contrast, *'casual dining restaurants typically rely on well-maintained and dependable technology tools, which enhance operational efficiency and reduce technostress'* (Tarek and Nour).

Usability features in technological tools are critical to reducing technostress among restaurant employees from managers' perspective. *'Managers in both types of restaurants found that the ease of use of technologies considerably improves employee efficiency and reduces technological stress'* (Nadia and Samir). Also, aspects of information quality, especially the correctness, availability, and dependability of data provided by technology tools, are essential for managers to consider when dealing with technological stress in both restaurants. *'At our fast-food restaurant, we realize the importance of constantly updating data on all digital devices, whether used by customers or employees'* (Ashraf).

Also, in a casual dining restaurant, one manager said, *'We constantly try to study customers' desires regarding the data they want us to provide to them on digital devices'* (Tawfeek). Moreover, restaurant managers highlighted that the interface quality features, and the user interfaces of technology tools play a crucial role in determining the visual appeal. *'The manager at a fast-food restaurant highlights how the user-friendly interface of the order processing system enables quick and accurate order placement, reducing potential errors and stress'* (Nermine).

On the other hand, *'a manager at a casual dining restaurant observes that the complexity of the interface on the point-of-sale system can lead to confusion and frustration during peak hours, which negatively impacts the workflow and employee well-being, especially with new employees'* (Samira). Finally, regarding technical features, restaurant managers stated that the performance and reliability of technology tools significantly impact employee efficiency and technostress levels. *'A fast-food restaurant manager mentioned how technical issues arising from inadequate maintenance of technology tools can amplify technostress'* (Fatma). Similarly, *'a manager at a casual dining restaurant note that when the order processing system experiences frequent glitches or slow response times, it hampers workflow, increases frustration, and elevates technostress among employees'* (Samira).

### 3. Technostress and employees' digital transformation readiness

Employees' readiness for digital transformation plays a crucial role in their ability to manage technostress within the context of fast-food and casual dining restaurants. The study found that employees with a higher affinity for digital tools and technologies for their restaurant responsibilities play a crucial role in their readiness for digital transformation and ability to manage technostress effectively. However, fast-food employees may be resistant to the implementation of automated order-taking kiosks, fearing job displacement. *'I am quite open to embracing new technologies, but when they introduced those automated order-taking kiosks, it made me worry about potential job displacement'* (Yasmin).

Hence, fast-food restaurants must understand employees' concerns about job displacement by new technologies, which cause technostress. On the contrary, in casual dining restaurants, employees show positivity of the utmost relevance when adopting novel technology. *'We use digital devices for enhancing customer service and ordering processes. For instance, we have embraced tablet-based menus with enthusiasm to provide a more engaging dining experience'* (Nour and Hana). Hence, casual dining restaurant employees demonstrate a willingness to adopt novel technology, resulting in an enhanced dining experience and potentially mitigating technostress.

Moreover, the result shows how employees' risk propensity towards technology might minimize technostress by making them more open to new systems and applications that improve fast-food and casual dining operational efficiency and performance. *'We are always willing to experiment with new systems and customer feedback apps, thereby enhancing the overall operations and performance of the restaurant'* (Youssef and Omar). In addition, casual restaurant employees showed an entrepreneurial attitude toward exploring innovative ways to improve restaurant operations through technology more than fast-food restaurant employees. *'Managers frequently consult us on the most crucial new technologies to improve ordering and customer service procedures'* (Nasr).

Further, in fast-food and casual dining restaurants, low-tech employees' technical skills are crucial to not disrupt due to the technology used. *'We are always trained to fix some simple problems that may arise with digital devices, including a frozen or unresponsive touchscreen and connectivity issues with Wi-Fi and Bluetooth devices'* (Dalia, Hoda, and Mohamed). Restaurant employees added that despite the training and knowledge we acquire to deal with technology, system downtime and service errors are the main reasons for the stress. Employees of both types of restaurants have shown that maintaining a responsive online presence is essential to customer satisfaction and effective communication. However, *'we are under technological stress due to the high volume of online orders, system downtime, the high demand for delivery services, and the steady flow of reservations, inquiries, and customer complaints'* (Amr and Anter).

Restaurant managers provided valuable insights into their employees' technology adoption attitudes and abilities in the study on digital transformation readiness and technostress in fast-food and casual dining restaurants. Fast-food restaurant managers indicated great employee enthusiasm for new technologies. *'Our employees rapidly adopted self-ordering kiosks and mobile ordering apps to boost service efficiency and customer satisfaction'* (Adel).

Additionally, managers found that staff typically welcomed technological advances because they saw the opportunity for improved operations and customer service. For example, *'in high-demand periods, our employees were willing to*

*take calculated risks while experimenting with new technologies, showing their adaptability'* (Fatma). Also, managers affirmed that employees' comfort with digital tools and technologies in this context was high, with many possessing technical skills relevant to their restaurant roles, such as proficiency with point-of-sale systems.

On the other hand, casual dining restaurant managers reported a more cautious approach to technology adoption among their employees. While some staff members exhibited eagerness, others displayed reluctance, mainly when dealing with complex interfaces for tasks like reservation management. *'Despite recognizing the potential benefits of technology, such as efficient reservations and menu presentation, some employees were less comfortable and exhibited reservations about technology's impact on their roles'* (Nadia). However, *'those with an entrepreneurial mindset sought innovative ways to leverage technology'* (Tawfeek). Casual dining managers observed employees adapting to new digital tools in response to changing circumstances within the restaurant. Further, *'although technical skills varied among our employees, effective communication and collaboration with colleagues and customers were achieved through training and teamwork, ensuring everyone was comfortable and informed about digital tools'* (Hossam).

## DISCUSSION AND IMPLICATIONS

This study examines how improving restaurant employees' digital transformation and technical device readiness reduces technostress. Technostress led fast-food employees to struggle with new digital tools like touchscreen order processing systems and mobile apps, resulting in dissatisfaction and time-consuming modifications. Casual dining employees faced technostress when introduced to table reservation systems and computerized menus. While some employees adapted by seeking guidance or self-directed learning, others found the learning curve steep, underscoring the variation in technostress experiences. These findings highlight the need to provide personalized support and training to employees to reduce stress (Christ-Brendemühl and Schaarschmidt, 2020; Hassanin et al., 2023).

Further, integrating technology into the restaurant industry has brought positive and negative effects. In fast-food establishments, digital ordering systems streamlined order processing, reducing customer wait times (Alshreef et al., 2023). In contrast, the experiences of casual dining restaurant employees were more diverse. Some expressed proficiency in tablet-based ordering systems, while others encountered occasional difficulties with the same technology. This divergence in experiences suggests that the impact of technology on employee performance and well-being varies depending on the specific context and individual adaptability (Shi et al., 2024).

Furthermore, one common theme in fast-food and casual dining restaurants was the encroachment of technology on employees' personal lives (Ayyagari et al., 2011; Högberg, 2021). Moreover, the study also examined the perspectives of restaurant managers in mitigating technostress among their employees. In fast-food restaurants, structured training and clear task delegation were essential in helping employees adapt to new technology and reducing associated stress. In contrast, casual dining managers noted that their employees exhibited a higher level of tech-savviness, requiring less managerial intervention. These findings underscore the importance of tailored strategies to alleviate technostress and promote a healthy work-life balance (Shi et al., 2024). The study delves into the impact of employees' technology fit readiness on technostress among fast-food and casual dining restaurants. In fast-food restaurants, implementing complex point-of-sale systems during high-demand periods can lead to technostress due to potential technical glitches.

In contrast, casual dining establishments prioritize the usability of technology tools to mitigate technostress. Information quality features also play a role in the technostress experienced by restaurant employees. In fast-food restaurants, where menus are standardized and options limited, technology tools typically provide accurate and reliable information, enhancing employee confidence. However, in casual dining restaurants with diverse menus, data quality issues, such as incorrect prices or menu descriptions, erode employee confidence and increase technostress. The person-technology fit model aligns with these findings, highlighting the importance of information quality features in influencing technostress (Mahadin et al., 2020).

The interface quality features of technology tools significantly impact technostress. In fast-food restaurants, intuitive and visually appealing interfaces contribute to higher efficiency and reduced technostress among employees. However, casual dining restaurants may employ more complex interfaces due to their diverse menus, leading to employee overwhelm and technostress. These findings are consistent with the person-technology fit model, which emphasizes the visual and interactive aspects of technology interfaces as factors influencing technostress (Alves et al., 2020). The performance and reliability of technical features also influence technostress. In fast-food restaurants, technical issues with extensive technology features, like self-service kiosks, can lead to increased technostress during high-demand periods. Conversely, casual dining restaurants rely on well-maintained and dependable technology tools, reducing technostress.

The study explored the relationship between employees' readiness for digital transformation and their ability to manage technostress in the fast-food and casual dining restaurant context. It was evident that employees' readiness for digital transformation plays a pivotal role in their capacity to effectively deal with technostress (Hassanin et al., 2023). However, in fast-food restaurants, there was a notable variation in employee readiness, primarily driven by concerns about job displacement due to the introduction of automated order-taking kiosks. Conversely, in casual dining restaurants, employees displayed a markedly positive attitude toward adopting innovative technology.

Their enthusiasm for adopting new technologies, such as tablet-based menus, was aimed at enhancing the dining experience, potentially mitigating technostress. Furthermore, the study revealed that employees' risk propensity towards technology could play a significant role in minimizing technostress.

## **Implications**

### **1. Theoretical implications**

There are numerous noteworthy theoretical implications of this study. First, the research sheds light on the diverse experiences of employees in fast-food and casual dining restaurants, emphasizing the importance of tailored support and training programs. These programs should consider individual differences and contextual factors to manage technostress (Christ-Brendemühl and Schaarschmidt, 2020) effectively. The study also reveals the dual impact of technology in the restaurant industry, with fast-food restaurants benefiting from streamlined processes while casual dining settings exhibit more varied experiences. This result highlights the context-dependent nature of technology's effects on employee performance and well-being (Shi et al., 2024). Further, the study underscores the challenge of technology encroaching on employees' personal lives, emphasizing the importance of work-life balance policies (Högberg, 2021).

Second, this study extended the person-technology fit model by incorporating technical features and investigates how usability, information quality, interface quality, and technical features collectively impact reducing employees' technostress experiences. This expanded model provides a comprehensive framework for understanding and addressing technostress in the workplace, emphasizing the importance of aligning technology with the needs and capabilities of employees (Ayyagari et al., 2011). Hence, the findings corroborate the relevance of the person-technology fit model, both in its original form and the extended version, in explaining the relationship between technology characteristics and employee well-being.

Third, the current study expanded Ng's (2012) digital transformation readiness model by introducing five additional factors, shedding light on how these factors collectively impact the reduction of employees' technostress levels. By exploring the relationship between employees' readiness for digital transformation and their ability to manage technostress in the fast-food and casual dining restaurant context, the study emphasizes the multifaceted nature of digital readiness and its impact on technostress. The findings suggest that employees' readiness for digital transformation can be influenced by factors such as job displacement concerns, risk propensity, and technical skills, which have a significant bearing on their ability to manage technostress. Moreover, the study underscores the role of restaurant managers in guiding employees through the technology adoption process, with their insights revealing how managers can promote a positive technological environment and reduce technostress by addressing employee attitudes and capabilities. This expanded digital transformation readiness model provides a comprehensive framework for understanding the interplay between employees' readiness for digital transformation and their ability to cope with technostress.

### **2. Managerial implications**

The findings of this study have significant practical implications for managers in the fast-food and casual dining restaurant industry who aim to mitigate employee technostress. Fast-food employees encountered difficulties with tools such as touchscreen order processing systems, leading to frustration and time-consuming adjustments, highlighting the adverse effects of technostress on their work. In response to these challenges, fast-food restaurant managers must consider customized training programs for individual employee differences and preferences (Christ-Brendemühl and Schaarschmidt, 2020).

Moreover, establishing clear work-life balance policies, setting boundaries for off-hours communication, and minimizing last-minute changes can mitigate the encroachment of technology on employees' personal lives, thereby enhancing their well-being and overall job satisfaction (Högberg, 2021). For casual dining restaurant managers, focusing on customized training and support is essential due to the diverse experiences and adaptability of employees. By providing a tailored environment that accommodates both tech-savvy and less tech-savvy employees, managers can mitigate the potential negative impacts of technology on employee performance and well-being (Lee et al., 2023).

The study examined the perspectives of restaurant managers on addressing technostress among their employees, emphasizing the need for tailored strategies. In fast-food restaurants, structured training programs and clear task delegation are vital to helping employees adapt to new technology effectively and reducing associated stress (Lee et al., 2023). In contrast, casual dining managers should consider fostering a culture of innovation and adaptability by encouraging employees with an entrepreneurial mindset to explore innovative ways to leverage technology. Effective communication and collaboration, even among employees with varying technical skills, can ensure a positive technological environment and minimize technostress (Daradkeh et al., 2023).

The study delved into the influence of technology characteristics on technostress among employees in fast-food and casual dining restaurants. It is of paramount importance for restaurant managers to place a high priority on the usability of the technology systems deployed in their establishments. Managers should also establish data validation procedures to proactively identify and rectify errors and inconsistencies, concurrently fostering a feedback mechanism for employees to address data quality issues promptly (Daradkeh et al., 2023). This approach not only enhances work quality but also mitigates stress stemming from technology use.

Furthermore, creating user-friendly and efficient interfaces is pivotal in significantly diminishing technostress. Restaurant managers ought to concentrate on crafting interfaces that are not only intuitive but also visually appealing, thus reducing the cognitive burden on employees (Qi, 2019). Engaging in usability testing with employees enables the identification of areas that require improvement, resulting in a smoother technological experience. Additionally, the routine maintenance and updating of technology systems are crucial in ensuring reliability and preventing disruptions (Leung and Loo, 2020). The implementation of redundancy and backup systems, coupled with the provision of robust technical support, contributes to a more seamless technological experience for employees, ultimately leading to a reduction in their stress levels. The study emphasized the relationship between employees' readiness for digital transformation and their ability to manage technostress in fast-food and casual restaurants. To address this, restaurant

managers should know the varying levels of employee readiness for digital transformation (Helal, 2023). When concerns about job displacement exist, open communication is vital (Melián-González and Bulchand-Gidumal, 2020). Managers can create a positive technological environment, reduce technostress, and enhance employee well-being by addressing attitudes and capabilities and fostering a culture of innovation. This is pivotal for improving overall employee satisfaction and operational efficiency (Daradkeh et al., 2023).

### 3. Limitations and further research

The current study, while offering valuable insights, does present several research limitations that warrant exploration in future research. The study employs a cross-sectional research design, capturing data at a single point in time, which, while valuable, does not account for potential changes and fluctuations in technostress, digital transformation readiness, and technology characteristics readiness over time. Adopting a longitudinal approach in future research could offer a more comprehensive understanding of these factors' evolution and interaction. Furthermore, the study primarily focuses on the restaurant sector within the broader hospitality industry, overlooking potential variations in technostress dynamics across different hospitality subsectors. Expanding the scope of future research to encompass a broader range of hospitality segments would provide a more holistic understanding of technostress within the industry. Finally, future research could explore factors beyond those examined in this study, such as fear of job displacement, leadership styles, organizational culture, and job demands, to understand their impact on employees' technostress better.

## CONCLUSIONS

This study demonstrates that effectively managing technostress in the restaurant industry hinges on aligning technology with employees' specific needs and capabilities. While technology brings benefits like faster service, it can also cause stress, especially with complex interfaces or unreliable tools.

The person-technology fit model highlights how well technology aligns with user needs is crucial. Personalized training, information quality, user-friendly interfaces, and reliable performance can all help mitigate technostress and improve employee well-being in the post-pandemic hospitality industry.

### Appendix:

Questions of technostress for employees:

- How do you manage and organize tasks using technology within the restaurant?
- Are you pressured to be constantly in touch and available through technology outside restaurant working hours?
- Have you ever felt that technology has encroached upon your space or time? How did you deal with this situation?
- Have you encountered difficulties using complex technologies or adapting to new ones implemented within the restaurant? Could you provide an example?
- Do you quickly adapt to new technological advancements implemented in the restaurant? How do you accomplish this?

Questions of technostress for restaurant managers:

- How do you, as a restaurant manager, oversee and organize tasks carried out by your employees using technology within the restaurant?
- As a restaurant manager, do you believe there is a perception among your employees that they should always be accessible through technology outside of their working hours at the restaurant?
- As a manager, have you ever observed that technology has intruded upon your employees' personal space or time? How do you address such situations?
- Have you encountered instances where your employees faced challenges in using complex technologies or adapting to new technologies implemented within the restaurant? Could you provide an example?
- As a restaurant manager, do you find that your employees quickly adapt to new technological advancements introduced in the restaurant? How do you facilitate this adaptation process?

Questions of technology characteristics for restaurant employees:

- How do you perceive the ease of use of the technology tools in your daily tasks?
- Can you highlight specific features in these tools that make them more user-friendly and potentially reduce your technostress?
- How confident are you in the accuracy and reliability of the information provided by your technology tools?
- Are there data quality features that stand out to you as contributors to reduced technostress?
- How intuitive and visually appealing are the interfaces of the technology tools you work with?
- Have you noticed any specific interface design elements that make your work more efficient and help alleviate technostress?
- How satisfied are you with the performance and reliability of the technical features in the technology tools you utilize?
- Can you highlight technical aspects that have positively impacted your efficiency and reduced technostress during your tasks?

Questions of technology characteristics for restaurant managers:

- How do you assess the user-friendliness of the technology tools implemented in your restaurant?

- Are there specific features or design elements in these tools that make them more user-friendly for your staff, potentially reducing technostress?
- How confident are you in the reliability and accuracy of the information provided by the technology tools used in your restaurant?
- Can you identify any data quality features that have positively impacted the quality of information, potentially reducing technostress among your employees?
- In your opinion, how intuitive and visually appealing are the user interfaces of the technology tools employed in your restaurant?
- Have you noticed any specific interface design elements contributing to smoother operations and reduced technostress for your staff?
- How satisfied are you with the overall performance and reliability of the technical features in the technology tools used in your restaurant?
- Can you pinpoint any technical aspects that have positively influenced your employees' efficiency and potentially reduced technostress in their work?

Questions of restaurant employees' digital transformation readiness that asked employees:

- How eager are you to embrace new technologies in your daily restaurant tasks?
- Do you generally have a positive attitude towards technological changes and how they affect your job?
- Are you open to taking risks when experimenting with new technologies in your role?
- How comfortable are you with digital tools and technologies for your restaurant responsibilities?
- Do you possess an entrepreneurial attitude when exploring innovative ways to improve restaurant operations through technology?
- Can you provide an example of a situation where you quickly adapted to a new digital tool or method in response to changing circumstances?
- What specific technical skills or knowledge do you have that are relevant to your job in the restaurant?
- How do you ensure effective communication and collaboration with colleagues and customers when using digital tools in a restaurant?

Questions about restaurant employees' digital transformation readiness were asked to restaurant managers:

- How would you assess your employees' eagerness to embrace new technologies in their daily restaurant tasks?
- From your perspective, do your employees generally exhibit a positive attitude towards changes in technology and how it impacts their jobs?
- Are your employees open to taking risks when experimenting with new technologies in their respective roles?
- How comfortable are your employees with digital tools and technologies for their restaurant responsibilities?
- Have you noticed if your employees are entrepreneurial when seeking innovative ways to enhance restaurant operations through technology?
- Can you share an example of a situation where an employee quickly adapted to a new digital tool or method in response to changing circumstances within the restaurant?
- What specific technical skills or knowledge do your employees have that are relevant to their restaurant roles?
- According to your observations, how do your employees ensure effective communication and collaboration with colleagues and customers when they use digital tools in the restaurant setting?

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## THE EFFECT OF ISLAMIC ATTRIBUTES TO CONSUMER SATISFACTION: A META-ANALYSIS

**Retno Santi SUMARDI\*** 

Universiti Putra Malaysia, Faculty of Business and Economics, Serdang, Malaysia, e-mail: shantyupm@gmail.com

**Anuar Shah Bali MAHOMED\*** 

Universiti Putra Malaysia, Faculty of Business and Economics, Serdang, Malaysia, e-mail: anuar@upm.edu.my

**Yuhanis Ab AZIZ** 

College of Business Administration, University of Sharjah, United Arab Emirates and Universiti Putra Malaysia,  
Faculty of Business and Economics, Serdang, Malaysia, e-mail: yuhanis@upm.edu.my

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**Abstract:** In the growing halal industry, there are differences of opinion among researchers about the effect of Islamic attributes on consumer satisfaction. Therefore, this paper aims to evaluate the effect of Islamic attributes on consumer satisfaction. The Prisma flow diagram indicated 23 papers and consists of 59 studies to analyze with JASP Software. The study identifies significant authors, dominant publishers, methodology, and theories commonly employed in this topic. The result proves that catering to Muslim needs through Islamic attributes can significantly enhance consumer satisfaction and the presence of other variables as moderators will strengthen tourist satisfaction.

**Keywords:** Islamic attributes, meta-analysis, Muslim-friendly hotel, Prisma flow diagram, satisfaction

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### INTRODUCTION

Tourism is a fast-growing industry and a major source of income for several countries in the world. Statista.com (2022) stated that international tourist arrivals worldwide reached around 1,466.5 billion US Dollars. Recently, as the number of Muslims worldwide expanded, so did the demand for halal tourism products. In addition, Muslim travel growth has increased worldwide (Crescentrating and Mastercard, 2022). According to Crescentrating and Mastercard (2023), it has been projected that in 2028 Muslim tourist arrivals will increase. International Muslim tourist arrivals reached 230 million and Muslim expenditure is projected to be 225 billion. Whereas, International Muslim tourist arrivals in 2022 reached 110 million, covering 68% of total Muslim tourist arrivals in 2019. Whereas, International Muslim tourist arrivals in 2022 reached 110 million, covering 68% of total Muslim tourist arrivals in 2019. Muslim-friendly hotels offer a special and beneficial experience that can help people grow spiritually, as discovered by Kamarudin and Nizam (2013). Additionally, Vargas-Shanchez and Moral-Moral (2019) found that a Muslim-friendly hotel is a business strategy that offers enhanced services to both Muslim and non-Muslim visitors.

Therefore, it can be said that the idea of a Muslim-friendly hotel significantly impacts the Islamic tourism sector in terms of social, economic, spiritual, and environmental sustainability. These hotels not only cater to the specific needs of Muslim travellers but also contribute to the local economy by increasing opportunities for local entrepreneurs, redistributing financial resources, and creating a more resilient economy. This highlights that the halal industry could make potential contributions to the global travel industry, investing in halal concept businesses a lucrative opportunity, especially for countries with high inbound Muslim tourists. Therefore, the Muslim-friendly hotel concept not only a great potential for the tourism industry but also become the most discussed among researchers.

There are several differences in terms and labels related to halal hospitality. Currently, several researchers discuss this term, the researchers mention about halal hotels (Rachmiate et al., 2022; Bastaman, 2019; Bogan and Sariisik, 2019), Islamic hotels (Idris and Razali, 2016; Alserhan et al., 2018), Dry hotels (Ridzuan and Sahari, 2012), Shari'ah-compliant hotels (Sulaiman et al., 2021; Hati et al., 2022; Razak et al., 2019), and others researchers used Muslim-friendly hotels (Arasli et al., 2021; Osman et al., 2023). The term Muslim-friendly hotel is a term used to refer to accommodation that is friendly to Muslim tourists (ITC, 2023).

Unfortunately, in a competitive environment, the availability of Muslim-friendly hotels, sharia-compliant hotels, or halal resorts is still limited in non-Muslim destinations. For example, currently Malaysia, it is noted that the availability of Muslim-friendly hotels is only around 40 hotels out of thousands of total hotels in Malaysia (ITC, 2023). The limitations of Muslim-friendly hotels are also caused by the standardization of the halal concept faced by hotel

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\* Corresponding author



management. Whereas, the hotelier must fulfil special requirements by Islamic principles (Joeliaty et al., 2020), requires a lot of money (Junaedi, 2020), and also lacks an understanding of businessmen and staff regarding Islamic rules (Adel et al., 2021; Jia and Chaozhi, 2020), hesitation by the businessman to open a Muslim-friendly hotel business due to the differences in the needs of Muslim and non-Muslim tourists (Battour et al., 2010; Battour et al., 2014).

Difficulty in finding Muslim facilities will create an inconvenient tourism experience (Han et al., 2016). Therefore, this inconvenience will be very critical to influencing the perception of Muslim tourists and could considerably influence tourism behaviour in the future (Al-Ansi et al., 2020; Han et al., 2016).

Thus, influencing the Muslim tourist consideration to not choose the place (Battour et al., 2011).

Likewise, according to Han et al. (2021) through their research, inconvenience factors consist of 5 factors such as halal-friendly, halal facilities, halal foods, services/information, halal-friendly staff/tourist/locals, and halal-friendly attitude of staff/tourists/locals. However, in several studies obtained, there was an inconsistency in the research results, whereas Fajriyati et al. (2020) stated that the classification of hotel attributes consists of basic and performance factors. Both of those factors do not influence satisfaction. Likewise, according to Bartikowski and Llosa (2004), some of the hotel attributes can be considered as bonuses and not influence satisfaction. In addition, there is some research regarding Islamic attributes in the hotel, but some of the attributes do not significant influence (Nassar et al., 2015; Putit et al., 2016; Bodet et al., 2017; Sulaiman et al., 2021; Hanafiah, 2021). Also, some conflicts happen because of the restriction of freedom. The rules of segregation between males and females in some recreation facilities could create an uncomfortable situation for non-Muslim people (Battour et al., 2018; Jia and Chaozi, 2020). Therefore, this paper is important to find out the effect of Islamic attributes on tourist satisfaction by generalising the findings from several papers that have been obtained and synthesising evidence from various sources to reach more reliable conclusions compared to a single study alone. In the future, it is hoped that this study will be useful for policymakers, hospitality business people, and hotel staff. It may also provide information about attributes related to the halal concept. In the end, this study aims to evaluate and give insight to researchers regarding the effect of providing Islamic attributes with a systematic review of tourist consumer behaviour (satisfaction or consumer decision). In addition, this paper will be useful to give insight for policymakers to consider facilities for Muslims in the accommodation or tourism area.

## METHODOLOGY

### Review Method

A systematic literature review is a rigorous method employed to comprehensively identify, evaluate, and interpret all relevant study material about a specific research topic or question. Kitchenham and Charters (2007), emphasize its significance as a structured approach that ensures thoroughness in reviewing and synthesizing existing knowledge, thus contributing to a robust understanding of the subject matter under investigation. A systematic literature review should have several stages. Starting with the stages of formulating questions, search strategy, and finally, searching the paper based on inclusion and exclusion criteria based on the PRISMA flow diagram (Figure 2). In addition, this paper will also present the results of a meta-analysis in determining the importance of Muslim-friendly hotel attributes on Muslim consumer satisfaction (Wahono, 2015). The flow chart of the methodology can be seen in Figure 1.

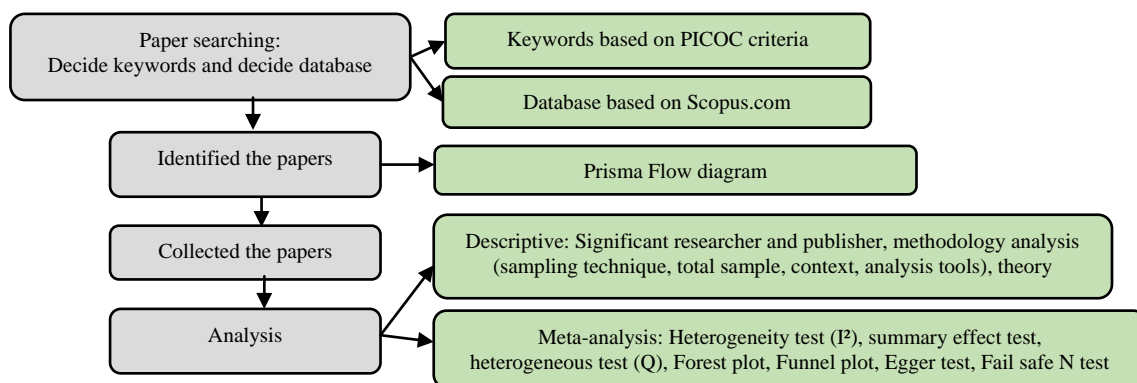


Figure 1. Flow chart of the methodology

This paper will only use quantitative research from 2012–2023 based on the SCOPUS database. The paper will be selected based on inclusive and exclusive criteria. It can be concluded that this paper used 23 papers that match the topic. Meta-analysis needs effect size, standard error, and correlation coefficient data. Then, those data will be used for analysis using JASP software. The effect size is obtained from the following formula (Cohen, 1988):

$$\text{Effect size (Z): } Z = 0.5 \ln \frac{1+r}{1-r} \quad \text{The standard error (Sz): } \sqrt{V_z} \quad \text{Variance error (Vz): } \frac{1}{n-3}$$

Note: r: coefficient correlation; Vz: Variance error; n: total sample; Z: effect size; Sz: Standard error

### Research Questions

This paper refers to the PICOC criteria (Population, Intervention, Comparison, Outcomes, and Context). Build the research questions after discovering the keywords from PICOC criteria (Table 1).

Therefore, could be seen the research questions below in Figure 2.

RQ1: Who is the influential researcher in Islamic tourism or Muslim-friendly hotels?

RQ2: What are the significant journal publications in the Islamic tourism or Muslim-friendly hotel study? RQ3: What are the research topics and trends?

RQ4: What is the majority theory that is used in the tourism area?

RQ5: How is the impact of Attributes of Muslim-friendly hotels on consumer satisfaction with Meta-Analysis methods?

### Search Strategy

According to past research (Sumardi et al., 2023) about systematic literature review, several strategies for choosing keywords exist. The steps are seen as follows:

1. Selecting digital libraries. This paper will use a database from SCOPUS Publisher. SCOPUS has been chosen in this paper as the database because this publisher is a famous database for the management field.

2. Defining search string. The search string was developed according to the following steps:

- Identification of PICOC search phrases, particularly Population and Intervention
- Search phrases derived from research questions,
- Search terms are identified in pertinent titles, abstracts, and keywords,
- Synonyms, alternate spellings, and antonyms of search phrases are identified,
- Creating a complicated search string from defined search phrases, including ANDs and ORs.

Keywords used in this paper could be seen in the following search string: (Islamic attributes OR Muslim attributes OR Indicator Muslim-friendly) AND (Muslim-friendly hotel OR halal hotel OR Islamic hotel). The search string will be used to search keywords in the database. Where such searches are limited to titles, keywords, and abstracts. The inclusive criteria of the articles can be seen in Table 2.

### Study Selection

Selection of papers based on inclusion and exclusion criteria. Those criteria can be seen in Table 2. Details of the search diagram and selection of papers can be seen on the PRISMA Flow Diagram below Figure 3.

Table 2. Inclusion and exclusion criteria

Inclusion Criteria	Studies written in English; Studies in the Islamic tourism industry and Muslim-friendly hotels; Studies according to journal review papers and research papers; The newest papers will be included for the same title; Using only quantitative paper that related to Attributes of Muslim-friendly hotel
Exclusion Criteria	Studies are not written in English; Studies are not related to tourism and hospitality; Studies are not related with the Muslim friendly hotel; Literature review and Qualitative paper

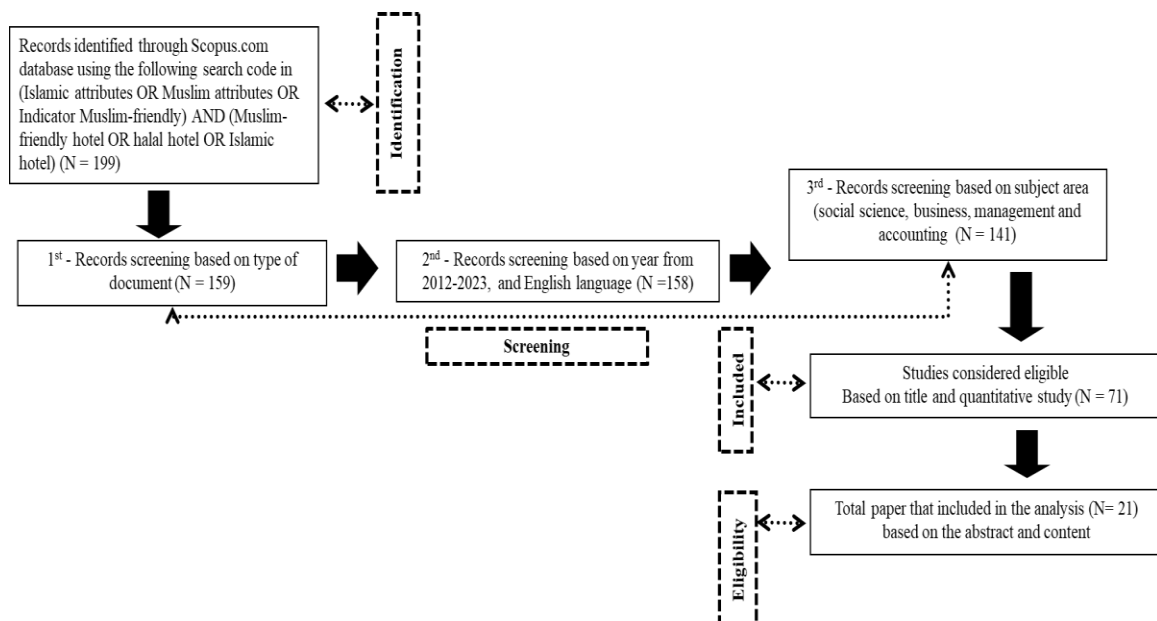


Figure 3. Process of selection paper by Prisma Flow Diagram

Table 1. PICOC criteria

Population	Islamic attributes, Muslim attributes, indicators of Muslim-friendly
Intervention	Muslim-friendly hotel
Comparison	Non-attributes of Muslim-friendly
Outcomes	Satisfaction of Muslim consumer
Context	Studies in Muslim-friendly hotel



Figure 2. Basic mind map of the SLR on attributes of Muslim-friendly hotels on Muslim consumer satisfaction

### Data Extraction

Data extraction was designed to answer the questions of the study. Five types of questions have been identified based on the research questions. The research questions in this study can be seen in Table 3.

### Threats to Validity

This paper will analyze the impact of attributes on consumer satisfaction, which will be seen based on the result of Meta-analysis.

## RESEARCH RESULT

### 1. Significant Researcher and Journal Publications

It is known from the results, that there is a 63 authors and co-authors who wrote the paper with the Islamic attributes topic. The top 7 researchers who produced a quantitative paper on Islamic attributes topic in 2012–2023 were: Al-Ansi, Han, Fajriyati, Afiff, Gayatri, Hati, and Papastathopoulos with the percentage for almost 2-3% in each paper and the rest is other researchers for almost 62.79% such as Azali, Isa, Nassar, Suhartanto, etc. Table 4 shows that most publishers in this field mostly come from the Journal of Islamic Marketing. Whereas, papers with Islamic attributes topic mostly produced in 2021-2022.

Table 3. Research questions of this paper

Properties	Research Questions
Researchers and Publications	RQ1 and RQ2
Research Methodology	RQ3
Theory in Tourism area	RQ4
Impact of attributes on satisfaction	RQ5

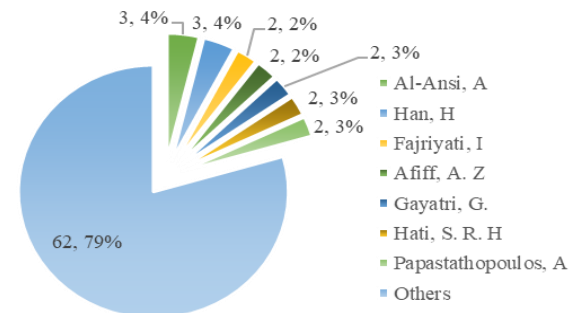


Figure 4. The significant author of the Islamic attributes topic

Table 4. The significant publisher of the Islamic attributes topic

No	Year	Publisher	Total Publication
1	2015	Tourism and Hospitality Research	1
		International Journal of Customer Relationship Marketing and Management (IJCRMM)	1
2	2018	International Journal of Engineering & Technology	1
		Journal of Islamic Marketing	1
3	2019	Tourism management	1
		Journal of destination marketing & management	1
4	2020	Journal of Hospitality Marketing & Management	1
		Heliyon	1
		Tourism Review	1
		Journal of Hospitality and Tourism Management	1
5	2021	International Journal of Contemporary Hospitality Management	1
		International Journal of Tourism Cities	1
		Enlightening Tourism. A Pathmaking Journal	1
		Current Issues in Tourism	1
		International Journal of Religious Tourism and Pilgrimage	1
6	2022	Sustainability	1
		Journal of Islamic Marketing	2
		SAGE Open	1
		International Journal of Hospitality Management	1
7	2023	Journal of Hospitality & Tourism Research	1
		Journal of Islamic Marketing	1
		Journal of Islamic Marketing	1

### 2. Methodology and Theory result in the tourism area

It is known from Table 5, SEM Amos is still the most popular analysis tool used by researchers. Amos is the analytical tool for research that aims to confirm, reject, or support an existing theory (Widarjono, 2015). The most widely used is the Theory of planned behaviour (TPB); this is because TPB is a basic theory that has been used in consumer behaviour research. In addition, TPB can also determine whether the consumer received strong institutional support, where attitude and subjective norms are important in determining consumer intention (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980). The convenience sampling technique is still a favourite technique for researchers. Convenience Sampling is a common and frequently used method in non-probabilistic samplings. There are several advantages to using convenience sampling, which can save time and money. Furthermore, in the absence of a sampling frame, convenience sampling enables researchers to collect data that would not otherwise be possible. Convenience sampling can assist in gathering data that can be used to build a solid hypothesis or research topic when performing exploratory research. Because the sample was not randomly picked, the sample can't be representative of the study's population. Therefore, convenience sampling could reduce the ability to generalize from the sample to the population of interest. Select the respondent based on the person who is most readily accessible and amenable to recruitment. This phenomenon directly impacts the precision of the collected data, hence increasing the likelihood of overlooking significant cases and resulting in the presence of concealed bias. Furthermore, the utilization of convenience sampling is contingent upon the researcher's subjective discernment and the participants' subjective incentives. The presence of observer bias is significantly heightened in this scenario (Nikolopoulou, 2023). Most of the research sites on this theme are in South East Asia. In contrast, the Middle East as a Muslim country is

rarely researched in Muslim-friendly hotels. In addition, non-Muslim countries such as Australia and European countries still need to start doing research. On the other hand, the most widely used sample total is about 301-500 samples.

Table 5. Methodology and theory result

No	Criteria	Summary
1	Analysis tool	SEM AMOS
		SEM PLS
		SEM LISREL
		SPSS
		Bayesian quantile regression
		Regression analysis
		Exploratory Structural Equation Modeling framework (ESEM)
		SOR theory
		Motivation theory
		exit voice theory
2	Theory	Complexity theory
		hedonic pricing theory
		the theory of planned behavior
		Expectation confirmation theory
		satisfaction theory
		three-factor theory of customer satisfaction
		bridging tourism theory
		The social exchange theory (SET)
		Equity theory, Tourism Consumption Theory
		Others
3	Sampling technique	Purposive sampling technique
		Convenience sampling technique
		Random sampling technique
		two-stage cluster sampling
		Others
4	Context	Countries in Asia
		Indonesia, Malaysia, Thailand, Japan, China, South Korea, Bangladesh, Taiwan, Sri Lanka, Maldives, Turkey
		Middle East Country
		Kuwait, UAE, Jordan, Saudi Arabia, Palestine, Qatar, Mecca, Abu dabi, Dubai
		European Countries
		United Kingdom, Russia, Italy, Germany
		African Countries
		Nigeria, Doha, Cairo
		American Countries
		Canada
		Australian Countries
		Australia
5	Total Sample	100-200
		201-300
		301-500
		501-800
		>800

### 3. Result in the impact of attributes on consumer satisfaction about Muslim-friendly hotels using Meta-Analysis

The results of this meta-analysis will provide information regarding the effect of attributes on satisfaction based on the papers obtained. Based on 23 papers, 30 studies were obtained. Several papers have 2-3 attributes discussed in the paper. Therefore, it will increase the number of studies used in the analysis. The meta-analysis could get the results of heterogeneity tests, effects summaries, residual heterogeneity estimation, forest plots, funnel plots, or Egger's test.

#### a. Heterogeneity test

The heterogeneity test can be performed using parameter  $I^2$ . Parameter  $I^2$  is the quotient of the true heterogeneity and the observed effect's variance. One advantage of utilizing the  $I^2$  statistic is its insensitivity to the impact size measure and the number of studies incorporated in the meta-analysis. In addition,  $I^2$  is not estimated based on quantity. Therefore, the interval for  $I^2$  would be better described as an indeterminate interval than a confidence interval. A good index value of  $I^2$  is close to 100%. The value of  $I^2$ , which is close to 100%, indicates that the effect size between the studies has become more heterogeneous (Retnawati et al., 2018). In addition. The  $I^2$  statistic of 25%, 50% and 75% represent the low, medium, and high degree of heterogeneity, respectively (Borenstein et al., 2011) Systematically,  $I^2$  value could calculated with the equation below or using JASP Software.

$$I^2 = \left( \frac{Q - df}{Q} \right) \times 100\% \quad \text{Note: } I^2 = \text{Heterogeneity estimates; } Q = \text{Weight Sum of Square, } Q = \sum_{i=1}^k W_i (Y_i - M)^2$$

df = Degree of freedom, df = k-1 (k = total study)

The observed  $I^2$  (Table 6) is 95.86% is above the minimum value of 25%, indicating significant heterogeneity, so the selection of a random effect model is appropriate with the criterion. Consequently, the random effects model is appropriate

based on the established criteria. The forest plot displays data indicating a summary effect of 0.79. This means there is a 79% difference in the Islamic attributes across various groups. Alternatively, consumers who possess the attributes of a Muslim-friendly hotel experience a satisfaction level that is 79% higher compared to those who do not possess these attributes. Additionally, it is important to note that the 95% confidence interval for the summary effect ranges from 0.39 to 1.19, indicating that zero is not within this range. The results suggest a notable disparity in satisfaction levels between providing traits associated with Muslims and the absence of such attributes. According to Jeaheng et al. (2020), halal-friendly physical environments and facilities are paramount in attaining significant satisfaction among Muslim guests. Furthermore, consumers may not prioritize pricing considerations when evaluating hotels that offer a diverse range of amenities, including but not limited to gender segregation, atmosphere, room interior design, TV channel selection, and overall decoration. Sulaiman et al. (2021) also stated that hotels that provide food and beverages following Muslim friendly and provide facilities that comply with Sharia will affect consumer satisfaction.

#### b. Summary Effect/Mean Effect Size; The Summary Effect

The calculation of the summary effect aims to determine a concise and overarching representation of the effect size. The computation of the summary effect size necessitates an indirect approach, as it is not feasible to directly determine the average effect size across all studies. This could be attributed to the presence of diversity in the studies, particularly concerning the size and features of the samples. The consideration of this variability is crucial when formulating a comprehensive summary effect. The analysis using a random effects model revealed a statistically significant positive connection between the qualities of a Muslim-friendly hotel and customer satisfaction. This finding (Table 7) falls within the high category, as indicated by the estimated result of 0.792. Cohen (1988) argues that the correlation coefficient values of  $r=0.1$ ,  $r=0.3$ , and  $r=0.5$  can be classified as low, medium, and high, respectively. Hence, it can be inferred that providing Islamic attributes in the hotel or the tourist destination in a hotel will significantly influence consumer satisfaction.

#### c. Fixed and Random Effect Result

The fixed-effect model assumes that all studies included in the meta-analysis have an equal effect size. In other words, the factors that impact the magnitude of the effect are consistent across all trials, thus indicating that the genuine effect size is constant across all studies as well. In the random effects model, the weight assigned to each research is determined by the total variances of the individual studies (Retnawati et al., 2018) Table 8, showed the analysis that the 59 study effect sizes were heterogeneous ( $Q = 17320.85$ ; and  $p = <0.001$ ). Therefore, the random effects model is more suitable for estimating the average effect size of the 59 studies. According to jasp-stats.org (2023), the effect of the heterogeneous size gives this variable the potential to investigate moderator variables that influence the relationship between Muslim-friendly hotel attributes and consumer satisfaction. Some literature can be as a moderator variable between Muslim-friendly attributes and satisfaction or loyalty. Among them is religiosity (Sulaiman et al., 2021), which can affect customer satisfaction. According to Alam et al. (2011) also stated that consumer behaviour will affect culture and religion. However, further meta-analysis must be conducted to determine the moderator variable's name. The forest plots show the effect sizes of the studies analyzed with

Table 6. Residual heterogeneity estimates

Residual Heterogeneity Estimates	Estimate
$I^2$ (%)	95.861

Table 7. Summary effect result

	Estimate	Standard Error	z	p	95% Confidence Interval	
Intercept	0.792	0.205	3.861	<.001	0.39	1.194

Table 8. Fixed and random effects result (Note: p - values are approximate; The model was estimated using the Restricted ML method)

	Q	df	p
Omnibus test of Model Coefficients	14.906	1	<.001
Test of Residual Heterogeneity	17320.85	29	<.001

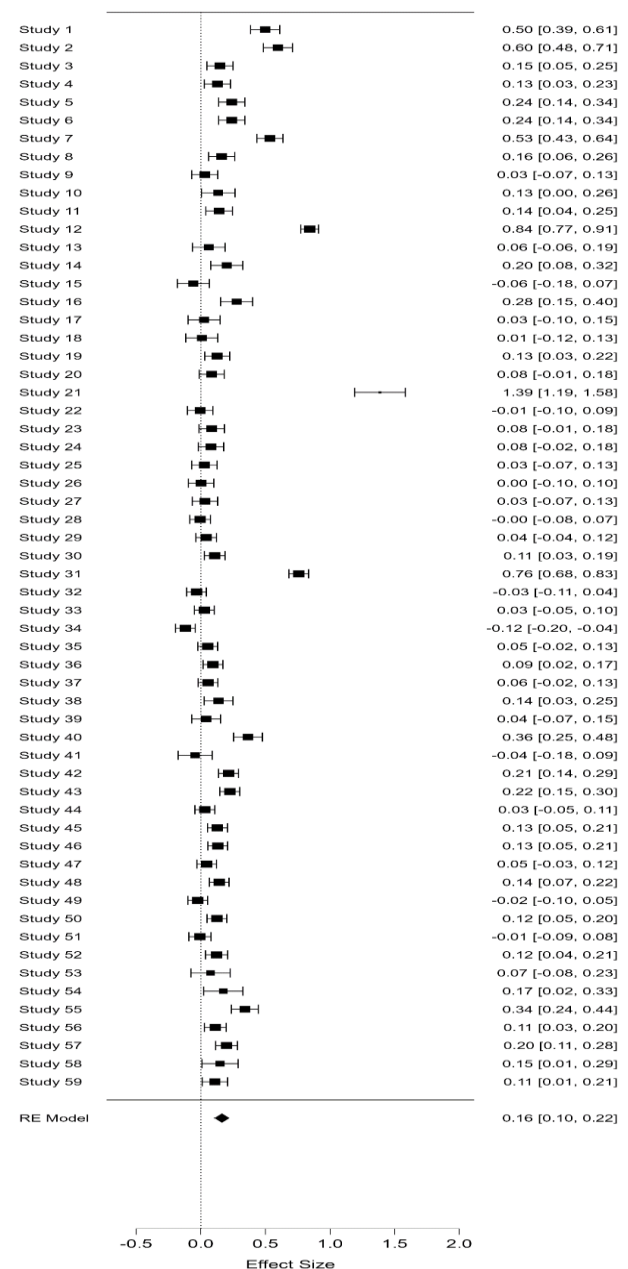


Figure 5. Forest Plot of the attributes on Muslim-friendly Hotel to consumer satisfaction



a variety between -0.12 and 1.39. According to forest plot the summary effect is 0.16, it can be interpreted that there are differences of about 16% between researchers regarding their opinion of the effect of Islamic attributes on tourist satisfaction. Likewise, the range of summary effect is between 0.10 and 0.22, thus, it is known that there is no difference between researchers regarding the effect of Islamic attributes on consumer satisfaction, but this number is not significant. Therefore, it can be concluded that most researchers agree that Islamic attributes in tourist destinations or Muslim-friendly hotels are important and influence consumer decisions and satisfaction. Based on visible diamonds, the studies analyzed are significant because they do not touch the line. It can be concluded that in this study, Muslim-friendly hotel attributes will significantly affect Muslim consumer satisfaction. Providing Islamic attributes heavily Influences the satisfaction and loyalty of Muslim consumers (Sulaiman et al., 2021; Fajriyati et al., 2022).

#### d. Forest plot

##### Funnel plot and Egger's test

A funnel plot is a test used to determine publication bias. Retnawati et al. (2018) stated that if there is no publication bias, the research will be distributed symmetric regarding the summary effect because the sampling error is random. Conversely, the research will follow the expected model if there is publication bias. However, funnel plots cannot be used as a strong evidence base to state that the funnel plots are symmetric or asymmetric because funnel plots are only based on visual judgments and seem highly subjective.

Therefore, there is another assessment, namely the Egger test. In the results based on visual assessment, the image is not symmetric. In Figure 6, it can be seen that there are no gaps at the bottom, but the plots on the right and left are not spread symmetrically. Assessment of symmetric or asymmetric plots can be seen in Figure 7.

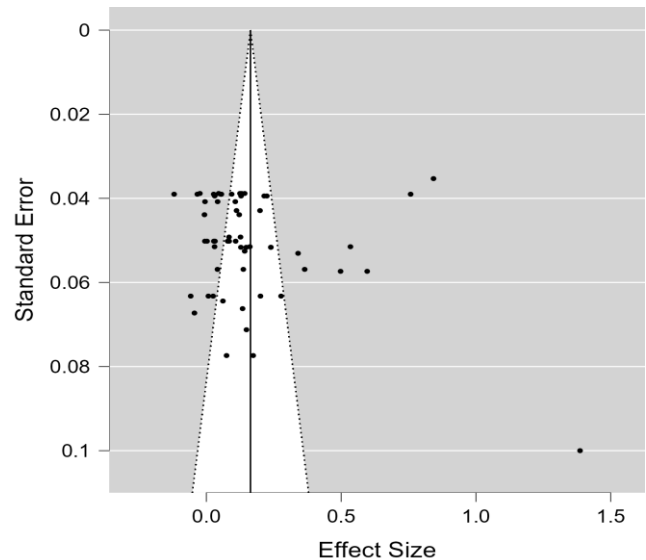


Figure 6. Funnel Plot the Islamic attributes to consumer satisfaction

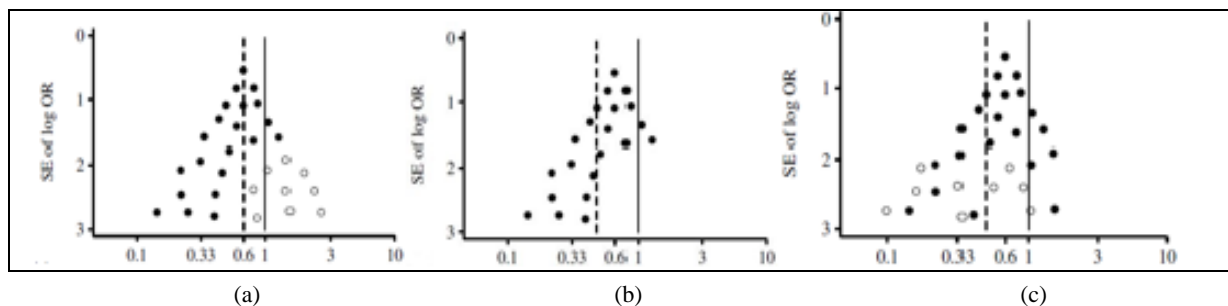


Figure 7. (a) plot simetris; (b) plot asimetris; (c) plot simetris

On the other hand, there is some criticism (Retnawati et al., 2018) that according to funnel plot interpretation that only based on visual assessment and seems objective. Therefore, there is another test that can determine biased publication and one of them is the Egger test. The Egger test was conducted to examine the linear relationship between the effect of the intervention and the standard error (Egger et al., 1997). The regression method is generally stronger than the rank correlation (Rothstein et al., 2006). The Egger test can be seen from the p-value result. If the  $p\text{-value} < \alpha$ , it can be said that the funnel plot is symmetrical or the null hypothesis is rejected.

Table 9. Egger's Test Result

	<b>z</b>	<b>p</b>
Sei	-0.122	0.903

Table 10. Result of Fail-safe N

	Fail-safe N	Target Significance	Observed
Rosenthal	85657	0.05	<.001

According to Table 9, the p-value is 0.9, and based on Egger's test with a  $p\text{-value} > 0.05$  ( $\alpha$ ), the funnel plot is symmetrical. It can be seen that there is no publication bias in the study meta-analysis.

#### e. Fail-safe N result

Fail-safe N is an approach suggested by Rosenthal (1979) that aims to overcome the problem of publication bias. This approach is very popular in the field of social sciences. Fail-Safe N is formed because there is a condition of the paper that is not significant, making it possible for the paper not to be published. Therefore, Rosenthal created this fail-safe N to determine how many papers were possibly not published because the results were not significant.

Based on Table 10, there are around 85,657 papers that have not been published because there is a possibility that these results are not significant. However, there is the tolerance level of meta-analysis study to see whether this meta-analysis is biased or not. This study can follow the following formula to determine whether it is biased or not. According to Zhang et al. (2014), tolerance level:  $5k + 10$ , which K is the study used in the current paper. Therefore, the results of this meta-

analysis show that  $K = 59$ , then  $5(59) + 10 = 305$ . The fail-safe N value obtained is 85,657 with a target significance of 0.05 and  $p < 0.001$  because the fail-safe N value is greater; in conclusion, there is no problem of publication bias in the study meta-analysis. This meta-analysis study can be justified as scientific.

## DISCUSSION

This paper is a systematic literature review based on PRISMA flow diagrams and uses meta-analysis to analyze the effect of attributes on consumer satisfaction. The analysis used 23 papers. The result analysis tools commonly used in the research are SPSS and SEM PLS. Widarjono (2015) stated that Amos is an analysis tool method that is very popular and widely used by researchers. However, in the research of Islamic attributes, many researchers are using SEM PLS. SEM PLS is one of the solutions of approaches that can be the best solution for predicting the relationship between variables whether big or small samples. SEM PLS could be said the user user-friendly and one of the analysis tools that can use small or big samples (Wong, 2013). Whereas, SEM AMOS and LISREL only can operate with a big sample size with a minimum of 200 sample size (Kline, 2005). On the other hand, in the result, researchers mostly use 300-500 samples. Therefore, in the big sample size, all analysis tools wheater SEM PLS, SEM AMOS, or LISREL.

The predominant theoretical framework employed in this research is the Theory of Planned Behavior (TPB). As proposed by Ajzen (2020), the Theory of planned behaviour serves as a theoretical framework employed to elucidate and predict human behaviour. The Theory of planned behaviour offers several advantages. Firstly, it encompasses a broader range of contributing factors compared to other motivation theories, such as the locus of control theory, which concentrates solely on one of the three factors examined in the Theory of planned behaviour. Secondly, the Theory has garnered substantial empirical support through numerous studies, indicating its practicality, applicability, and capacity to withstand rigorous examination. Lastly, the Theory's incorporation of subjective norms enables it to consider cultural influences, rendering it applicable across diverse social and cultural contexts.

However, it is important to acknowledge that the Theory may only sometimes provide an entirely correct behaviour prediction. This assertion holds particular validity when unforeseen occurrences or variables arise within a given scenario that defy categorization within the existing theoretical framework. In such cases, the Theory in question fails to examine latent aspects that could influence the decision-making process. The tendency is to emphasize the conscious decision-making process primarily. The emphasis on the conscious mind may not comprehensively encompass the intricacies of human action (Cornell, 2023). Despite various flaws, the Theory of planned behaviour is deemed the most appropriate framework for examining consumer behaviour within the context of Muslim-friendly hotels.

The sampling technique that is widely used is the convenience sampling technique. Convenience sampling is the most student-friendly sampling technique because it is flexible and does not require a lot of money and time. Getting respondents is also quite easy. Therefore, it shortens research time. However, it is possible to bias in research (Schonlau et al., 2001). Because of the limited rules that occur, this creates a bias toward age differences, gender differences, and cultural or religious differences. In a consumer behaviour study using a convenience sample as an example, there may be differences of opinion in the perception of Muslim or non-Muslim consumers towards hotels that do not have Muslim standards. However, convenience sampling does not consider the impact of religion. Using convenience with certain requirements for respondents may reduce bias. Therefore, a convenience sample technique was obtained in several studies in this paper but still considering several standard respondent requirements. Besides that, the purposive sampling technique is the mostly sampling that is used in the research. Purposive sampling, according to Sugiyono (2018), is a method of selecting the sample while taking particular factors into account. The purposive sampling technique primarily emphasizes saturation, where this method aims to obtain a comprehensive understanding so that the participants used are participants who already have information that is valuable for the study and have unique criteria. Meanwhile, the convenience primary emphasis on generalizability, ensures that the sample used is representative of a population that does not have criteria as in the purposive sampling technique (Etikan et al., 2016).

Based on the results, countries that discuss Muslim-friendly hotels mostly come from Southeast Asian countries. Likewise, there is research in Korea (Al-Ansi et al., 2020; Chua et al., 2021), but research in European or American countries is still very rare. Likewise, Fajriyati et al. (2022) stated that few studies have been conducted in Arabic Islamic contexts such as Saudi Arabia, Jordan, and Iraq. Based on this paper, attributes influence consumer satisfaction (Battour et al., 2014; Han et al., 2019; and Sulaiman et al., 2021) state that halal-friendly hospitality services will affect satisfaction to a destination. However, there is a contradiction to the statement in the article by Bodet et al. (2016) that the lack of an attribute does not mean identified as dissatisfied, according to Bartikowski and Llosa (2004) stated that an attribute is categorized as a bonus. Kim et al. (2021) stated that loyalty programs could combat the other competitors and (Lin and Bowman, 2022) could increase sales and profitability. In addition, loyalty programs will affect the loyalty purchase (Sharp and Sharp, 1997). A loyalty program could accelerate customer loyalty a loyalty program is the essential tool for hotel firms to achieve success in business over the competition (Koo et al., 2020). Bonus is one example of this type of loyalty program (Lin and Bowman, 2022).

Therefore, even Islamic attributes are categorized as a bonus, but it will increase consumer satisfaction. In addition, Jeaheng et al. (2019) stated that halal food and prayer facilities are basic needs of Muslims. The basic requirements for a Muslim-friendly hotel include serving halal foods, having a place and the necessary tools for praying, providing an ablution area, and providing sufficient clean water (Henderson, 2010; Karim et al., 2017; Razalli et al., 2015). Therefore, according to Al-Ansi et al. (2019), if Muslim customers cannot continue practicing their Islamic beliefs during their travels, then consumers will be affected in choosing the hotel.

After knowing Islamic attributes affect consumer satisfaction, the provision of attributes deserves to get attention. According to 23 papers, Islamic attributes can be classified as Physical attributes (tangible) dan non-physical attributes (intangible) (Isa et al., 2018; Sodawan and Hsu, 2022). **Physical attributes** consist of sharia-compliant facilities (Al-Ansi and Han, 2019; Han et al., 2019; Jaeheng et al., 2020; Hanafiah et al., 2021; Suhartanto et al., 2021; Sulaiman et al., 2022; Azali et al., 2023). Sharia-compliant facilities consist of prayer rooms, halal food and beverages (Rahman et al., 2020), halal certification and halal logo, no alcohol and pork, Qibla sign, praying equipment (Abdelkader, 2015) such as holy book Qur'an, prayer mat and women praying equipment, separate recreation facilities (Abdelkader, 2015; Alserhan et al., 2018; Isa et al., 2018; Han et al., 2019; Al-Ansi and Han, 2019; Shnyrkova and Predvoditeleva 2019; Rahman et al., 2020; Fajriyati et al., 2020; Jeaheng et al., 2020; Papastathopoulos et al., 2021; Dabphet, 2021; Sodawan and Hsu, 2022; Sulaiman et al., 2022; Fajriyati et al., 2022; Azali et al., 2023).

Whereas **non-physical attributes** could consist of *Sharia-compliant staff*, *Sharia-compliant interior design*, and *Sharia-compliant entertainment* (Sodawan and Hsu, 2022). *Sharia-compliant staff* consist of staff knowledge of Islamic rules (Hanafiah et al., 2021; Rostiani et al., 2023; Papastathopoulos, 2022; Azali et al., 2023; Al-Ansi and Han, 2019), Islamic greetings, Islamic dress code (Fajriyati et al., 2020; Suhartanto et al., 2021; Al-Ansi and Han, 2019), Arabic language, Muslim staff (Nassar et al., 2015), staff awareness (Papastathopoulos, 2022; Al-Ansi and Han, 2019). *Sharia-compliant interiors and design* consist of separate floor between men and women (Abdelkader, 2015), Islamic decoration and arts (Al-Ansi and Han, 2019; Isa et al., 2018), halal iconic buildings (Lestari et al., 2022), toilet not facing Qibla (Sulaiman et al., 2022). Whereas, *Sharia-compliant entertainment* consists of banning gambling/banning casino places (Jeaheng et al., 2020; Sulaiman et al., 2022), no night club (Han et al., 2019; Jeaheng et al., 2020, Sulaiman et al., 2022), banning prostitution (Fajriyati et al., 2022).

This paper also gets the result that there is a possibility of a moderator variable that is correlated between attributes and satisfaction. Likewise, according to research by Sulaiman et al. (2021), religiosity influences consumer satisfaction with hotel attributes, namely Sharia-compliant facilities such as providing prayer mats, qibla signs, holy Qur'an, and sharia-compliant designs such as decorations that do not use animals or humans. Essoo and Dibb (2004) stated that religious issues influence the decision-making process of an individual. Likewise, according to Hilary and Hui (2009), a high level of religiosity indicates lower risk exposure. For someone with a high level of religiosity personality, most people do not want to take risks that conflict with their religion and beliefs. As Muslims, they will approach a decision that does not have a high risk of conflicting with their religion. Mathras et al. (2015) stated that non-religious consumers will be more susceptible to various marketing strategies than religious consumers. Therefore, it can be concluded that all forms of attribute facilities provided by hoteliers will influence the decisions and satisfaction of Muslim people with a high religious level.

Alam et al. (2011) propose that consumer behavior can be influenced by religion and culture. Similarly, as asserted by Craig and Douglas (2006), national culture has the potential to influence consumer attitudes and subsequent behavior. In addition, the influence of national culture can significantly enhance consumer motivation when selecting a travel destination (Filimonau and Perez, 2018). According to Mariani et al. (2018), individuals residing in societies characterized by low uncertainty avoidance, ambiguity, and uncertainty tend to exhibit a higher propensity for tolerance. Differences in uncertainty avoidance will also affect consumer loyalty (Seo et al., 2018). According to research by Seo et al. (2018), it is also stated that uncertainty avoidance is a moderator variable in consumer behavior. Therefore, it can be said that people with low uncertainty avoidance, such as Western countries such as America and Europe, have a higher tolerance for choosing a product or service. However, Muslim countries such as the Middle East have high uncertainty. Therefore, Muslim countries will be more strict in choosing certain hotels. They will prefer a hotel that is familiar to them or acceptable to their culture. One example is a hotel with a Muslim-friendly concept.

## CONTRIBUTION

The contribution in this paper is not only in theoretical form but also provides practical contributions for hotel business people who have a sharia concept, and stakeholders. Contributions that can be made are as follows:

### 1. Theoretical Contribution

This study contributes to the existing body of knowledge in the following ways. First, this study is the first to provide a systematic evaluation of the Islamic attributes topic from the empirical evidence on the effect of Islamic attributes on consumer behavior. This paper includes various study of quantitative studies, with different methods, analysis tools, also with different sample characteristics. But this paper shows the same conclusion will influence Islamic attributes to the satisfaction and consumer decision to the Muslim friendly hotel. Second, this paper provides the probability of the effect of the moderator variable which will strengthen the relationship between the effect of Islamic attributes to the satisfaction or consumer decision.

### 2. Practical Contribution

The result of this paper could contribute to the halal industry. Potency and huge demand of halal tourism industry, this paper will give some insight into the industry tourism business to take into account Muslim consumer needs with the provision of some crucial facilities to the Muslim tourist.

## CONCLUSION

Based on the results from 23 papers selected. It is noted that Islamic attributes will affect consumer satisfaction. This study finds only a few empirical studies that stated Islamic attributes do not affect tourist satisfaction. Even though there are contradictions in providing attributes, attributes for Muslims such as prayer rooms, prayer mats, halal food, and beverages, the provision of separate recreation facilities will increase the satisfaction of Muslim consumers.



Even in the operation of Muslim-friendly hotels, there are various dilemmas because there is a potential for loss of profit due to the elimination of alcoholic beverages and the development of separate recreation facilities that may incur a lot of costs. One strategy is to create separate kitchens and restaurants, and also create separate operational time between male and female to give wide privacy to women guests. On the other hand, crucial facilities are to provide facilities for Muslims such as halal foods and beverages, prayer rooms, and other prayer equipment. Likewise, based on this paper, there is a possibility of a moderator variable that can be correlated with Muslim-friendly hotel attributes and satisfaction. An example is the level of religiosity and culture, especially the effect of uncertainty avoidance.

## RECOMMENDATION

This paper can give some recommendations that use analysis tools like LISREL as an alternative to SEM. Besides, the countries used in the research can be done in non-Muslim countries like Europe, Muslim countries like the Middle East, and some South African countries like Morocco, Egypt, Algeria, and so on. This research has some weaknesses where this paper only covers one publisher, it will be good if also includes other machine searching such as Google Scholar, Research gate, or another publisher such as Emeraldinsight.com, sciencedirect.com, etc.

## Author Contributions:

Conceptualization, RSS, ASBM and YAA; methodology, RSS and ASBM; software, RSS; validation, ASBM and YAA; writing - original draft preparation, RSS; writing - review and editing, RSS, ASBM and YAA; supervision, ASBM and YAA; project administration, RSS. All authors have read and agreed to the published version of the manuscript. RSS, ASBM and YAA designed the concept. RSS prepared the manuscript with contributions from all coauthors. All authors have read and agreed to the published version of the manuscript.

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## HOSPITAL BRAND IMAGE AND DETERMINANTS IN MEDICAL TOURISM: THE CASE OF SAMSUN

**Yaşar DEMİR\*** 

Samsun Training and Research Hospital, Samsun, Türkiye, e-mail: mszydsimal@gmail.com

**Erhan DAĞ** 

Kütahya Health Sciences University, Gediz Vocational School, Kütahya, Türkiye, e-mail: erhan.dag@ksbu.edu.tr

**Zeynep AYDIN KILINÇ**

Alanya District Directorate of Health, Alanya, Antalya, Türkiye, e-mail: dtzeynepaydinkilinc@gmail.com

**Pınar KARAKUŞ**

Alanya Alaaddin Keykubat University, Graduate School of Education, Alanya, Antalya, Türkiye, e-mail: pinaar\_oruc@hotmail.com

**Saliha ÖZPINAR** 

Alanya Alaaddin Keykubat University, Faculty of Medicine, Department of Public Health, Alanya, Antalya, Türkiye, e-mail: salihaozpınar@gmail.com

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**Abstract:** The aim of this study is to reveal the effects of word-of-mouth marketing, hospital social media accounts, user social media accounts, hospital advertisements and price policy on hospital brand image from the perspective of medical tourists visiting Türkiye. Data were gathered using English, Arabic, and Turkish questionnaires from 1 July 2023 to 31 December 2023. There is a strong and positive relationship between hospital brand image, word-of-mouth communication (WOM), hospital social media use, social media accounts of followers, hospital advertisements ( $r>0.500$ ,  $p<0.01$ ). Hospital brand image is influenced by word-of-mouth communication (WOM), hospital social media use, social media accounts of followers, hospital advertisements and price perception ( $p<0.05$ ). As a result of the study, it was determined that social media use and marketing activities were the most important predictors in the formation of hospital brand image.

**Keywords:** Medical Tourism, Hospital Brand Image, WOM, Social Media, Samsun, Türkiye

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### INTRODUCTION

Medical tourism has emerged as an essential component of the health sector in many national economies. The medical tourism market size is projected to reach approximately 97.9 billion USD by 2030 (Market Analysis Report, 2023). In response to the economic potential of this market, countries are making strategic investments in medical services that aim to gain a share of this market by meeting the needs of potential customers. The range of services in medical tourism is broad, covering a variety of treatments ranging from aesthetic and bariatric surgeries to infertility treatments and dental health services (Taheri et al., 2021). Within this broad network of services, medical tourists seek not only superior quality but also cost-effective solutions. Therefore, it is crucial to become a preferred destination for medical tourists and to create a strong brand image in this field (Cham et al., 2022). Keller (1993) describes brand image as the perceptions consumers hold about a brand, which are reflected by the brand associations stored in their memory (Keller, 1993). Brand image represents the associations consumers form with a brand (Dobni and Zinkhan, 1990).

The brand image significantly impacts consumer buying choices, particularly in choosing products and services from a wide range of competing brands (Górska-Warzewicz, 2022). According to image formation theory, consumers develop a particular perception of items or services when they encounter marketing communication and promotional strategies (Cham et al., 2016). Creating a brand image is influenced more by companies' marketing activities than by the functional aspects of the product or service (Parris and Guzmán, 2023).

There are many types of image concept in the literature. These are called corporate image, product image, foreign image, transfer image. In the last decade, especially in parallel with the development of medical tourism, the concept of hospital image has entered the literature (Koçyiğit et al., 2022). For this reason, it is necessary to mention the definition of hospital brand image in terms of medical tourism and why it is important for health enterprises (Yalman, 2023).

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\* Corresponding author

Brand image is a critical factor for businesses as it has a great impact on strategic planning and organizational performance. The role of brand image becomes even more important, especially for businesses operating in the health sector where competition is intense and complex (Raka Sukawati, 2021). Hospital brand image is a whole consisting of healthcare users' thoughts, beliefs and perceptions about that hospital. In the studies conducted in the literature, it has been determined that hospital brand image increases medical tourist satisfaction (Salman and Esen, 2023), medical tourist loyalty (Aladwan et al., 2021), revisit and recommendation intention (Dikici and Akkılıç, 2023) and trust (Zengin et al., 2022). Realizing this situation, healthcare managers are trying to create a hospital brand image by using social media platforms, digital advertisements and digital marketing activities such as word-of-mouth communication in order to create a hospital brand image and get more share from medical tourism (Fahmi et al., 2022).

The development of the internet and related technologies has forced businesses to participate in digital markets and activities. Digital transformation is vital for collecting data to understand customers' preferences and expectations. Therefore, marketing efforts are now evolving more towards digital marketing (Kaya and Ündil, 2022). The intensive use of information technologies in the healthcare sector weakens the traditional boundaries of marketing in this field, which accelerates the digitalization process. Healthcare organizations use digital tools such as websites, mobile applications and social media to reach consumers (Armutcu et al., 2023; Cristobal-Fransi et al., 2023).

Social media encompasses tools that enable collaborative information generation and sharing online, fundamentally transforming how businesses engage with customers. Social media facilitates extensive communication through online discussions, reviews, chats, sharing of ideas, and video conferencing. This medium is portrayed as a new avenue for individuals to interact and exchange ideas freely. Furthermore, it acts as an influential platform for developing marketing strategies and influencing consumer perceptions and actions (Caber et al., 2021). Social media serves a crucial role in marketing, particularly within the tourism industry. It has emerged as the main information source for medical tourists looking for insights on medical destinations, healthcare experts, and treatment options in the medical tourism sector (Fletcher et al., 2017; John et al., 2018; Lim et al., 2019).

“Word-of-mouth (WOM) marketing”, a concept with deep historical roots in marketing literature, has experienced considerable theoretical evolution through the adoption of cognitive, emotional, and interactionist perspectives (Taheri et al., 2014). The literature predominantly defines WOM as “*informal communications among consumers regarding the ownership, usage, or characteristics of specific goods and services and/or their vendors*” (Westbrook, 1987). WOM has proven particularly effective in sectors like health services and tourism, where the products or services offered are intangible (Taheri et al., 2014). Numerous studies have demonstrated that WOM recommendations serve as a tool to mitigate the risks associated with these sectors (Cham et al., 2022; Han and Hyun, 2015; Taheri et al., 2021).

Al-Hasan (2024) found that social media marketing leads to an increase in hospital brand image and generates more revenue for the hospital (Al-Hasan, 2024). Mandagi et al. (2023) found that hospital brand image has a significant effect on patient satisfaction and revisit intention (Mandagi et al., 2023). Hoşgör and Sevim (2022) determined that hospital brand image affects patient satisfaction in their study (Hoşgör and Sevim, 2022).

Cham et al. (2020) determined that social media use, hospital advertisements and word-of-mouth marketing affect hospital brand image (Cham et al., 2020). In the study conducted by Yalman (2023), it was determined that price policy is effective in the formation of hospital brand image (Yalman, 2023). As seen in the studies, social media accounts, price policy, hospital advertisements and word-of-mouth communication are very important in the formation of hospital brand image. For this reason, this study aims to reveal the effects of social media usage and hospital advertisements, hospital price policy, and word-of-mouth marketing on hospital brand image from the perspective of medical tourists receiving health services from Türkiye. When the studies conducted in Turkey are examined, it is seen that there are more studies on the relationship between hospital brand image and satisfaction, hospital brand image and perceived service quality. Therefore, this study offers a different perspective on the impact of different marketing techniques on hospital brand image. The research design and hypotheses created to reveal this purpose are shown below (Figure 1).

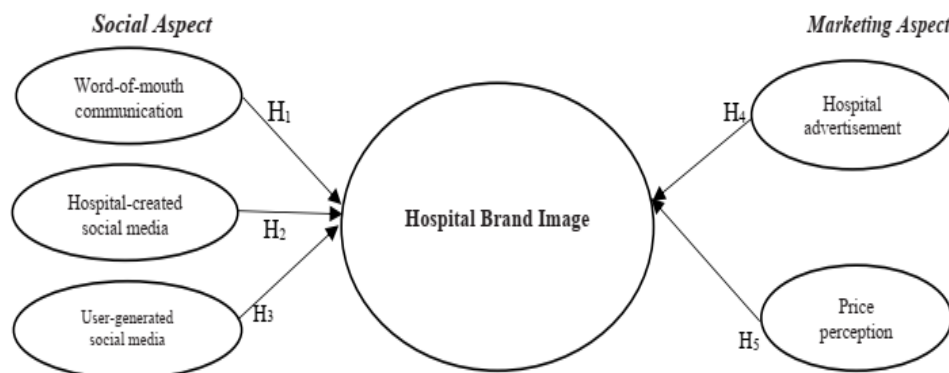


Figure 1. Research model

#### Hypotheses:

H<sub>1</sub>: Hospital brand image is affected by WOM.

H<sub>2</sub>: Hospital brand image is affected by hospital-created social media.

H<sub>3</sub>: Hospital brand image is affected by User-generated social media.

H<sub>4</sub>: Hospital brand image is affected by Hospital advertisement.

H<sub>5</sub>: Hospital brand image is affected by price perception.

## MATERIALS AND METHODS

### 1. Population and Sample of the Study

The study is cross-sectional. The study was conducted in Samsun, located in the Black Sea region of Turkey. Samsun is the province with the largest population and the highest socio-economic level in the Black Sea region. There are many international hospitals and medical centers in Samsun there are direct flights from many countries to Samsun, which also has an international airport medical tourists from many countries come to Samsun, which has a highly developed health infrastructure. In 2022, 30.339 medical tourists came to Samsun according to the data of the Provincial Health Directorate the universe of the study consists of these medical tourists (SİNA, 2023). The minimum sample size of the study was determined as 384 with a prevalence of 50%, a margin of error of 5%, and an error level of 0.05, with 80% power. 21. (sina.saglik.gov.tr). The minimum sample size of the study was determined to be 384 at 80% power with 50% prevalence, a 5% margin of error, and a 0.05 error level (Gürbüz and Şahin, 2018).

### 2. Data Collection Tools

A questionnaire form was used as the data collection tool used in the study. In the first part of the questionnaire, a personal introduction form consisting of 8 statements was used to reveal the socio-demographic characteristics of medical tourists. The second part of the questionnaire includes the scale developed by Cham et al (2020). The scales and their explanations are given in Table 1 (Cham et al., 2020).

Tablo 1. Scales and descriptions

1	<b>Word of mouth communication Scale</b>	The scale developed by Cham et al. (2020) in English, Arabic and Indonesian consists of 5 statements. The scale utilizes a 5-point Likert scale, with scoring from '1-strongly disagree' to '5-strongly agree'. The scale does not contain any reverse items; scores range from a minimum of 5 to a maximum of 25.
2	<b>Hospital-created social media scale</b>	The scale developed by Cham et al. (2020) in English, Arabic, and Indonesian consists of 3 statements. The scale utilizes a 5-point Likert scale, with scoring from '1-strongly disagree' to '5-strongly agree'. It contains no reverse-scored items; the lowest possible score is 3, and the highest is 15.
3	<b>User-generated social media scale</b>	The scale developed by Cham et al. (2020) in English, Arabic, and Indonesian consists of 3 statements. The scale utilizes a 5-point Likert scale, with scoring from '1-strongly disagree' to '5-strongly agree'. It contains no reverse-scored items; the lowest possible score is 3, and the highest is 15.
4	<b>Hospital advertisement scale</b>	The scale developed by Cham et al. (2020) in English, Arabic and Indonesian consists of 6 statements. The scale utilizes a 5-point Likert scale, with scoring from '1-strongly disagree' to '5-strongly agree'. It contains no reverse-scored items; the lowest possible score is 6, and the highest is 30.
5	<b>Price perception scale</b>	The scale developed by Cham et al. (2020) in English, Arabic, and Indonesian consists of 3 statements. The scale utilizes a 5-point Likert scale, with scoring from '1-strongly disagree' to '5-strongly agree'. It contains no reverse-scored items; the lowest possible score is 3, and the highest is 15.
6	<b>Hospital Brand Image</b>	The scale developed by Cham et al. (2020) in English, Arabic, and Indonesian consists of 3 statements. The scale utilizes a 5-point Likert scale, with scoring from '1-strongly disagree' to '5-strongly agree'. It contains no reverse-scored items; the lowest possible score is 3, and the highest is 15.

Table 2. Socio-demographic characteristics of participants

Variables	N	%
<b>Age</b>		
18-25	23	5.8
26-35	42	10.6
36-45	84	21.2
46-55	128	32.3
56 +	119	30.1
<b>average age (20-71) 48.43±13.58</b>		
<b>Gender</b>		
Female	204	51.5
Male	192	48.5
<b>Education</b>		
High School	311	78.5
University	85	21.5
<b>Marital status</b>		
Married	326	82.3
Single	70	17.7
<b>How did you get here?</b>		
Friend / Relative Advice	215	54.3
Internet / Social Media	143	36.1
Intermediary Institution/Agency	35	8.8
Physician Advice	3	0.8
Total	396	100



### 3. Data Collection

The survey forms were prepared in three languages: English, Arabic and Turkish. Since the original questionnaire forms were in English and Arabic, the questionnaire forms were translated into Turkish by language experts. Then, they were translated from Turkish to English again by different language experts and finalised. The research data were collected face-to-face between 1 July 2023 and 31 December 2023, with the support of the employees working in the health tourism unit and public relations unit of the health institutions. The study included medical tourists who had undergone all procedures and consented to participate in the research.

### 4. Data Analysis

As a result of the study, 396 fully completed questionnaires were imported into the SPSS 26.00 software for analysis. The data were subjected to percentage and frequency analyses, exploratory factor analyses, correlation, and multiple regression tests.

## RESULTS

### 1. Socio-Demographic Characteristics

Of the participants, 32.3% were in the 46-55 age range, 51.5% were female, and 82.3% were married. It was determined that 54.3% of the participants preferred health institutions with the recommendation of friends and relatives (Table 2). Of the participants, 24.2% came from Germany, 10.9% from Georgia, 10.9% from Iraq, and 8.8% from Azerbaijan. 18.4% of the participants came from other countries (Austria, Norway, United Arab Emirates, North Macedonia, Denmark, Switzerland, United States of America, Bosnia Herzegovina, Saudi Arabia, Sweden, Italy, Hungary, Syria, Bulgaria) (Figure 2). Of the participants, 47.2% received dental diseases and treatment, 36.7% received aesthetic, plastic, and reconstructive surgery, and 9.8% received ear, nose, and throat disease services (Figure 3).

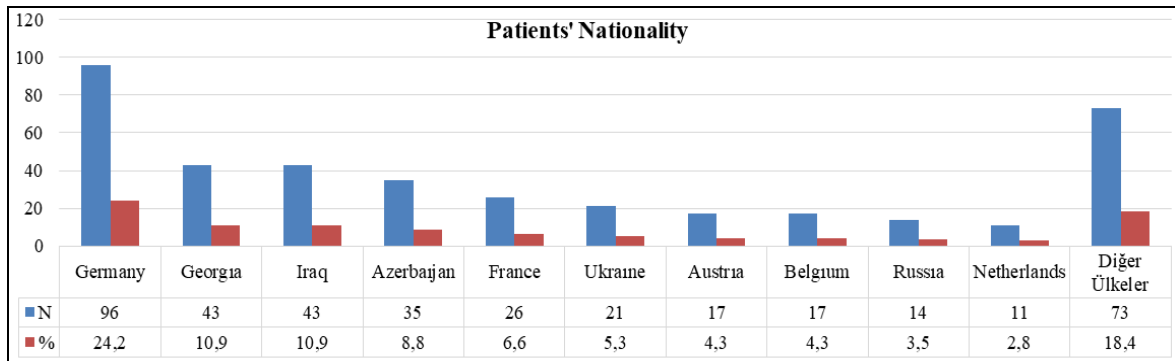


Figure 2. Countries of participants

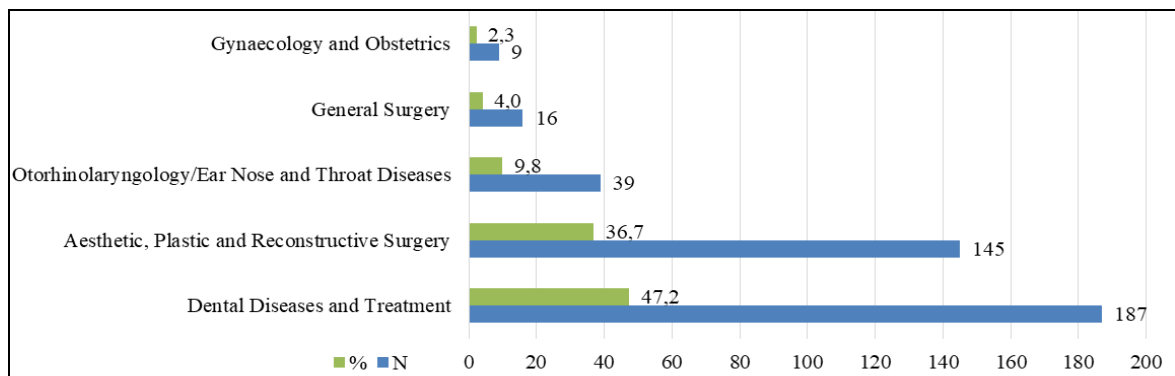


Figure 3. Specialities of treatment types

### 2. Exploratory Factor Analysis

An exploratory factor analysis (EFA) was conducted to ascertain the validity of the measurement scale. Initially, the suitability of the data for factor analysis was assessed through Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. The results indicated that the KMO value exceeded 0.60 ( $KMO > 0.60$ ), and Bartlett's Test of Sphericity reached statistical significance, affirming the data's appropriateness for factor analysis. Subsequent EFA results revealed that all items had factor loadings above the acceptable threshold of 0.5.

Furthermore, the composite reliabilities (CR) for each construct surpassed the 0.7 benchmark, and the average variance extracted (AVE) for each construct was greater than 0.50, thereby confirming convergent validity (Gürbüz and Şahin, 2018; Hair et al., 2010). Additionally, Cronbach's alpha (CA) values for the scales indicated adequate internal consistency, with values of 0.801 for Word-of-Mouth Communication, 0.707 for Hospital-Created Social Media, 0.786 for User-Generated Social Media, 0.794 for Hospital Advertisement, 0.821 for Price Perception, and 0.839 for Hospital Brand Image (Table 3).

Table 3. Explanatory Factor Analysis

Scales/Items	Factor Loading	CA (>0.70)	AVE (>0.50)	KMO (>0.60)	CR (>0.70)
<b>Word-of-mouth communication</b>					
My family/friends had a positive impact on my perception of this hospital's brand.	0.773	0.801	0.703	0.778	0.822
My family/friends highlighted positive aspects of this hospital's brand that I hadn't thought of.	0.791				
My family/friends gave me positive impressions about this hospital's brand.	0.808				
My family/friends positively affected my judgment of this hospital's brand.	0.805				
My family/friends assisted me in deciding to choose this hospital's brand	0.790				
<b>Hospital-created social media</b>					
This hospital's social media communication about its brand meets my expectations.	0.798	0.707	0.648	0.694	0.708
When compared to the excellent social media communications of its competitors, this hospital's social media efforts for its brand hold up well.	0.758				
I am content with the social media communications of this hospital for its brand.	0.722				
<b>User-generated social media</b>					
The feedback from other users on social media regarding this hospital's brand aligns with my expectations.	0.785	0.786	0.723	0.719	0.887
In comparison to the high-quality feedback on social media from users about competing hospitals' brands, the feedback about this hospital's brand on social media stands out positively.	0.786				
I am pleased with the feedback from other users on social media about this hospital's brand	0.803				
<b>Hospital advertisement</b>					
I find the advertisement from this hospital appealing.	0.730	0.794	0.740	0.810	0.830
I focus on the advertisement's message from this hospital.	0.764				
As a medical tourist, the advertisement from the hospital is significant to me.	0.885				
The advertisement from this hospital offers me valuable information about its medical services.	0.701				
The repeated advertising of this hospital's brand affects my preference for it.	0.711				
The hospital's advertisement impacts me	0.724				
<b>Price perception</b>					
The cost of medical services at this hospital is reasonable.	0.783	0.821	0.698	0.714	0.761
The pricing for medical services at this hospital is fitting.	0.753				
On the whole, the pricing of medical services at this hospital is more affordable compared to its competitors	0.729				
<b>Hospital Brand Image</b>					
This hospital's brand offers comprehensive practical functionalities, including medical services and sufficient medical facilities.	0.803	0.839	0.744	0.798	0.836
The brand of this hospital carries a positive symbolic value, characterized by a strong reputation, reliability, and a favorable image.	0.722				
I believe that the brand of this hospital is capable of delivering a satisfying service experience to me.	0.805				

Notes: AVE = Average variance extracted; KMO = Kaiser Mayer Olkin; CA=Cronbach's alpha; CR= Composite reliabilities

### 3. Scale Averages and Correlations

The mean scales were word-of-mouth communication ( $\bar{X}=18.73$ ), hospital-generated social media ( $\bar{X}=11.45$ ), user-generated social media ( $\bar{X}=11.23$ ), hospital advertisement ( $\bar{X}=23.40$ ), price perception ( $\bar{X}=10.30$ ) and hospital brand image ( $\bar{X}=11.71$ ) (Table 3). A correlation analysis was conducted to identify the relationships and directionalities among the scales. The results of the analysis indicated a positive and robust association among the variables: word-of-mouth communication, hospital-created social media, user-generated social media, hospital advertisement, price perception, and hospital brand image ( $r>0.500$ ,  $p<0.01$ ) (Table 4).

Table 4. Scale averages and correlations (\*Correlation is significant at the 0.01 level)

Scales	Items	Min-Max.	$\bar{X}$	SS	1	2	3	4	5	6
1. Word-of-mouth communication	5	5-25	18.73	4.11	1	0.642*	0.607*	0.597*	0.611*	0.696*
2. Hospital-created social media	3	3-15	11.45	2.27		1	0.578*	0.605*	0.613*	0.667*
3. User-generated social media	3	3-15	11.23	2.40			1	0.526*	0.599*	0.555*
4. Hospital advertisement	6	6-30	23.40	4.43				1	0.606*	0.614*
5. Price perception	3	3-15	10.30	2.46					1	0.613*
6. Hospital brand image	3	3-15	11.71	2.34						1

### 4. Multiple Regression Analysis

The multiple regression model to determine hospital brand image and its predictors was statistically significant ( $F(5,390) = 39.893$ ,  $p=0.000$ ). According to the analysis results, independent variables (word-of-mouth communication, hospital-created social media, user-generated social media, hospital advertisement, price perception) explain 58% of the change in the dependent variable (hospital brand image). According to the results of this analysis, hospital brand image is affected by word-of-mouth communication, hospital-created social media, user-generated social media, hospital advertisement, and price perception (Table 5).

Table 5. Hospital brand image and its determinants (Dependent variable: hospital brand image)

Variables	B	SH	$\beta$	t	p	Tolerance	VIF
Constant	3.367	0.726		4.638	0.000*		
Word-of-mouth communication	0.012	0.028	0.020	0.421	0.004*	0.72	1.39
Hospital-created social media	0.030	0.048	0.029	0.635	0.006*	0.80	1.26
User-generated social media	0.462	0.047	0.473	9.882	0.000*	0.74	1.35
Hospital advertisement	0.070	0.024	0.132	2.860	0.004*	0.79	1.26
Price perception	0.093	0.040	0.098	2.297	0.022*	0.94	1.06
<b>Adjusted R<sup>2</sup>=0.580</b>	<b>F=39.893</b>			p<0.05			

## DISCUSSION

The first finding of the study is that there is a strong positive relationship between word-of-mouth communication (WOM) and hospital brand image, and hospital brand image is affected by word-of-mouth communication. According to the research conducted by Styliadis et al. (2020), WOM is generally accepted as a reliable, comprehensive, unbiased and non-profit source of information. It has been determined that this method strongly and positively affects customers' perceptions, intentions and actual behaviour in purchasing new products or services (Styliadis et al., 2020). Cham et al. (2021) also found that word-of-mouth communication influences patient brand image (Cham et al., 2021). The study conducted with medical tourists by Abubakar and İlkan (2016) determined that WOM is influential in the choice of destination and health institution of medical tourists (Abubakar and İlkan, 2016). The study by Zengin et al. (2022) determined that WOM affects patient branding image (Zengin et al., 2022). Based on these results, it can be said that positive word-of-mouth communication is a significant factor in creating the brand image of healthcare institutions.

Secondly, there is a strong positive relationship between patient brand image and communication between hospital social media account communication and user social media accounts, and hospital brand image is affected by these two variables. The study by Cham et al. (2016) showed that the social media content produced by the hospital significantly impacted the hospital's brand image. However, contrary to the results of Cham et al. (2016), this study shows that in addition to the content created by the hospital, social media content created by users also directly affects the branding process of the hospital. This finding reveals the comprehensive effects of social media, in line with the research of Cham et al. (2020), Aguerrebere et al. (2021), Aguerrebere et al. (2022), Saputra et al. (2022) and Zengin et al. (2022) (Cham et al., 2021; Aguerrebere et al., 2021; Aguerrebere et al., 2022; Saputra et al., 2022; Zengin et al., 2022).

These findings reveal that medical tourists frequently use social media to obtain reliable information about the hospital and prefer these platforms to reinforce their perceptions about the hospital's brand image. Considering this situation, it is clear that it is essential for hospitals to offer new and different content on social media platforms continuously. For example, hospitals can regularly update their social media accounts by using various types of content such as videos, stories and photos and sharing the most up-to-date information about their services. Additionally, including patient reviews, contact details, information about the hospital, medical treatment options, and real-time online posts can help hospitals develop their social media accounts more effectively.

Thirdly, a significant positive correlation exists between patient brand image and hospital ads, influencing the hospital brand image. Medical tourists may perceive hospitals differently based on hospital ads and social media before their service encounter. Hospitals with a strong brand image might influence patients' decision-making processes positively. This highlights the need for marketing communication before service is provided (Cham et al., 2021; Zhou et al., 2020).

Compelling and informative commercials can effectively influence potential buyers. Advertisements have a crucial role in generating customer awareness and establishing brand identity, particularly for newly introduced products and services (Kim and Lee, 2020). Hospitals can utilise their material to sell services, and medical tourists can share their experiences with others through user-generated content. Social media serves as a platform for creating and distributing information to effectively and affordably reach a broad audience of potential customers (Cham et al., 2022; John et al., 2018).

Fourthly, there is a strong positive relationship between patient brand image and price perception and hospital brand image is affected by this variable. Price is one of the most significant factors in the motivation of medical tourists in many studies in the literature (Çalhan and Arıcı, 2022; Polat and Omar, 2022; Üstün and Uslu, 2022).

Moreover, in different studies, it has been determined that price positively affects the satisfaction of medical tourists (Nikbin et al., 2019; Rahman, 2019; Rahman et al., 2022). In the study conducted by Cham et al. (2021), it was determined that price perception has an effect on hospital brand image, similar to the results of this study (Cham et al., 2021). Based on these results, it can be said that price perception is an important factor in hospital brand image.

## CONCLUSION

Hospital brand image, which is a relatively more recent concept for the health sector, is a very important concept for health institutions to gain competitive advantage and ensure their sustainability. Due to the nature of healthcare services, quality cannot be clearly assessed even after the use of services, making brand image an even more valuable indicator for hospitals. This situation increases its importance day by day, especially for countries investing in medical tourism.

Hospital brand image is a marketing activity of strategic importance as it helps to improve the competitiveness of organizations. Therefore, a positive hospital brand image has the function of strengthening medical tourists' intention to choose that hospital. Therefore, it can be stated that this situation will reflect positively on the financial performance of

both health institutions and the country. In addition, it can be stated that medical tourists who perceive the brand image of a hospital as high quality and high prestige will have a positive perspective on the hospital and the services it offers.

As a result of the study, it was determined that hospital brand image is affected by word-of-mouth communication, hospital advertisement, hospital created social media, user-generated social media and price perception. Therefore, it can be said that health institutions that carry out marketing activities according to the innovations brought by the age will be more successful due to positive comments. Moreover, it can be said that health institutions with a high hospital brand image will earn more income than their competitors.

Therefore, brand image can be a unique and effective sales factor for hospitals operating in the field of medical tourism. This concept has the potential to significantly enhance the competitive advantage of healthcare facilities, making the nation a preferred destination for medical tourists and giving the country a competitive edge. Various stakeholders, such as government bodies, healthcare facilities, tourism service providers, and travel agents, have a crucial role in shaping the brand views of medical tourists. Positive relationships, good communication, and continuous collaboration among various parties are vital for enhancing the nation's reputation on the global stage.

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## ENHANCING 21ST CENTURY SKILLS THROUGH INTEGRATED STEM EDUCATION USING PROJECT-ORIENTED PROBLEM-BASED LEARNING

Rommel AlAli\* 

National Research Center for Giftedness and Creativity, King Faisal University, Al Ahsa, Saudi Arabia, e-mail: ralali@kfu.edu.sa

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**Abstract:** In the pursuit of comprehensive education, the symbiotic relationship between 21st-century skills and STEM is crucial. These two domains work hand in hand to equip students with the knowledge and abilities required to thrive as productive and technically literate citizens in the future. This study assessed the impact of an integrated STEM education program on students' 21st-century skills using Project-Oriented Problem-Based Learning (PoPBL) as the core pedagogical approach. A one-group quasi-experimental design and survey methodology were employed to evaluate students' skills before and after participating in the program. The findings showed a significant increase in students' overall 21st-century skills, with high productivity skills notably improving from moderate to high proficiency. These results provide compelling evidence that PoPBL in STEM education effectively enhances students' skills by immersing them in authentic, real-life problem-solving experiences through project work. The study emphasizes the value of integrating PoPBL into STEM education to enhance critical skills such as problem-solving, creative thinking, collaboration, and effective communication. By engaging in practical, project-based activities, students not only apply their knowledge but also develop competencies to address complex challenges in their future endeavors.

**Keywords:** STEM education, Project-Oriented Problem-Based Learning, 21st-century skills, Literacy in the digital age, High productivity

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### INTRODUCTION

STEM education is a contemporary educational approach that encompasses the integration and synthesis of knowledge and skills in the fields of science, technology, engineering, and mathematics. This trend has gained increasing interest due to its aim of simplifying these disciplines, connecting their ideas, and staying abreast of advancements and changes in science, engineering, technology, and mathematics. STEM education also considers the demands of the global job market in the twenty-first century, catering to the workforce needs in these fields. The emphasis on teaching science, technology, engineering, and mathematics represents a significant aspect of educational reform in the present era. This focus is commonly known as the STEM initiative, which was initially introduced in the 1990s by the National Science Foundation (NSF) through the development of curricula and topics in these four areas. Over time, the structure of the STEM initiative has evolved to align with the market demands and interests in STEM fields. Additionally, the initiative has expanded to include other fields such as computer science, information, sociology, economics, politics, and psychology (Breiner et al., 2012). The STEM orientation represents a highly influential and promising trend in science and technology education. It serves as a mission to restructure and enhance the education of science, engineering design, and mathematics. This restructuring aims to align with the demands of the global economy, the requirements of the labor market, and the needs of students in addressing the challenges and issues they encounter in their daily lives (Barcelona, 2014).

STEM Project-Based Learning (STEM PBL) is an instructional approach within STEM education that places emphasis on students' interests and abilities. By tailoring the learning experience to accommodate individual learning styles, STEM PBL facilitates the development of students' communication skills and critical thinking processes. Moreover, it provides students with the necessary motivation to engage with real-world challenges, allowing them the time to construct their own understanding within the learning context. This approach enables students to work at their appropriate levels, fostering positive attitudes towards future learning in STEM education classrooms (Eslami and Garver, 2013).

The Kingdom of Saudi Arabia's dedication to the Kingdom Vision 2030 demonstrates the kingdom's expanding commitment to developing STEM education. This national vision recognizes the value of investing in human capital by offering improved training and supplying individuals with the know-how and abilities needed for potential career opportunities. More than 80% of occupations worldwide are directly related to STEM subjects, according to research studies (AlAli et al., 2023; Ministry of Education, 2017). The Saudi Arabian Ministry of Education founded the National Center for the Development of Science, Technology, Engineering, and Mathematics (STEM) in 2017 in keeping with this pace. Putting the center's plans into action at three different levels is its main goal. The STEM scientific Mawhiba Advanced Program for Science and Math was established first. This program's main goal is to give talented students access to enriched learning experiences that go beyond what is taught in the classroom. The program's objectives are to awaken

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\* Corresponding author

their potential, encourage their investigation of complex science and math ideas, and pique their curiosity. In order to do this, the program meets outside of regular school hours, providing these talented students with an extra period of time to participate in a deeper and more comprehensive learning experience.

The pursuit of a high-income developed nation status involves recognizing the critical importance of a high-quality human resource that possesses the necessary skills to navigate the challenges of the 21st century. To foster the development of a world-class nation, it is essential to cultivate a competitive, knowledgeable, creative, and ethically responsible human resource. This recognition has led to the creation of the enGauge 21st Century Skills model by the North Central Regional Educational Laboratory (NCREL) and Metiri Group (Osman and Marimuthu, 2010). The enGauge model emphasizes four main criteria that are crucial for producing a generation capable of addressing the challenges of the 21st century. These criteria are: Digital Age Literacy: In today's digital era, individuals need to be proficient in using technology, accessing and evaluating information, and utilizing digital tools for communication, collaboration, and problem-solving. Inventive Thinking: Encouraging innovative and creative thinking is essential for individuals to develop new ideas, solve complex problems, think critically, and adapt to evolving circumstances. Effective Communication: The ability to communicate effectively, both orally and in writing, is a vital skill in the 21st century. Individuals need to be able to express their ideas clearly, collaborate with others, and engage in constructive dialogue. High Productivity: The modern world demands individuals who can manage their time effectively, set goals, prioritize tasks, and demonstrate a strong work ethic to achieve desired outcomes. In addition to these four criteria, the enGauge model recognizes the importance of incorporating spiritual norms and values within the Saudi context. This acknowledges the significance of cultural and religious values in shaping individuals' behavior, decision-making, and ethical conduct (Wan Husin et al., 2016; Burkhardt et al., 2003).

Digital age literacy encompasses a range of competencies such as communication, data analysis, model understanding, task management, problem-solving, and ensuring well-being and safety (Wan Husin et al., 2016). It is crucial to develop digital age literacy in students to enable them to effectively utilize technology in modern learning environments. Inventive thinking is another vital skill that involves applying creative and critical thinking to problem-solving through innovative activities. Key elements of inventive thought include managing complexities, self-regulation, curiosity, risk-taking, and high-level thinking (Bravo et al., 2021; Brown, 2018). Effective communication is a skill that needs to be cultivated in individuals in the 21st century, encompassing information delivery, teamwork, interpersonal skills, social responsibility, interactive communication, and communication in various environmental contexts. The integration of information and communication technology (ICT) in communication activities enhances the learning process, facilitating faster information acquisition and supporting overall learning experiences. High productivity is the fourth skill, characterized by a student's ability to generate relevant, high-quality, intellectual, current, and original outputs. This skill also involves task delegation, prioritization, planning, and the production of high-quality work. Finally, spiritual values emphasize the practice of religious knowledge and beliefs, as well as the cultivation of positive attitudes and values (Burkhardt et al., 2003).

The increasing demand for workers with marketable skills, such as problem-solving, critical and innovative thinking, and teamwork proficiency, in the 21st-century workforce has prompted a need for evaluating students beyond their academic achievements. Mastery of 21st-century skills has become essential. Among the student-centered teaching and learning approaches available, Project-Oriented Problem-Based Learning (PoPBL) stands out as a project-centered method. Developed by Aalborg University in Denmark, the PoPBL approach utilizes experiential steps that engage students and establish connections between science education and real-life situations. PoPBL is derived from the Problem-Based Learning (PBL) model and is guided by core principles, including student-centeredness to motivate and engage learners, a focus on the learning process of finding solutions, project-based activities with actionable goals, exemplarity, and the promotion of group work, teamwork, social skills, and communication abilities. By involving students in project-based activities, PoPBL aims to foster critical thinking, active learning, and problem-solving skills while also developing communication skills through group discussions. Implementing PoPBL in STEM programs provides students with valuable opportunities for self-directed learning and enhances their soft skills (Alanazi and Benlaria, 2023; Ibrahim and Halim, 2013; Yasin and Rahman, 2011). Classroom observations highlighted the positive impact of implementing PBL (Problem-Based Learning). PBL activities elevated students' collaboration and problem-solving skills, fostering advancements in their collaborative abilities such as endorsing each other's perspectives, vocalizing thoughts, attentive listening, and engaging in meaningful discussions. Throughout the PBL project, students demonstrated active involvement and efficient collaboration, which significantly contributed to its success (Rehman et al., 2022). In summary, while the findings suggest promising benefits of PoPBL and PBL in promoting student engagement and skill development, further research is needed to validate these claims and address potential limitations in implementation and generalizability.

Certainly! Project-Oriented Problem-Based Learning (PoPBL) is an instructional approach that focuses on student-centered, project-based activities to enhance learning outcomes. Here are some additional details about PoPBL: Student-Centered Approach: PoPBL places students at the center of the learning process. It aims to actively engage students in their own learning by encouraging them to take ownership of their projects and collaborate with their peers. Problem-Based Learning (PBL) Roots: PoPBL is derived from the Problem-Based Learning model, which is a student-centered instructional approach that emphasizes problem-solving and critical thinking skills. In PoPBL, students work on project-based activities that involve identifying and addressing real-world problems or challenges. Experiential Learning: PoPBL incorporates experiential learning, where students engage in hands-on experiences that connect their learning to real-life contexts. By applying knowledge and skills in practical situations, students develop a deeper understanding of the subject matter. Connection to Everyday Life: PoPBL aims to bridge the gap between classroom learning and everyday life. The approach facilitates the connection of scientific concepts and theories to practical applications, making learning more



meaningful and relevant to students. **Emphasis on Collaboration and Communication:** PoPBL promotes collaboration and teamwork among students. Group discussions, problem-solving activities, and project work provide opportunities for students to develop their interpersonal and communication skills while working towards shared goals. **Skills Development:** PoPBL focuses on the development of 21st-century skills, such as critical thinking, problem-solving, creativity, communication, and collaboration. By engaging in project-based activities, students have the opportunity to hone these skills and become better prepared for the demands of the modern workforce. **Self-Directed Learning:** PoPBL encourages self-directed learning, where students take responsibility for their learning process. They identify learning goals, plan their work, and seek resources and guidance as needed, fostering independence and autonomy. **Implementing PoPBL in STEM programs** has shown promise in enhancing students' soft skills, such as communication, teamwork, and critical thinking, while also promoting a deeper understanding of STEM subjects. Overall, PoPBL offers a student-centered and experiential learning approach that integrates problem-solving, collaboration, and real-world application to foster the development of essential skills for the 21st century (Desai et al., 2022; Alwi and Hussin, 2018).

In alignment with STEM education's objective of fostering interdisciplinary thinking, the Project-Oriented Problem-Based Learning (PoPBL) approach is considered a suitable method for STEM education. PoPBL is recognized as an approach that holds the potential to facilitate meaningful learning experiences by connecting teaching to real-life situations, allowing students to directly engage with these situations. It serves as an alternative teaching method that prioritizes project-based learning rather than relying solely on traditional lecture-based instruction. One concerning issue is the students' inability to apply the concepts and skills they have learned in STEM subjects to solve problems both within the field and in everyday life. This lack of application stems from difficulties in comprehending abstract concepts, which consequently hinders their ability to effectively utilize theoretical knowledge in solving STEM-based problems (Maegala et al., 2021; Wan Husin et al., 2016; Rasul et al., 2016). In summary, while PoPBL shows promise as an approach for promoting interdisciplinary thinking and application-oriented learning in STEM education, further research is needed to address implementation challenges, validate its effectiveness, and tailor instructional strategies to meet the diverse needs of students and educators. PoPBL has emerged as a highly favored pedagogical model for structuring teaching methods, offering benefits beyond academic learning by placing significant emphasis on the development of students' personal skills and fostering creativity. As a result, PoPBL holds immense potential in aligning STEM-based education with the demands of the 21st-century generation. This is achieved through PoPBL's systematic approach, which involves the analysis of research problems and the subsequent design and execution of projects aimed at solving these problems. This process is vital as it establishes a strong STEM foundation for students, equipping them to navigate career challenges and thrive in the 21st century (Eliyawati et al., 2020; Schmidt et al., 2011).

Recent research has demonstrated that the PoPBL approach has the potential to enhance students' interest in science. By making science subjects more accessible and facilitating easier learning, PoPBL fosters students' sense of the importance of science, ultimately increasing their interest in the field (Eliyawati et al., 2020). Furthermore, the PoPBL approach has been found to be effective in generating new knowledge and addressing real-world issues, such as the low percentage of recycling practices on campus, by integrating these topics into the curriculum (Alwi and Hussin, 2018). Empirical evidence also supports the notion that the PoPBL approach contributes to students' academic achievements. Studies have shown that students who engage in PoPBL activities exhibit high levels of achievement and motivation in their learning processes. Moreover, through teamwork, PoPBL enhances students' interpersonal skills, including effective communication and collaborative planning. An investigation conducted among students in the Faculty of Electrical and Electronics explored the application of the PoPBL approach. The findings indicated that implementing PoPBL in the teaching and learning processes improved students' ability to analyze and create analog circuits using various types of transistors and diodes (Diana and Sukma, 2021; Fadzilah et al., 2016). In summary, while the findings suggest that PoPBL holds promise for enhancing students' interest, academic achievement, and interpersonal skills, further research is needed to address limitations, validate findings across diverse contexts, and explore the long-term effects of PoPBL on student learning and development.

In their 2024 study, Rizki and Suprpto explored the implementation and effectiveness of the POPBL model in the SR-STEM project for enhancing critical thinking skills in renewable energy materials. Their findings indicated high feasibility of the model, effective improvement in critical thinking skills, and a positive correlation with student achievement, perceived control, and affective perception. The research underscores the importance of innovative learning approaches to promote critical thinking in renewable energy education and emphasizes the need to consider factors influencing lesson implementation for sustainable development. In their 2022 study, Smith et al. aim to establish principles for supporting a PBL model of STEM education in schools, drawing from literature insights and expert focus groups of PBL professionals. The research identifies four key principles: flexible knowledge, skills, and capabilities; active and strategic metacognitive reasoning; collaboration driven by intrinsic motivation; and real and rich contextualized problems. The findings offer evidence-informed guidance for educators contemplating the adoption of PBL in school-based STEM education. The research by Stehle and Peters-Burton (2022) investigates the effectiveness of inclusive STEM high schools in developing 21st-century skills in students. Analyzing data from seven exemplary schools, the study examines student work samples and teacher lesson plans. Out of 67 collected lesson plans, 50 included instruction on 21st-century skills, mostly at introductory levels. Few plans addressed multiple skills or higher skill levels. Notably, plans for grades 11 and 12 tended to emphasize higher skill levels. Longer-duration plans were associated with increased skill levels. The findings highlight the potential of inclusive STEM high schools in nurturing 21st-century skills but emphasize the need for enhanced teacher training to improve skill instruction. In summary, while these studies provide valuable contributions to the literature on STEM education and skill development, they also highlight the need for continued research and improvement in educational practices.

Addressing limitations such as instructional gaps, enhancing teacher training, and adopting rigorous research methodologies can further enhance the effectiveness of educational models in promoting critical thinking and 21st-century skills among students. With the aim of promoting interest and engagement in STEM-related careers, extracurricular programs encompassing the domains of Science, Technology, Engineering, and Mathematics (STEM) have emerged as a favorable approach. These programs, conducted outside regular school hours, provide an alternative avenue for advancing STEM education. Additionally, the integration of STEM subjects within the educational framework stimulates students' cognitive abilities, fostering creative, critical, and innovative thinking, and contributing to technological advancements. STEM education involves exploring the teaching and learning processes that connect two or more STEM components or bridge STEM with other fields of knowledge. It essentially entails integrating technology and engineering design concepts into the teaching and learning of science and mathematics (Altoum, 2021; Han et al., 2016).

The aim of the STEM program investigated in this study is to boost students' engagement in Science, Technology, Engineering, and Mathematics (STEM) fields and equip them with the essential skills for success in the 21st century. The program adopts a multidisciplinary approach and places emphasis on active learning through inquiry, the application of 21st-century skills, and exposure to careers in contemporary science and technology domains. The study is grounded in the Constructivism learning theories, which encompass five phases: orientation, idea generation, idea restructuring, idea application, and reviewing. During the idea application phase, the study incorporates the theory of Constructionism, particularly in practical activities involving problem-solving in the Metaverse world. According to Constructionism, the effective generation of new ideas occurs when participants engage in the design processes of artifacts. The theory highlights participants' involvement in artifact designing activities throughout the learning journey. In the artifact designing process, participants employ the TMI model of the engineering design process (Think, Make, and Improve).

The application of this process unfolds through three core stages: ideation (T), making (M), and improvement (I). In the ideation phase, participants are presented with authentic situations or problems that require resolution. They engage in group discussions, collaboratively working to define the problem, generate suggestions, and formulate plans. Facilitators provide continuous support to ensure the successful completion of this phase. Moving onto the making phase, participants actively construct, create, experiment, and address both the initial problem and any additional challenges encountered during the artifact design process. Once the technical aspects are finalized, testing is conducted to identify and address potential issues. Lastly, the final improvement phase involves participants enhancing the artifact they have constructed. They engage in testing, rebuilding, and implementing improvements to address emerging issues or develop a superior artifact in line with established guidelines (Fajrina et al., 2020; Rasul et al., 2016).

The objectives of science education in Saudi Arabia encompass the development of globally competitive human resources and the advancement of science and technology civilization. This entails equipping students with scientific knowledge and technological skills that enable them to contribute to society and excel on an international scale. However, a significant challenge lies in the declining interest of Saudi students towards science, which hampers the realization of these objectives.

The aim of this study was to evaluate the impact of implementing Problem-Oriented Project-Based Learning (PO-PBL) within a Science, Technology, Engineering, and Mathematics (STEM) education program, particularly focusing on the development of 21st-century skills among students. To address this objective, a one-group quasi-experimental pre- and post-test design was utilized to investigate the research questions posed in this study:

1. Did the PO-PBL learning program result in statistically significant changes in the skills of 21st-century students?
2. Can the implementation of PO-PBL enhance students' 21st-century skills?

## METHOD

Experiential learning, also known as "learning by doing," is an effective approach for helping students comprehend abstract content more effectively. One method that promotes this approach is Problem-Oriented Project-Based Learning (PoPBL). Through project work that emphasizes artifact creation, students engage in solving real-world problems based on authentic and practical experiences. The success of the project work relies on collaborative teamwork among students and facilitation by the teacher. The integration of PoPBL with STEM disciplines is a novel approach in the learning environment. The implemented program combines PoPBL and STEM education, offering project-based and multidisciplinary activities that foster enjoyable and student-centered learning. The program's primary objectives include the development of 21st-century skills, higher-order thinking, and research abilities. To facilitate participation, the program introduced four distinct module units to the students: Energy, Urban Infrastructure, Transportation, and Wireless Communication as shown in Figure 1.

### 1. Population and Sampling

The study population consisted of intellectually gifted students who were enrolled in Mawhiba, a program in Saudi Arabia. A total of 115 high school students from public and private schools participated in this research. These students demonstrated exceptional performance on the Mawhiba test in both science and mathematics subjects and had also attended summer programs that provided STEM support. Further, Mawhiba Advanced Program for Science and Math.

### 2. Study tools

This study utilized two assessment tools: students' interest in science, technology, engineering, and mathematics (STEM), and 21st-century skills. Both tools employed a Likert scale with five levels of agreement (1=strongly disagree, 5=strongly agree).

The first tool, focusing on students' interest in STEM, utilized a questionnaire adapted from the work of Tyler-Wood, Knezek, and Christensen (2010) and modified to suit the Saudi context. This questionnaire encompassed three dimensions:

the perception of a supportive environment for pursuing a career in STEM (4 items), interest in pursuing educational opportunities leading to a STEM career (5 items), and the perceived significance of a career in STEM (3 items). The final version of the questionnaire comprised 12 items. The second tool centered on assessing 21st-century skills. The questionnaire was developed by synthesizing insights from relevant prior studies, taking into account various components of 21st-century skills (Van Laar et al., 2020; Chu et al., 2017; Rasul et al., 2016; Arsad et al., 2011). These skills encompassed five dimensions: literacy in the digital age (7 items), innovative thinking (12 items), effective communication (8 items), high productivity (8 items), and spiritual values (5 items). The final version of the questionnaire comprised 40 items.

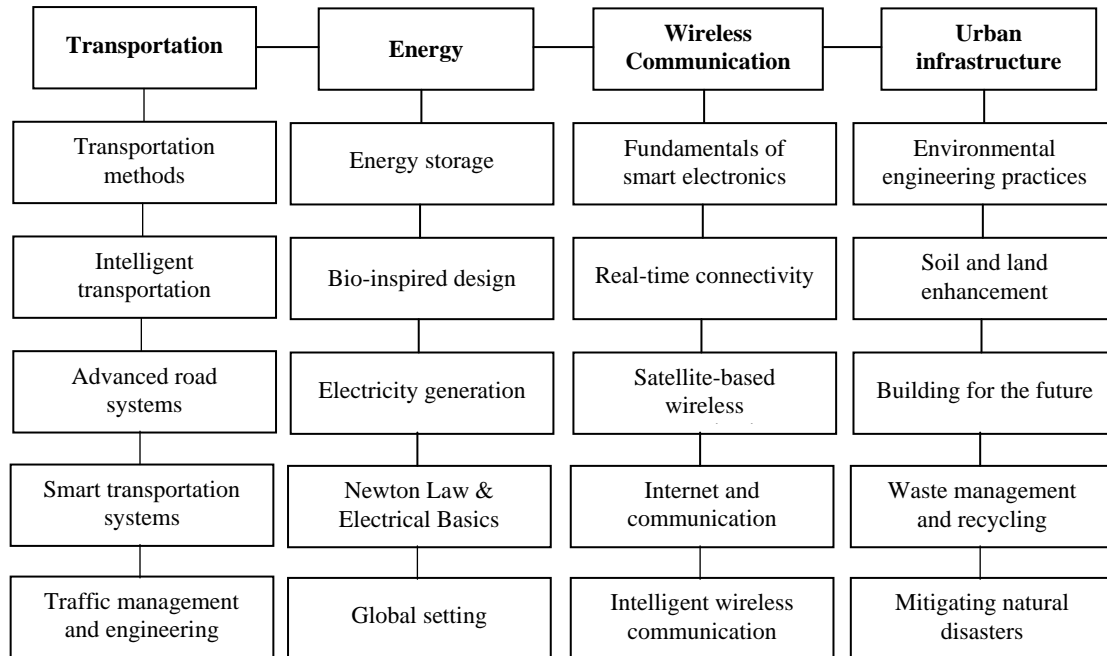


Figure 1. The units of intervention and modules

## 2.1. The validation of the reliability and validity of the scales.

The assessment tools underwent an initial evaluation conducted by a committee of expert judges consisting of esteemed faculty members at various Saudi universities. These faculty members held the rank of professor and possessed specialized knowledge in areas such as mathematics education, measurement and evaluation, and educational technology. The researchers received valuable feedback, comments, and suggestions from the committee, which were given careful consideration. Following this, the wording of the questions underwent a comprehensive review, and alternative options were thoughtfully assessed. Essential modifications were implemented to the scales to guarantee their accuracy and suitability.

After that, a pilot study was conducted to assess the validity and reliability of the assessment instruments using a sample of twenty students. To prove the measurement tool's construct validity, a number of metrics were looked at, including Composite Reliability and Macdonald's Omega. The study also evaluated discriminant and convergent validity. Macdonald's Omega and Composite Reliability (CR) values vary from 0.84 to 0.94 and 0.88 to 0.95, respectively, according to the results, which are shown in Table 1. These numbers are higher than the suggested cutoff point ( $>0.7$ ), suggesting that the scales have a high degree of internal consistency. Additionally, the average variance extracted (AVE) values are above than the 50% minimum requirement, ranging from 0.682 to 0.801. Moreover, the square root of the AVE, or discriminant validity coefficients, need to be greater than the intercorrelations among the latent variables or factors.

Table 1. Indicators and coefficients used to assess construct validity

Scale	Constructs	Items	Macdonalds Omega	CR	AVE	$\sqrt{AVE}$
Students' interest in STEM	Perception of a supportive environment for pursuing a career in STEM.	4	0.87	0.88	0.68	0.82
	Interest in pursuing educational opportunities leading to a STEM career.	5	0.88	0.87	0.77	0.88
	Perceived significance of a career in STEM.	3	0.87	0.88	0.80	0.89
21st-century skills	Literacy in the digital age.	7	0.84	0.85	0.73	0.85
	Innovative thinking	12	0.91	0.92	0.74	0.86
	Effective communication	8	0.89	0.90	0.79	0.89
	High productivity	8	0.95	0.95	0.73	0.85
	Spiritual values	5	0.85	0.86	0.77	0.88

It is clear from a comparison with the previous column that this criterion is satisfied because the loading factor values are higher than the required minimum. These results validate the scales' validity and reliability (AlAli, 2020).

Confirmatory factor analysis (CFA) was performed using statistical programs like Amos and SPSS in order to demonstrate factor validity. CFA, a component of structural equation modeling (SEM), examines the connections between latent components in order to find underlying patterns in the data. In several phases, such as the creation of measuring instruments, assessment of construct validity, and examination of methodological impacts, this statistical methodology is essential. Confirmation factor analysis (CFA) is a crucial step in the instrument development process because it confirms the primary dimensions and factor loadings incorporated in the measuring tool as well as its latent structure. In light of this, CFA is a crucial analytical method that greatly enhances other facets of psychometric evaluation (AlAli and Saleh, 2022; AlAli and Al-Barakat, 2022). The study sample was given the final version of the questionnaire to guarantee factorial construct validity. The alignment of the scale items with their corresponding dimensions was evaluated using confirmatory factor analysis (CFA). Examining the loading values of the scale items on their respective dimensions was imperative, as illustrated in Figure 2. It was determined that products with loading factors less than 0.40 ought not to be approved (AlAli and Abunasser, 2022). The results demonstrate that all items exhibit loading factors greater than 0.40, satisfying the established criterion.

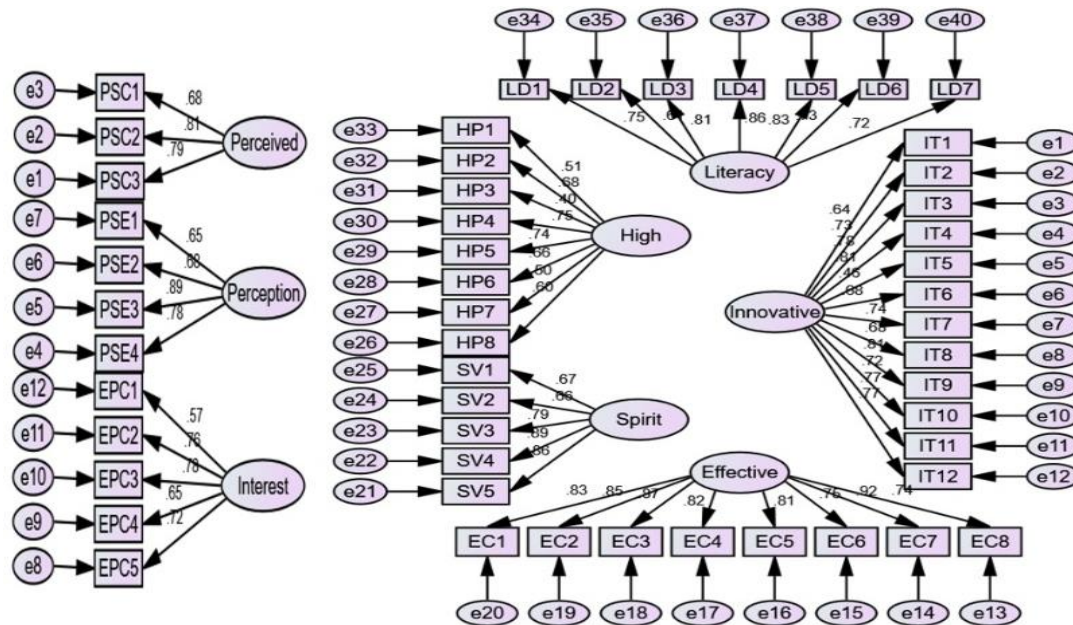


Figure 2. The findings from the confirmatory factor analysis to determine the association between the items in the questionnaire and their respective dimensions, as well as the extent of their loading

## RESULTS

In the study, the researchers aimed to examine the effects of the Problem-based Project-Based Learning (PoPBL) approach in science, technology, engineering, and mathematics (STEM) programs on students' 21st-century skills. To measure these skills, pretests and posttests were conducted. The pretests were administered before the implementation of the PoPBL approach, while the posttests were administered after the completion of the intervention. The paired sample t-test was used to compare the average scores of the pretests with the average scores of the posttests.

This statistical test allowed the researchers to determine if there were significant differences in the students' skills before and after the intervention. The assessment of 21st-century skills focused on five dimensions: literacy in the digital age, innovative thinking, effective communication, high productivity, and spiritual values. These dimensions encompassed various aspects of skills that are crucial in the 21st-century learning environment.

Table 2. The results of the comparison between the average pre- and post-test scores for all dimensions tested to measure students' skills in the twenty-first century

variable	Test	N	Mean	Std. Deviation	T-Value	Sig.	Statistical significance
Literacy in the digital age.	Pre-test	115	3.66	0.52	3.35	0.02	Statistically significant
	Post-test	115	3.80	0.59			
Innovative thinking	Pre-test	115	3.90	0.52	1.67	0.11	Not Statistically significant
	Post-test	115	3.94	0.71			
Effective communication	Pre-test	115	3.98	0.53	1.98	0.06	Not Statistically significant
	Post-test	115	4.06	0.69			
High productivity	Pre-test	115	3.74	0.51	3.54	0.02	Statistically significant
	Post-test	115	4.01	0.59			
Spiritual values	Pre-test	115	4.43	0.52	1.16	0.21	Not Statistically significant
	Post-test	115	4.41	0.62			
Overall Degree	Pre-test	115	3.93	0.45	3.07	0.03	Statistically significant
	Post-test	115	4.04	0.56			

Table 2 provided a comprehensive overview of the comparison between the average pretest and posttest scores for each aspect measured within the 21st-century skills framework. The table also included the average values of the scores and the standard deviation (SD) for both the pretests and posttests. This information offered insights into the central tendency and variability of the scores within each dimension of 21st-century skills.

The data presented in Table 2 indicates a noteworthy improvement in the average scores across all dimensions of twenty-first century skills, except for spiritual values, which experienced a minor decline of 0.039. However, this decrease was not statistically significant ( $t(115) = 1.16$ ). On the whole, the findings demonstrate that students exhibited higher average scores in 21st century skills after their participation in the Mawhiba Advanced Program for Science and Math, as indicated by a significant increase ( $t(115) = 3.07$ ). Further analysis revealed significant differences in specific dimensions of 21st century skills. Notably, there was a significant improvement in literacy in the digital age ( $t(115) = 3.35$ ) and high productivity ( $t(115) = 3.54$ ). However, no significant differences were observed in the dimensions of innovative thinking ( $t(115) = 1.67$ ) and effective communication ( $t(115) = 1.98$ ). A significant proportion of students exhibited a strong proficiency in 21st-century skills, indicating the program's effectiveness.

Subsequently, there was an observed increase of 4.7% in the number of students demonstrating a high level of competency in 21st-century skills following their participation. Table 3 presents a detailed analysis of the distribution of students' proficiency in 21st century skills, categorized into three distinct stages: low, medium, and high. The table provides comprehensive insights into the percentages of students falling into each proficiency stage, thereby offering a comprehensive understanding of their overall skill levels in relation to the 21st century skills framework.

Table 3. Distribution of Gifted Students' Proficiency Percentage Based on 21st Century Skills

		Lowest	Moderate	High
Gifted Students' Proficiency Percentage Based on 21st Century Skills	Pre-test	0	15.5	84.5
	Post-test	0	7.4	92.6

## DISCUSSION

Enhancing 21st Century Skills through the Mawhiba Advanced Program for Science and Math: Analysis and Teaching Approach, where the acquisition of essential 21st century skills is paramount for students' development. This study conducted an analysis to evaluate the impact of the Mawhiba Advanced Program for Science and Math on students' proficiency in these skills, with the exception of Spiritual Values. The findings indicate an overall increase in the levels of 21st century skills following students' participation in the program.

Among the identified skills, High Productivity demonstrated the highest improvement, with a notable mean score difference of 0.27 between pre- and post-tests. This was closely followed by Digital Age Literacy (0.14), 21st Century Skills (0.11), Effective Communication (0.08), and Innovative Thinking (0.04). The Mawhiba Advanced Program for Science and Math employed a teaching and learning approach centered around Problem - and Project-Based Learning (PoPBL). This approach fostered hands-on, minds-on activities that encouraged students to identify and solve real-world problems. The research findings underscore the positive impact of this approach on nurturing inventive thinking among students. Collaborative group activities prompted students to collectively devise solutions by drawing upon their individual experiences, fostering exploration and connections between problem contexts and their own experiences. Additionally, students were tasked with designing novel artifacts, which further stimulated their inventiveness and consequently had a positive effect on High Productivity.

These findings align with previous research (Hilal, 2021; Rasul et al., 2016; Wan Husin et al., 2016; Ibrahim and Halim, 2013) that highlights the efficacy of PoPBL in yielding significant academic achievements among students. The Advanced Programs for Science and Math's emphasis on this approach has proven instrumental in enhancing students' 21st century skills and fostering a culture of inventive thought (Hacioglu, 2021; Fajrina et al., 2020).

Elevating Digital Era Literacy and Exploring Spiritual Values in the Mawhiba Advanced Program for Science and Math, where the research findings reveal a significant improvement in students' Digital Era Literacy Skill following their participation in the Mawhiba Advanced Program for Science and Math. The program incorporated the use of the internet as a valuable resource during teaching and learning activities, enabling students to access additional information to enhance their projects and designs. This application of Problem- and Project-Based Learning (PoPBL) resulted in a high and commendable level of Digital Era Literacy Skill among students who attended the program (Muhammad et al., 2020; Wan Husin et al., 2016).

However, the results of the study show that after students participated in the Mawhiba Advanced Program for Science and Math, the value of Spiritual Values decreased (-0.039). This decline emphasizes the need for more research to create programs in the future that strengthen and reaffirm spiritual beliefs. To guarantee that students demonstrate not only creativity, effective communication, digital literacy, and high productivity, but also the essential spiritual values needed for the betterment of humanity, it is imperative to improve the integration of spiritual values into the teaching and learning processes.

Furthermore, neither before nor after the program, any student was at the lowest competence level, according to a review of student percentages based on 21st century competencies. Notably, pupils who took part in the Mawhiba Advanced Program for Science and Math saw a noteworthy overall gain in their level of 21st century skills, with the highest scale seeing an astounding increase of 4.9%. These results confirm that the PoPBL teaching and learning approach used in the program is appropriate and effective in piquing students' attention and ultimately improving their knowledge of STEM-based education. Overall, the study's conclusions demonstrate how well PoPBL works to improve students' 21st century skills, especially when used in STEM programs (Wan Husin et al., 2016; Rasul et al., 2016). With its emphasis on digital era literacy and the necessity

for additional study of spiritual values, the Mawhiba Advanced Program for Science and Math is a testament to the program's dedication to developing well-rounded students who excel in vital competencies for success in the contemporary day.

## CONCLUSION

Empowering 21st Century Skills through PoPBL in the Mawhiba Advanced Program for Science and Math, where based on the extensive research findings, it can be confidently concluded that the application of the Problem- and Project-Based Learning (PoPBL) approach in teaching and learning processes, as exemplified in the Mawhiba Advanced Program for Science and Math, effectively enhances the levels of five crucial 21st century skill elements. These elements include Digital Age Literacy, Inventive Thinking, Effective Communication, High Productivity, and Spiritual Values.

Moreover, the collaborative nature of PoPBL as a teaching strategy proves to be particularly effective in improving communication skills. By engaging students in group activities, the program fosters the development of positive attitudes and essential interpersonal skills. These include effective interaction during project presentations, teamwork, perseverance, and creative thinking. Such a teaching model and principle are of utmost importance in today's educational landscape, where students are expected to be active and creative, poised to confront the challenges of the 21st century.

Hence, it is imperative to ensure that teaching and learning processes remain relevant and coherent with the demands of the modern era. The Mawhiba Advanced Program for Science and Math, with its integration of STEM education, embodies a forward-thinking, flexible, and dynamic approach. This program effectively nurtures a human resource pool that is not only creative and innovative but also adept at mastering the essential 21st century skills. Furthermore, it equips individuals with the ability to strategically plan for the future and make informed choices in the face of globalization and the rapid influx of information. In summary, the Mawhiba Advanced Program for Science and Math, with its PoPBL pedagogy, plays a pivotal role in empowering students with the necessary skills and competencies to thrive in the 21st century. By embracing this program, educational institutions can cultivate ingenious and forward-thinking individuals capable of navigating the complexities of our rapidly evolving world.

## Limitations

Limitations of this study include the exclusive focus on intellectually gifted students enrolled in the Mawhiba program in Saudi Arabia, potentially limiting the generalizability of the findings. Additionally, the self-selecting nature of the sample, comprising students with exceptional performance on the Mawhiba test and participation in STEM summer programs, may introduce bias. The reliance on Likert scale questionnaires for data collection could be susceptible to social desirability bias, affecting the accuracy of responses. Furthermore, the adaptation of the questionnaires from prior studies may not fully capture the nuances of the Saudi context, potentially compromising the validity and reliability of the instruments. Lastly, the limited scope of the questionnaire on 21st-century skills, focusing on specific dimensions, may overlook other critical competencies essential for students' success in the modern workforce.

## Recommendations and future directions

Based on the findings of this study, several recommendations and future directions can be suggested to further enhance the integration of Project-Oriented Problem-Based Learning (PoPBL) in STEM education and promote the development of 21st century skills among students: Provide comprehensive professional development opportunities for teachers to familiarize them with the principles and methodologies of PoPBL. This will help them effectively implement the approach in their classrooms and facilitate student engagement in authentic, project-based learning experiences. Curriculum Design: Integrate PoPBL into the curriculum design process, ensuring that it aligns with the learning objectives and standards of STEM education. This can involve mapping out specific projects and problem-solving tasks that allow students to apply their knowledge and skills in meaningful ways. Collaboration and Partnerships: Encourage collaboration and partnerships between educational institutions, industry professionals, and community organizations. This can provide students with opportunities to work on real-world projects, gaining exposure to authentic challenges and fostering connections between classroom learning and practical application.

Technology Integration: Explore the integration of technology tools and resources to enhance the implementation of PoPBL. This can include utilizing online platforms, virtual simulations, and digital resources that support collaborative project work and facilitate the acquisition of digital literacy skills. Assessment Strategies: Develop comprehensive assessment strategies that align with the objectives of PoPBL and the development of 21st century skills. Consider incorporating authentic assessment methods, such as portfolios, presentations, and real-world application of knowledge, to evaluate students' abilities to apply their skills in practical contexts. Research and Evaluation: Conduct further research and evaluation to gather additional evidence on the effectiveness of PoPBL in enhancing students' 21st century skills. This can involve longitudinal studies, comparative analyses, and exploring the impact of PoPBL on various student populations. Scaling and Sustainability: Explore strategies for scaling up the implementation of PoPBL in STEM education at a broader level. This can involve establishing frameworks, guidelines, and support systems to ensure the sustainability and widespread adoption of PoPBL in educational institutions.

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## GIS-BASED ESTIMATION OF SHORELINE CHANGE AT THE OLIE PIER HARBOR HERITAGE SITE, MANGGAR, EAST BELITUNG, INDONESIA

**Anninda SABINA** 

Department of Marine Science and Technology, Faculty of Fisheries and Marine Sciences, IPB University  
(Bogor Agricultural University), Bogor, Indonesia, e-mail: sabinaanninda@gmail.com

**YULIUS\*** 

Research Center for Conservation of Marine and Inland Water Resources, National Research and Innovation Agency,  
Cibinong, Indonesia, e-mail: yuli058@brin.go.id

**Syamsul B. AGUS** 

Department of Marine Science and Technology, Faculty of Fisheries and Marine Sciences, IPB University  
(Bogor Agricultural University), Bogor, Indonesia, e-mail: Sba\_cacul@apps.ipb.ac.id

**Hadiwijaya L. SALIM** 

Research Center for Conservation of Marine and Inland Water Resources, National Research and Innovation Agency,  
Cibinong, Indonesia, e-mail: hadi026@brin.go.id

**Ira DILLENIA** 

Research Center for Conservation of Marine and Inland Water Resources, National Research and Innovation Agency,  
Cibinong, Indonesia, e-mail: irad001@brin.go.id

**Taslim ARIFIN** 

Research Center for Conservation of Marine and Inland Water Resources, National Research and Innovation Agency,  
Cibinong, Indonesia, e-mail: tasl003@brin.go.id

**Joko PRIHANTONO** 

Research Center for Conservation of Marine and Inland Water Resources, National Research and Innovation Agency,  
Cibinong, Indonesia, e-mail: joko.prihantono@brin.go.id

**Dini PURBANI** 

Research Center for Conservation of Marine and Inland Water Resources, National Research and Innovation Agency,  
Cibinong, Indonesia, e-mail: dini017@brin.go.id

**Aida HERIATI** 

Research Center for Conservation of Marine and Inland Water Resources, National Research and Innovation Agency,  
Cibinong, Indonesia, e-mail: aida002@brin.go.id

**Muhammad RAMDHAN** 

Research Center for Geoinformatics, National Research and Innovation Agency, Bandung, Indonesia, e-mail: muha307@brin.go.id

**Siti Hajar SURYAWATI** 

Research Center for Behavioral and Circular Economics, National Research and Innovation Agency, Jakarta, Indonesia, e-mail: siti102@brin.go.id

**Ary WAHYONO** 

Research Center for Society and Culture, National Research and Innovation Agency, Jakarta, Indonesia, e-mail: ariw001@brin.go.id

**Ulung Jantama WISHA** 

Research Center for Oceanography, National Research and Innovation Agency, Jakarta, Indonesia; Department  
of Physics and Earth Sciences, University of the Ryukyus, Nakagami District, Okinawa, Japan, e-mail: ulun002@brin.go.id

**ZULFIANDI** 

Department of Culture and Tourism of East Belitung Regency, Indonesia, e-mail: zulfiandibelitungtimur@gmail.com

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**Abstract:** The coastal area is a dynamic region influenced by continuous interactions between land and the sea. Changes in

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\* Corresponding author

coastal compositions are closely related to shoreline instability. This study analyzes coastline changes at the Olie Pier Heritage Site, Manggar, East Belitung, Indonesia, using statistical-based techniques EPR (End Point Rate) and NSM (Net Shoreline Movement) 2015 to 2023. The DSAS (Digital Shoreline Analysis System) was employed to calculate the shoreline alterations in every transect with a distance of about 100 m. The study area is generally predominated by a moderate abrasion. The EPR and NSM values indicate a potential for future shoreline changes, considering the present status and future estimations of oceanographic parameters (currents, wind, waves, tides). The highest erosion is identified in the Lalang Village with a shoreline retreat (NSM) of -65.38 m and a retreat rate (EPR) of 8.78 m/year. On the other hand, the highest accretion is observed in the Baru Village with a NSM of -56.68 m and EPR of 7.61 m/year. The implications of these shoreline changes on the heritage site and the coastal environment contribute to the management of coastal areas amidst global environmental challenges. This study provides valuable insights into conservation and sustainable development efforts in the coastal region of East Belitung.

**Keywords:** End Point Rate (EPR), Digital Shoreline Analysis System (DSAS), Net Shoreline Movement (NSM), Olie Pier site, East Belitung

\* \* \* \* \*

## INTRODUCTION

The coast has a shoreline formed by the meeting of land and sea. Coastal areas are the most vulnerable to changes, both in the short and long term. This is because the coastal areas are influenced by the continuous interaction of the land and sea, such as the activities of currents and waves generated by the winds and tides (Baig et al., 2020). In this case, the changes in the coastal area are typically associated with the coastline change.

The coastline, the boundary between land and sea, undergoes continuous and dynamic changes over time (Mentaschi et al., 2018). The coastline changes are related to the resilience of coastal conditions, including topographical and geological features and the interaction with waves, tides, and winds. Extreme waves and abrasion are the main threats of coastline change (Opa, 2011). According to the Agency of Meteorology, Climatology, and Geophysics Science (BMKG) of 2010, extreme waves are defined as significant sea waves that reach a wave height greater than 2 meters. Extreme waves are also accompanied by strong winds that can trigger abrasion phenomena. According to Amri et al. (2016), abrasion is the erosion of soil/coast or the depositions of sand hills by the movement of waves, tidal water, wave currents, or water flow. In such cases, the coastal area diminishes as a result of erosion by seawater, leading to a retreat of the shoreline. Indonesia is a vulnerable country that has 5243.76 Km erosion shoreline in year of 1990-2020 (Zhang et al., 2024)

The coastline change is caused by the contributing factor from nature or human activities (anthropogenic). Nature's contribution is influenced by waves, currents, and tides (Permana et al., 2022). Meanwhile, human-related factors, such as human activities that disrupt coastal environment stability, whether intentional or unintentional, contribute to shoreline changes. Coastal area conversion, jetty construction, mangrove deforestation, and other intensive activities conducted in coastal areas can impact the coastline change. Mining can also influence the coastline changes due to excessive extraction of mineral deposits from the earth, causing damage. In some regions in Indonesia, mining is a significant economic driver for communities, as seen in the Bangka Belitung Islands, where tin mining is crucial for improving the local economy and fulfilling their daily needs. It is further supported by Bangka Belitung Islands' potential as Indonesia's largest tin (Sn) producer. This is due to the strategic location of Belitung, which intersected with the Metal Mineralization Belt in western Indonesia. The potential of tin mining has been exploited for centuries and has become one of Indonesia's significant sources of foreign exchange. The Province of Bangka Belitung Islands is located at 104°50' - 109°30' East and 0°50' - 4°10' South, near the Province of South Sumatera. East Belitung is a district within the Bangka Belitung Islands province. Geographically, it is situated between the coordinates of 107°45' - 108°18' East and 02°30' - 03°15' South, with the district capital in Manggar. East Belitung is a significant contributor to Indonesia as it has been a maritime trade route since ancient times. However, the phenomenon has led to the collapse of pine trees and mangrove vegetation due to wave impacts, as seen along the coastline of Manggar areas. Abrasions also cause a decline in the biodiversity of organisms due to the continuously changing environment. Moreover, continuous ocean waves eroding the coastline also result in changes to the shoreline, affecting the damage and the submersion of some land areas and coastal tourist attractions in East Belitung. According to research by Intan (2014), ceramic artifacts from a sunken ship site were found in the waters of Belitung. Additionally, a Dutch heritage site, Oli Pier Dock, sank due to severe abrasion in those waters.

The community in East Belitung relies on the tin mining sector to fulfill their daily needs. The unconventional mining process using simple mechanical tools can potentially damage and pollute the environment significantly. Unconventional tin mining, or Artisanal and Small-Scale Mining (ASM), is increasingly encroaching into coastal areas, affecting changes in coastal topography, making it steeper, and intensifying coastal erosion. Furthermore, dredging activities from the seabed and the continuous conditions of sea waves eroding the coast can change the coastline. In this context, understanding changes in the coastline is crucial for assessing coastal area management plans and conducting hazard analysis resulting from the land and sea interactions in that region. If these conditions are left without preventive measures, coastal erosion will persist, leading to the loss of structures on the mainland due to the continuous influx of seawater. The change in the coastal area can be analyzed using remote sensing technology, specifically through satellite imagery (Arifin et al., 2023). According to Kasim (2012), the advantage of using satellite imagery is the ability to quickly monitor coastline changes and observe a wide study area. Remote sensing technology operates based on the Geographic Information System (GIS) principle, which has unique capabilities in handling spatially referenced data related to Earth's phenomena. The remote sensing technology used in this research is Sentinel-2A Imagery in 2015 and 2023. A Geographic Information System (GIS) is employed to identify

the changes in the coastline at the heritage site of Olie Pier, Manggar, East Belitung, Indonesia. Moreover, the main factors contributing to coastal erosion in this area are also identified, including both natural factors and human activities.

## MATERIALS AND METHODS

### Study Area

East Belitung is a regency within the Province of Bangka Belitung Islands. Geographically, it is located between the coordinates of 2° 30' – 3°15' South and 107°45' – 108°18' East, with the regency capital in Manggar. The research was conducted in some villages: Sukamandi Village in Damar District and Baru Village, Kurnia Jaya Village, Lalang Village, and Padang Village in Manggar District (Figure 1). Belitung Regency is an archipelagic region (85% facing the sea) and arranged of 195 km shoreline. The coastal instability in East Belitung has been occurring for a long time, leading to the uprooting of pine trees and damaging the mangrove vegetation. This issue is frequently reported in the coast of the Manggar region, directly facing the Karimata Strait.

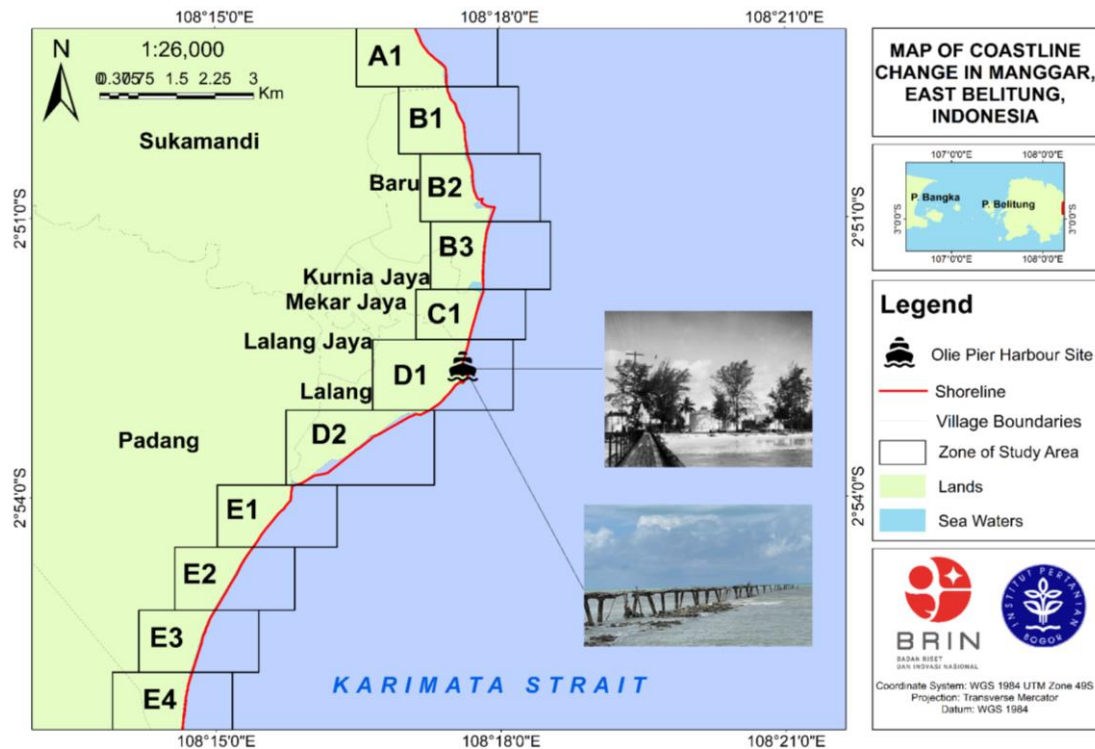


Figure 1. Map of the study area

Table 1. Research materials

Data Type	Data Source	Resolution	Time	Provider
Data GPS Handheld	Field Survey	5 m	2023	BRIN
Sentinel-2A Imagery	National Research and Innovation Agency Indonesia	10 m	2015 and 2023	BRIN
RBI Map	<a href="http://tanahair.indonesia.go.id">tanahair.indonesia.go.id</a>	1:10,000	2019	-
Tides	<a href="https://www.tpxo.net/">https://www.tpxo.net/</a>	0.083°	2015-2023	Oregon State University (OSU).
Winds	<a href="https://cds.climate.copernicus.eu/">https://cds.climate.copernicus.eu/</a>	0.083°	2015-2023	European Centre for Medium-Range Weather Forecasts (ECMWF)
Winds	<a href="https://cds.climate.copernicus.eu/">https://cds.climate.copernicus.eu/</a>	0.083°	2015-2023	European Centre for Medium-Range Weather Forecasts (ECMWF)
Waves	<a href="https://cds.climate.copernicus.eu/">https://cds.climate.copernicus.eu/</a>	0.083°	2015-2023	European Centre for Medium-Range Weather Forecasts (ECMWF)
Currents	<a href="https://data.marine.copernicus.eu/">https://data.marine.copernicus.eu/</a>	0.083°	2015-2023	European Space Agency (ESA) and European Commission

### Data Acquisition

The primary data was coastline marking using GPS (Global Positioning System). The secondary data consists of Sentinel-2A imagery, Indonesian topographical maps with a scale of 1:10,000, and other supporting data such as tides, currents, winds, and waves. The coastline marking was performed using an approach known as Ground Control Point (GCP). The field observation is imperative as the basis to examine and validate the results yielded from the satellite imagery. Meanwhile, the primary analyzed data was derived from Sentinel-2A from 2015 and 2023, considering other oceanographic regimes, such as tides, winds, currents, and waves. Oceanographic supporting data is essential in assessing the coastline alteration. According to Handiani et al. (2022), coastal damage is often influenced by natural factors such as

coastal currents, sediment transport, changes in sea level, and ocean waves. Ocean waves are typically generated by various factors, such as wind, tides, currents, and others. Furthermore, according to Dewi et al. (2020), the main parameters causing changes in the coastline are waves, tidal differences, currents, wind, bathymetry, and coastal morphology, such as slope or topography and lithology (rock composition). Sea waves consist of a series of waves moving towards the coast and changing shape due to wave transformation, leading to coastal abrasion, damaging the coastline, and threatening coastal infrastructure.

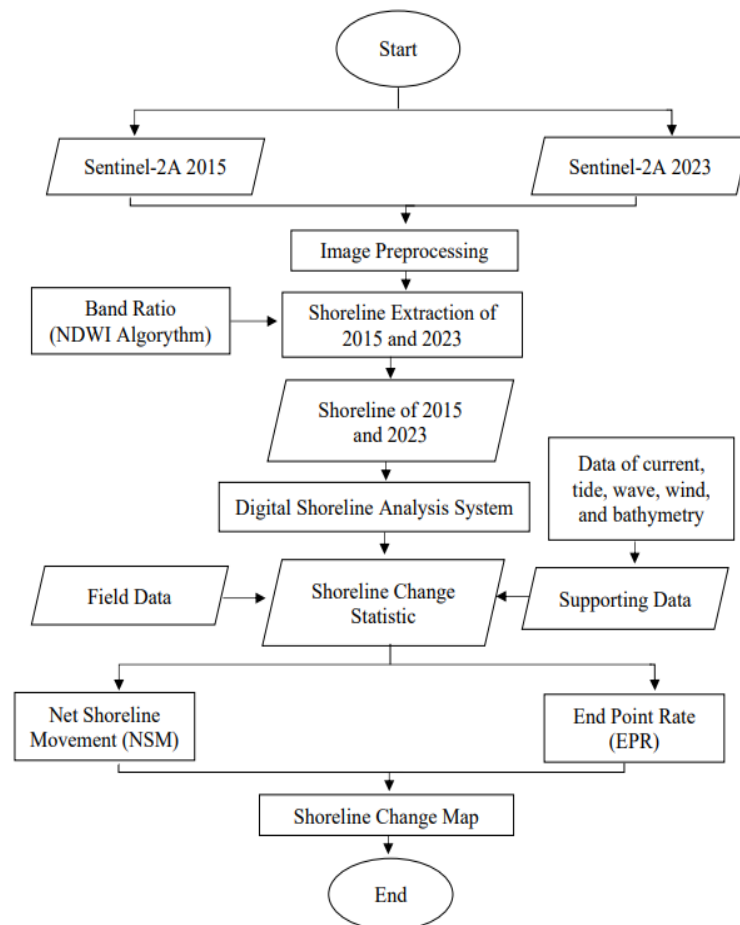


Figure 2. Flow chart of data processing

### Data Processing

The research was conducted in several stages, including field observations, processing Sentinel-2A satellite imagery, and handling supporting data. The procedures are illustrated in Figure 2. Data processing begins with preprocessing, followed by coastline extraction and analysis of coastline changes in 2015 and 2023. Additionally, supporting oceanographic data that influences coastline changes, such as tides, winds, waves, and currents, was processed. The imagery utilized in this study is from Sentinel-2A. The following are the bands from the Sentinel-2A imagery (Table 2).

Table 2. Characteristic of Sentinel-2A image bands used (ESA 2015)

Band	Wavelength (µm)	Spatial Resolution (m)
Band 2 - Blue	0.490	10
Band 3 - Green	0.56	10
Band 4 - Red	0.665	10
Band 8 - NIR	0.842	10

### Preprocessing Image

Preprocessing stage is the phase of preparing images through band combination, image cropping, and image correction. The bands were combined through layer stacking, followed by the cropping stage to narrow down the study area. According to Darmiati et al. (2020), cropping can be done based on the number of pixels, coordinates, or enlargement (zooming) of a specific area. Geometric correction is a step in correcting image distortions caused by spatial distortions of objects, ensuring that the recorded positions of objects match the field coordinates. Image correction includes geometric correction, radiometric correction, and atmospheric correction. According to Ismail (2012), geometric correction is necessary due to disturbances caused by scanning motion discrepancies, resulting in noise in the scanning system, rotational motion, Earth curvature, changes in the height of the sensor carrier, and changes in the sensor carrier's viewing angle to the object. Radiometric correction is performed to improve pixel values that do not correspond to the true spectral reflectance or emission values of

objects. Atmospheric correction aims to reduce the object's reflectance from the total Top of Atmosphere (ToA) radiation after normalizing lighting conditions and eliminating atmospheric effects (Prananta and Kurniadin, 2021). In this study, atmospheric correction was carried out using the Dark Object Subtraction (DOS) method.

#### Shoreline Extraction with NDWI Algorithm

Before applying the DSAS, the shoreline was extracted using the NDWI (Normalized Difference Water Index) method on Sentinel-2A imagery. NDWI is an algorithm for identifying the presence of water bodies because water bodies can absorb wavelengths of visible and infrared light with sufficient intensity (Anggraini et al., 2017). According to Ahmad et al. (2021), NDWI optimizes water reflectance by utilizing the green wavelength and reducing the reflectance from the infrared band on water so that vegetation or land around the coast can utilize the NIR reflectance values. In this context, the NDWI algorithm is employed to obtain the boundary between land and sea, separated from sand and vegetation.

The research by Prayogo et al. (2021) explains that the NDWI method produces water body boundaries with better land object distinction than the Sobel Filter method. Therefore, the NDWI technique can be applied as a threshold value for the boundaries of both features in the infrared band type (Kasim, 2012). Here is the formula of the NDWI algorithm.

$$NDWI = \frac{(Green - NIR)}{(Green + NIR)} \quad (1)$$

The combination of green and NIR bands is employed for land observation and coastal boundary delineation with vegetation, as proposed by Riantiyastika (2022). Furthermore, the NDWI algorithm can be extended to assess the conditions of a water body experiencing erosion or accretion. After obtaining the image results using the NDWI algorithm, a raster to vector format is converted to acquire the coastline boundaries in the study image.

#### Digital Shoreline Analysis System (DSAS)

The analysis of coastline changes in this study was conducted utilizing the Digital Shoreline Analysis System (DSAS) method. This method requires a minimum of three shoreline datasets, namely the baseline serving as the reference line and two shoreline datasets employed as research materials. According to Wawan et al. (2022), the DSAS method offers advantages in discerning the distribution of coastal change phenomena and evaluating the extent of changes along the desired transect. The proximity of the transect utilized directly influences the level of detail in the acquired data.

This study's determination of coastline change distances employed the Net Shoreline Movement (NSM) method. NSM was utilized to compute the distances of coastline changes from the earliest available data to the most recent (Himmelstoss et al., 2018). Specifically, the study considered the 2015 data as the longest coastline change and the 2023 data as the most recent shoreline data. Meanwhile, the baseline used 2019 data because the information base map (RBI Map) was available that year. Then, the NSM method yields two distinct values: positive (+) and negative (-). A positive value signifies the advancement of the coastline in a given coastal area, commonly referred to as accretion. Conversely, a negative value indicates the recession of the coastline, termed abrasion (Prahesti et al., 2021).

Furthermore, the study employed the End Point Rate (EPR) method, a technique aimed at calculating the rate of coastline change (expressed in meters per year). It involves assessing the displacement of a shoreline position over a specific timeframe, as delineated by Baskoro et al. (2018). The EPR method is carried out by dividing the distance between the oldest (2015) and the newest (2023) shorelines. The categories of coastline change rate can be seen in Table 3.

According to Limber et al. (2007) and Achmad et al. (2020), the EPR calculation is as follows:

$$Rse = \frac{X_o}{t} \quad (2)$$

$Rse$  = Rate of shoreline position change (meter/year);

$X_o$  = Distance of shoreline position change (meter);  $t$  = Time span of shoreline position (years)

Table 3. Categories of coastline change rate (Source: Setyandito and Triyanto 2007)

Rate of coastline change (meter/year)	Category
< -10	Severe Abrasion
-9,99 – -5	Heavy Abrasion
-4,99 – -2	Moderate Abrasion
-1,99 – 0	Light Abrasion
0 – 2	Light Accretion
2 – 5	Medium Accretion
5 – 10	Heavy Accretion
> 10	Severe Accretion

## RESULTS AND DISCUSSION

### Research Site Conditions

Belitung Regency has a coastline stretching approximately 195 km. The Belitung region is also archipelagic, with 85% of its sub-district area facing the sea. East Belitung Regency has diverse coastal landscapes. The predominant type of beach in East Belitung includes sandy beaches. The coastal topography is formed by land with elevations ranging from 0 to 20 meters and a gently sloping beach (Cahyani et al., 2012). East Belitung predominantly features a coastline with a gentle slope. Therefore, the oceanographic conditions in East Belitung waters influence the coastal conditions along its shores. Here are the existing coastal conditions in East Belitung (Figure 3).





Figure 3. Beach conditions in (a) Tambak Beach, photo taken on June 19, 2023 (b) Nyiur Melambai Beach, photo taken on June 18, 2023 (c) Serdang Beach, photo taken on June 17, 2023 and (d) Mudong Beach, photo taken on June 18, 2023. (Source: private document-Authors, 2023)

### Tide Analysis

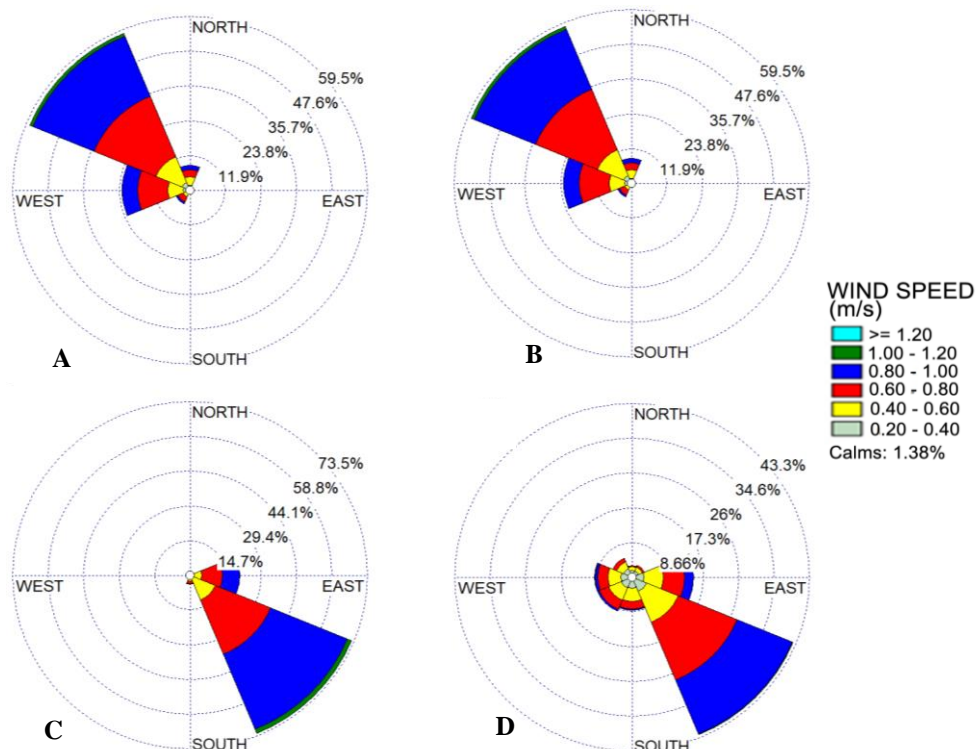
Tides are the periodic rise and fall of the sea surface caused by the gravitational forces of the moon and the sun. Tidal data processing involves using tide values over 30 days, specifically from June 1, 2023, to June 29, 2023. This processing is obtained by comparing tidal prediction models with measurement data at the BIG Belitung station, resulting in the tidal component values occurring in East Belitung (Table 4). Subsequently, the Formzahl number is calculated using harmonic constants obtained from the tide model. The Formzahl number obtained is 3,18 meters. This value indicates that the tides in all segments fall into the diurnal tide type, meaning there is one high tide and one low tide per day (Fadilah et al., 2014).

Table 4. The tidal component in East Belitung

	So	M2	S2	N2	K2	K1	O1	P1	M4	MS4
A (cm)	-1.35	4.94	17.09	3.59	0.39	41.16	29.04	13.58	0.12	0.19
g	-	334.1	345.8	97.1	345.8	24.7	213.2	24.7	101.4	130.4

### Wind Analysis

The speed and direction of wind data in East Belitung are displayed in the wind rose (Figure 4). The West Season (December - February) shows the wind moves from the northwest to the southeast. East Belitung has wind speeds ranging from 0.03 to 10.14 m/s with an average speed of 4.56 m/s. In Transition Season I (March - May), the dominant winds move in the southeast and northwest regions of East Belitung. During Transition Season I, wind speeds range from 0.05 to 9.13 m/s with an average speed of 3.03 m/s. In the East Season (June - August), the wind in the East Belitung region moves from the southeast to the northwest. Wind speeds during the east season in East Belitung range from 0.01 to 11.90 m/s, with an average speed of 5.20 m/s. In Transition Season II (September - November), the wind moves from the southeast to the northwest, but the wind conditions in the northwest region of East Belitung still influence the wind speed. Wind speeds during Transition Season II in East Belitung range from 0.08 to 10.14 m/s, with an average speed of 3.60 m/s





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### Wave Analysis

The direction and height of the wave along the coast of East Belitung Regency are visualized using a wave rose (Figure 6). The wave patterns along this coastal area tend to be consistent each year. The highest waves occurred during the West Season in 2021, reaching a height of 0.7 meters. The lowest waves occurred during the Transitional Season I, with a height of only 0.2 meters. The average wave height over the 5 years is 0.46 meters. Waves generated by winds moving near the coast can erode coastal areas, influencing the shape and slope of the coastline (Hasanudin and Kusmanto 2018). This phenomenon contributes to the advancement or retreat of the coastline (Ginanjari et al., 2021).

During the West Season, the average wave height in the East Belitung region is 0.52 meters. In Transitional Season I, the average wave height in the East Belitung region is 0.3 meters, while in the East Season, the wave height reaches 0.57 meters. Waves moving from deep to shallow waters create wavefronts that bend and move parallel to the coast. The refraction of waves affects the distribution of wave energy (Sadono et al., 2014). Waves are generated by the coastline windbreak, causing longshore currents (Dewi et al., 2020).

### Current Analysis

The spatial distribution of seasonal currents was obtained from the <https://resources.marine.copernicus.eu/> site from 2015 to 2023 (Figure 5). The depiction of these seasonal currents is visualized as a current distribution map. In this case, the current visualization is divided into four seasons, namely the West Season (December - February), Transition Season I (March - May), East Season (June - August), and Transition Season II (September - November). The water current speeds during these four seasons range from 0.008 to 0.554 m/s, with an average current speed of 0.141 m/s.

During the West Season (December - February), surface currents at the research location move southwestward with current speeds ranging from 0.03 to 0.55 m/s. Meanwhile, during the East Season (June - August), currents move northwestward with speeds ranging from 0.02 to 0.24 m/s. The Transition Seasons I (March - May) and II (September - November) are periods of transitioning current directions. The current strength is relatively low during these periods, and the sea is relatively calm. However, the Transition Seasons can result in the occurrence of longshore currents. This phenomenon affects changes in the coastline due to sediment movement, leading to erosion or accretion (Ukkas, 2009).

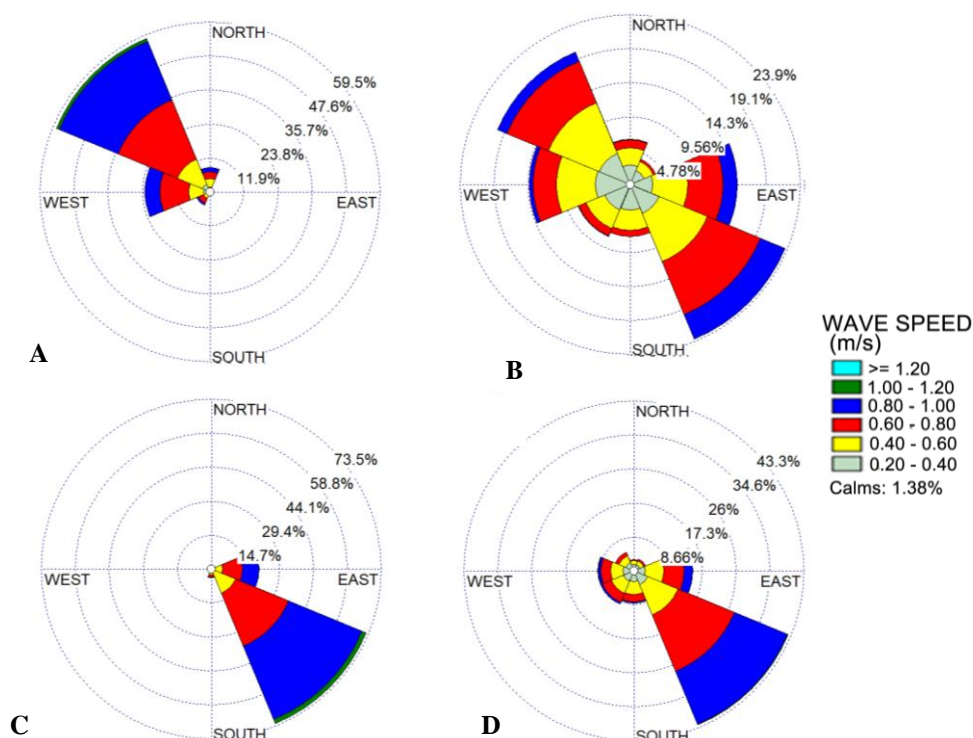


Figure 5. Wave rose of wave direction and speed (A) West Season, (B) Transition Season I, (C) East Season, and (D) Transition Season II. (Source: data processing - Authors, 2023)

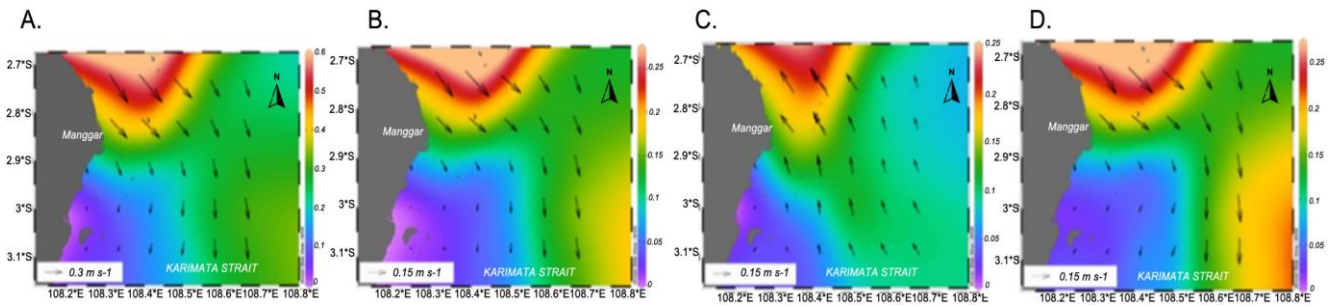


Figure 6. Current direction and speed (A) West Season, (B) Transition Season I, (C) East Season, and (D) Transition Season II, (Source: data processing - Authors, 2023)

### Shoreline Change Analysis

In this research, the analysis of coastline changes is divided into several zones (Figure 7). The dominant phenomenon of coastline change in East Belitung is moderate abrasion. Sub-zone D2 has the highest distance of coastline change experiencing abrasion, with a value of -65.38 meters, while the most significant coastline change experiencing accretion occurs in sub-zone B2, with a value of 56.68 meters. The highest rate of coastline change during erosion occurs in sub-zone D2 with a value of 8.78 meters per year, while the highest rate in accretion phenomena occurs in sub-zone B2 with a value of 7.61 meters per year (Table 5). In this case, there is a significant relationship between the distance of coastline change and its rate. The higher the rate of coastline change, the greater the value of the change.

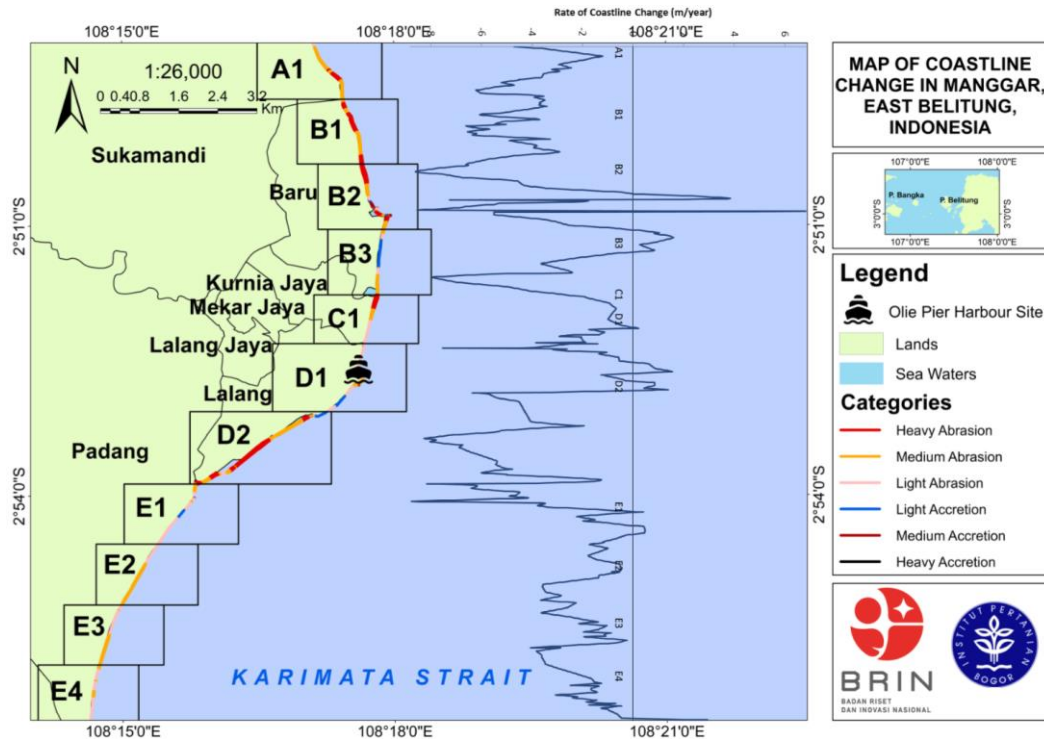


Figure 7. Map of coastline change in Manggar, East Belitung Timur from 2015 - 2023 (Source: data processing - Authors, 2023)

Table 5. Result of coastline change analysis

Zone	Net Shoreline Movement (NSM)			End Point Rate (EPR)			Dominant
	Low	High	Average	Low	High	Average	
A1	-46.33	-8.91	-27.05	-6.22	-1.20	-3.63	Medium Abrasion
B1	-49.33	-21.66	-36.91	-6.62	-2.91	-4.96	Medium Abrasion
B2	-64.09	56.68	-25.93	-8.61	7.61	-3.48	Heavy Abrasion
B3	-59.26	12.01	-20.28	-7.96	1.61	-2.72	Medium Abrasion
C1	-33.55	-5.01	-13.55	-4.5	-0.67	-1.82	Light Abrasion
D1	-56.08	11.71	-7.64	-7.53	1.57	-1.03	Light Abrasion
D2	-65.38	10.41	-34.64	-8.78	1.40	-4.65	Heavy Abrasion
E1	-62.52	3.55	-9.62	-8.40	0.48	-1.29	Light Abrasion
E2	-27.16	-3.66	-17.27	-3.65	-0.49	-2.32	Medium Abrasion
E3	-30.18	-1.86	-17.40	-4.05	-0.25	-2.34	Medium Abrasion
E4	-22.89	21.96	-10.87	-3.07	2.95	-1.45	Light Abrasion

Zone B is the coastal area of Baru Village, Manggar Subdistrict. Zone B is divided into sub-zones: sub-zone B1, B2, and B3. In this study, the furthest accretion occurs in sub-zone B2, which is 56.68 meters, with a rate of 7.61 meters per year. This accretion is because Zone B, specifically Serdang Beach, is located near former tin mining areas. Inactive onshore mining areas can lead to the deposition of sediments carried by rivers around the beach, resulting in land addition towards the sea (Kurniawan et al., 2019). Additionally, Zone B still has the flow of a large river estuary near the downstream of the Manggar River, causing accretion due to high sedimentation. According to Pabintan et al. (2019), accretion generally occurs in the downstream part of the river because sediments downstream will slow down and stop, leading to the accumulation and deposition of sediments causing accretion. As the area moves away from the former mining area, Zone B experiences severe and moderate erosion. This is because the coastal conditions in Zone B, namely Serdang Beach, have a sandy beach type. Waves easily erode the shoreline in coastal areas with sandy and muddy beach types.

Zone D is the coastal area of Lalang Village, Manggar Subdistrict. Zone D is divided into several sub-zones, namely sub-zones D1 and D2. Sub-zone D1 is divided into 172 transects, where the dominant phenomenon is mild erosion. Sub-zone D2 is divided into 317 transects, where severe erosion occurs. The coastal conditions of Lalang Village are characterized by a sandy beach with a narrow shoreline and rarely found river estuaries. According to Pamungkas et al. (2021), waves will more easily erode coastal conditions with sediment composed of sand and mud, resulting in low resilience. In this study, the highest erosion phenomenon occurs in sub-zone D2, with a shoreline retreat distance of 65.38 meters and a retreat rate of 8.78 meters per year. This area also lacks wave breakers, potentially exacerbating coastal erosion. Considering oceanographic factors, such as currents and waves, the dominant direction is from the southeast of East Belitung. Lalang Village has a geomorphological condition that slightly protrudes into the ocean compared to other coastal areas. This continuous exposure causes the currents and waves from the southeast to continuously erode the coastal area of sub-zone D2, as no wave breakers or jetties obstruct them. Therefore, the highest erosion occurs in sub-zone D2. The Olie Pier Cultural Site is one of the remaining pieces of historical evidence on the coast of East Belitung. This Olie Pier site is an old pier located right on the beachfront, which was once used as a docking place for oil-carrying ships.

However, its condition has deteriorated over time, with some parts of the pier only consisting of support posts. In this study, the Olie Pier site, located in sub-zone D1, predominantly experienced mild abrasion. Sub-zone D1 has the furthest abrasion distance of 56.08 meters with a retreat rate of 7.53 meters per year, classifying it as a mild abrasion phenomenon. The Olie Pier site in Lalang Village has a mixed sediment type of fine sand and rocks. Therefore, the changes in the coastline in sub-zone D2 are minimal. According to Nasir et al. (2015), rocky shores generally have low vulnerability because the rocks resist the impact of waves on the shoreline, resulting in minimal abrasion.

## CONCLUSION

The coastal area of Manggar Subdistrict, East Belitung, from 2015 to 2023, experienced changes in its shoreline, both through erosion and accretion. The highest erosion occurred in Lalang Village (sub-zone D2), with a shoreline retreat of 65.38 meters and a retreat rate of 8.78 meters per year. In addition to erosion, the Manggar coast also experienced instances of accretion. The highest accretion occurred in Baru Village (sub-zone B2), with a shoreline advancement of 56.68 meters and an advancement rate of 7.61 meters per year.

The dominance of shoreline changes on the Manggar coast falls under the moderate erosion category. Oceanographic factors such as currents, waves, tides, wind, and bathymetry significantly influence the phenomenon of shoreline changes in Manggar, East Belitung. It is due to the conditions of the waters in East Belitung being in open waters directly adjacent to the Karimata Strait, causing the generated wave energy to impact the increasing wind speed.

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## BUSINESS TRAVEL MOTIVATIONS AND OBJECTIVES OF TRADE FAIRS VISITORS: EXPERIENCE FROM THE TRADE FAIRS IN THESSALONIKI, GREECE

**Dimitris KOURKOURIDIS\*** 

Aristotle University of Thessaloniki, School of Spatial Planning and Development, Thessaloniki, Greece, e-mail: kourkouridis@plandevl.auth.gr

**Ioannis FRANGOPOULOS** 

Aristotle University of Thessaloniki, School of Spatial Planning and Development, Thessaloniki, Greece, e-mail: yfrago@plandevl.auth.gr

**Asimienia SALEPAKI** 

Business and Exhibition Research and Development Institute, Thessaloniki, Greece, e-mail: salepaki@iee.org.gr

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**Abstract:** This research investigates the motivations and objectives of visitor participation in trade fairs in Thessaloniki. In particular, the trend of combining professional goals with the entertainment of visitors is investigated. The aim of the research is to determine whether the inclination to blend economic goals with entertainment is a shared characteristic among attendees of all trade fair events, or if it varies in any manner. Mixed methods research was used: quantitative research (1,066 participants) and in-depth interviews (51 participants). In order to comprehensively understand phenomena and ensure validity, the triangulation approach was used. The results showed that the type of trade fair is related to visitors' participation objectives. Specifically, the reason for visiting the trade fairs addressed to the general public is mainly entertainment, while those of the specialized sectoral trade fairs are mainly business-related. However, even in the sectoral trade fairs there is a significant percentage in several cases that mentions fun-entertainment as an objective. These results are of great research importance, but also of managerial importance, both for the trade fair organizers and for the local tourism development agencies.

**Keywords:** MICE, Trade Fairs, Events, Business Tourism, Bleisure Tourism, Business travelers' objectives, Trade Fair visitors

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### INTRODUCTION

The trade fair sector has a significant economic impact worldwide (UFI, 2022), and although the COVID-19 pandemic has negatively affected the industry to the point of questioning the physical presence at such events with the help of digitization (Süygün, 2021), the post-covid era confirms their irreplaceability. Personal contacts through physical presence are still considered important by event participants (Kostopoulou et al., 2023; UFI, 2023; Müller and Wittmer, 2023). The business tourism market is experiencing substantial expansion and is projected to continue its growth trajectory. Specifically, global business travel reached a value of US\$ 1.1 trillion in 2023. According to IMARC Group (2024), this market is anticipated to reach US\$ 1.9 trillion by 2032, indicating a growth rate of 6.6% from 2024 to 2032.

Trade fair research has traditionally come from the field of management and marketing. However, in recent years studies in the field of business administration, economic geography, sociology and other disciplines have begun to understand and explore the role that trade fairs play in creating and disseminating key flows of knowledge, connecting collective actors, institutions, businesses and geographies in different parts of the world (Bathelt et al., 2014).

Also, trade fairs, which belong to the wider M.I.C.E. (Meetings – Incentives – Conferences – Exhibitions) sector, are a key part of the business tourism literature (Kourkouridis and Frangopoulos, 2022, Kourkouridis et al., 2017). The findings show that trade fairs contribute to the development of a destination, as they bring significant socio-economic effects at the local level (Kim and Chon, 2009; Oxford Economics, 2012; Lee et al., 2013; Kumar et al., 2014; Wallstam et al., 2020; Kourkouridis et al., 2023). However, the question that arises is what are the objectives of trade fair attendees and why do they ultimately choose a trade fair over the many others available. There are many findings related to economic objectives (Berne and Garcia-Uceda, 2008; UFI, 2017), but the factor of the destination itself has not been extensively studied. Although, business travel is usually quite rigid, and choosing a destination is frequently difficult for travelers, destinations with leisure opportunities are generally preferred for business travel (Buhalis, 2000; Ezeuduji, 2024). After all, the clear distinction between business travelers and leisure travelers seems to have been questioned in recent years, as it is found that these two concepts often overlap (Kachniewska, 2016). We attempt to fill this research gap with the present research, which aims to investigate the “entertainment” factor in the visitors’ choice of trade fairs, specifically in the case of trade fair activity of Thessaloniki. Thessaloniki is an interesting case study, as it has a long history of trade fair activity, and continues to hold an important position in the industry (Tsiftelidou et. al, 2017).

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\* Corresponding author



The question we attempt to answer with this research is whether the tendency to combine economic objectives and entertainment is common to visitors to all trade fair events or is it differentiated in some way. In a highly competitive environment, organizers and local agencies will benefit greatly by understanding the factors that motivate trade fair visitors, resulting in better destination marketing. Since the new generation of visitors tends to combine business with entertainment, this new trend should be explored further.

## CONCEPTUAL FRAMEWORK

### 1. Business Tourism

Business tourism generally includes any business-related travel (Davidson and Cope, 2003) that is travel with a business purpose (United Nations Statistical Division, 2010). These travels are primarily motivated by the need for business communication (Müller and Wittmer, 2023; Gebesmair and Musik, 2023). Trade fairs in particular are an important sector of business tourism based on networking incentives (Silva and Moutinho, 2022). The physical contact with products and services, as well as the socialization offered by business events, are undeniably fundamental human needs (Getz, 2012; Seraphin, 2021). Recently, the COVID-19 pandemic has challenged business-to-business events, coupled with the evolution of technology, to the point where the need for personal contact is being questioned (Sütygün, 2021).

However, while technology can be a useful tool, it doesn't seem like it can actually replace a physical presence (Seraphin, 2021), especially at M.I.C.E. events (Kostopoulou et al., 2023; UFI, 2023; Müller and Wittmer, 2023). The pandemic experience has revealed a deficiency in establishing trust with buyers and enhancing connections in virtual trade fairs (Yu and Benson-Rea, 2024). Therefore, business tourism demonstrated notable resilience, adapting to the circumstances and swiftly reverting to pre-Covid levels (UFI, 2023). An important characteristic of business travelers that differentiates them from leisure travelers is that although they stay for less time in the destination, they spend larger amounts (Kumar and Hussain, 2014; Ezeuduji, 2024), a key motivating factor for business tourism promotion. However, although there is a conceptual dichotomy between work and leisure (Unger et al., 2016), business tourism is often transformed into or combined to leisure tourism (Marques and Santos, 2016). The line between business travelers and leisure travelers is not as clear as it used to be, as the boundaries between life and work seem to be blurred in modern times (Kachniewska, 2016).

This hybrid model of travelers has been characterized by Uriely and Reichel (2000) as “working tourists”. Uriely (2001) advanced the reasoning, distinguishing another type of travelers: “travelling workers”, that are more business oriented during their trip than “working tourists”. Later, a body of literature has emerged regarding “bleisure” tourism, a term that describes business travelers who also participate in leisure activities at the destination (Lichy and McLeay, 2018; Aydın and Özgürel, 2021; Sohaili et al., 2022; Unger and Uriely, 2022; Batala and Slevitch, 2024).

The differentiation lies in the fact that recreation was considered as a secondary product on business trips, while recent approaches consider it an important element of business trip (Unger and Uriely, 2022). Although there are time restrictions due to the tight timetable of bleisure travelers, they seek short leisure activities that are pleasing to them as they help them relax before returning to work responsibilities (Batala and Slevitch, 2024). This is an important research finding for destination management. In a fiercely competitive market, business event destinations must find ways to differentiate themselves, not so much through individual parts of the tourism product, such as venues and event facilities, but as an integrated whole for visitors (Buhalis, 2000; Ezeuduji, 2024).

### 2. Business travel motivations and objectives

Studies in management and marketing, which date back to the late 1960s, generally approach trade fairs as a means of promotion or sales (Carman, 1968; Cavanaugh, 1976; Shoham, 1992; Gopalakrishna and Lilien, 1995; Smith et al., 2004). Research interest is mainly focused on measuring trade fair effectiveness, where researchers mainly use two approaches. The first approach emphasizes sales performance and uses objective indicators such as sales (Gopalakrishna and Williams, 1992) and number of visitors from the target audience (Dekimpe et al., 1997). Research shows that attending trade fairs has a significant positive effect on overall business performance (Khongsawatkiat and Agmapisarn, 2023).

The second and more widespread approach leverages exhibitors' subjective evaluation of the effectiveness of their efforts at trade fairs. In this case, significant benefits are found, beyond sales, such as establishing international business relationships (Kreivi et al., 2011; Kellezi, 2013; Karabulut, 2014), receiving information about competitors and buyers (Kreivi et al., 2011; Sasaka, 2012; Kellezi, 2013; Karabulut, 2014), exploring new markets (Karabulut, 2014) etc.

However, in addition to the participating exhibitors, important stakeholders in this multidimensional knowledge transfer relationship are also the trade fair visitors. In a particular competitive environment with a multitude of available trade fairs worldwide (Berne and Garcia-Uceda, 2008), the reasons for choosing the trade fairs they visit is an important research question. Literature review conducted by Berne and Garcia-Uceda (2008) shows that visitors' main motivations for choosing the trade fairs they attend are: the information they have about the specific event, the marketing goals of their business, and the cost they estimate their participation will have. Nevertheless, the sample size in this specific survey was confined to retailers and also limited geographically. Moreover, according to UFI (2017), the largest percentage of trade fair visitors in the international experience visit these events to see new products, services and innovations, followed by those who mention as a reason for visiting information on new trends and innovations, but also those who mention meeting with prospective new suppliers as the reason for their visit.

As can be seen in Figure 1, all the reasons/objectives for visiting trade fairs worldwide are purely economic. UFI's interest in this research was purely business-oriented; after all, this is the orientation of the specific organization. However, in a subsequent report by UFI (2019), it appears that the exclusive focus on meeting business needs does not

apply to younger visitors. Specifically, Millennials (individuals born between early 1980s and the mid-1990s) and Gen Z visitors (those born between late 1990s and early 2000s) exhibit a significantly higher propensity to prioritize entertainment alongside business objectives. This trend is also confirmed in the literature, where it seems that bleisure tourism is a trend of the younger generations (Caicedo-Barreth et al., 2020; Dragomir et al., 2021; Ezeuduji, 2024).



Figure 1. Visitors' objectives worldwide (Source: UFI, 2017: 17)

This trend, combined with the fact that trade fairs are events with complex socio-spatial dimensions (Kourkouridis et al., 2023), lead to significant impacts on host areas, that are mainly economical (Kim and Chon, 2009; Oxford Economics, 2012; Lee et al., 2013; Kumar et al., 2014), but also social and political (Wallstam et al., 2020; Kourkouridis et al., 2023; Chen, 2023). Although a significant part of the literature shows that the reasons for attending trade fairs are strictly economic, there is evidence to suggest that a destination offering leisure opportunities may be preferred (Buhalis, 2000; Ezeuduji, 2024). Sohaili et al. (2022) literature review shows that bleisure travelers' main motivations to participate in leisure activities are: (a) seeking knowledge and novelty, (b) escape, and (c) fun and resting. Thus, the quality and leisure opportunities of the destination seem to influence their satisfaction with the business trip, while significantly contributing to their desire to revisit the destination in the future (Aydın and Özgürel, 2021). Ezeuduji (2024) characteristically mentions that many academics choose the conferences they attend based on their preferences for the destination and the leisure opportunities it offers. However, the topic of business travelers' motivations and objectives has not been explored in depth. For the visitors of the trade fairs in particular, there is no research investigation of the subject, apart from the UFI reports that mentioned above. Thus, we identify an important research gap, which we aim to address with the present research.

## RESEARCH METHOD AND DESIGN

In order to examine our research questions, mixed methods research was used as it integrates the strengths of both methodologies (qualitative and quantitative) (Johnson and Onwuegbuzie, 2004). After all, the nature of events is such that it favors the application of multiple and creative methods that lead to more comprehensive results (Crowther et al., 2015). Figure 2 shows a diagram of the research process. In order to comprehensively understand phenomena and ensure validity, the qualitative research utilized the triangulation approach. Initially, three researchers participated in the study to provide diverse observations and conclusions. This type of triangulation, known as investigator triangulation, serves to authenticate findings and provide varied perspectives, thereby enriching the depth of comprehension. Additionally, both the qualitative and the quantitative research involved gathering data from multiple sources (data triangulation) to obtain diverse perspectives and validate the data (Johnson and Onwuegbuzie, 2004). Specifically, visitors from various trade fairs with different characteristics were chosen to participate in the research. A structured questionnaire of ten questions (Appendix 1) was created for the quantitative research, which was completed face-to-face.

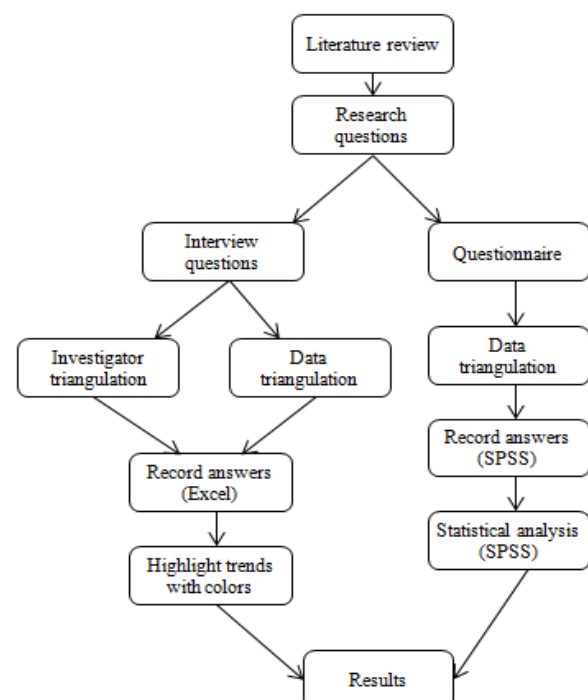


Figure 2. Research process

The target group of the quantitative research was the general population of the city of Thessaloniki and the sample size was 1,066 (population size: 767,933; margin of error: 3%; significance level: 95%). The sampling method used is Stratified Random Sampling. The 1,066 responses were recorded in an Excel file and then followed by statistical analysis in the software SPSS. Regarding the qualitative research in-depth interviews were chosen as a method of collecting qualitative material and information. The interviews conducted were semi-structured, i.e., there was a set of predetermined questions, which were organized into sections (Appendix 2). The questions and the interview guide in general were used flexibly. In total, 51 interviews conducted with visitors to the Zootechnia (28 interviews) and Detrop (23 interviews) trade fairs were collected. Appendix 3 lists the interviews conducted and the main characteristics of the interviewees. Following the collection of qualitative research data through interviews, the key points from each interview were documented in an Excel file. Responses were organized into groups to identify patterns or consistencies, visualized using a color-coded table. Specifically, recurring trends were highlighted with matching colors to emphasize prevalent response patterns (Glesne, 2016). Subsequently, the three researchers coded the responses post-interviews, followed by a cross-validation process among the three perspectives.

### Empirical context: trade fair activity in Thessaloniki

Thessaloniki is a metropolitan area of Northern Greece and the country's second largest city (Frangopoulos et al., 2009). The city has a long exhibition history, as the 1st Thessaloniki International Fair (TIF) was organized in 1926 (Pozrikidis, 2013). The national entity for the organizing of exhibitions, congresses, and cultural events, TIF-HELEXPO S.A., began its operation in 1925 and since 1940 has been operating in the existing facilities: the International Exhibition and Congress Centre of Thessaloniki. The Centre covers a total area of 180,000 sq.m., of which 62,000 sq.m. are covered exhibition space distributed in a complex of 17 Pavilions (TIF-HELEXPO, 2023). An important milestone in the history of the city's trade fair activity was the launching of sectoral trade fairs in the 1970s. In this context, during this period, parallel to TIF which continued to be organized every year, sectoral trade fairs with a more specialized orientation were developed. These sectoral trade fairs gathered the interest of thousands of professionals in each sector. Essentially the interest, on a commercial and economic level, transferred to sectoral trade fairs and TIF maintains a relative momentum (less than in the past) as a political, social and entertainment event (Kourkouridis, 2019). Today TIF-HELEXPO organizes more than 25 international trade fairs in Greece. For example, in 2023 the following trade fairs were organized: Zootechnia, Detrop/Oenos, Freskon, Book Fair, Beyond, Forward Green, TIF, Kosmima, Philoxenia/Hotelia etc. During the financial crisis of 2009 and until 2012-2013, the trade fair activity suffered a blow. From that point onwards, the trade fair activity gradually tried to regain its momentum, showing signs of improvement. However, the conditions created by the covid-19 pandemic drastically changed the evolution of trade fair activity worldwide and of course in Greece as well (Kourkouridis, 2024). The trade fair activity in Thessaloniki stopped completely from February 2020 until September 2021. In 2022 a decrease in visitor numbers was recorded, compared to the pre-pandemic years, as was also the case at the exhibition events in other European countries. This reduction in trade fairs participation in Thessaloniki varied according to the sector to which each trade fair is addressed and also the characteristics of the organization. Trade fairs that are purely professional and have a B2B character had smaller decreases in visitor numbers, while trade fairs more open to the public had higher percentage losses as people were still psychologically affected by the feeling of insecurity created during the pandemic period. Thus, sectoral trade fairs with an emphasis on B2B had the highest participation in 2022, e.g., "Freskon", "Kosmima". However, trade fairs such as "Agrotica", which has a more open character, but also TIF, faced reluctance on the part of visitors (TIF-HELEXPO, 2023).

Table 1. Participation by trade fair type

	Trade Fair Type	N	%
TIF	B2C	705	89.7%
Agrotica/ Zootechnia	B2C & B2B	124	15.8%
Detrop/Oenos/Artozymba	B2C & B2B	75	9.5%
Freskon	B2B	23	2.9%
Philoxenia/Hotelia	B2C & B2B	118	15.0%
Infacoma	B2B	38	4.8%
Kosmima	B2B	49	6.2%
Book Fair	B2C	157	20.0%
Sportexpo	B2C	47	6.0%
Art Thessaloniki	B2C	83	10.6%
Other	-	45	5.7%

## RESEARCH RESULTS ANALYSIS

### 1. Participation by trade fair type

The trade fairs that are most preferred by the citizens of Thessaloniki are the Thessaloniki International Fair (TIF), as well as the large sectoral trade fairs that are of interest to the general public as well, such as the Agricultural Trade Fair (Agrotica), the Tourism Trade Fair (Philoxenia) and the Book Fair. In particular, as shown in Table 1, 89.7% of respondents have visited TIF, 20.0% Book Fair, 15.8% Agrotica, 15.0% Philoxenia, 10.6% ART Thessaloniki, while smaller percentages are shown by the rest of the sectoral trade fairs organized at the TIF facilities. It should be noted that 5.7% of the sample reports that they have visited some other trade fair or event. In this category, the respondents mentioned that they visited, mainly, the theme parks that have been organized in recent years, such as for example the "Chocolate Factory and Museum", "The Secret Worlds of Eugene Triviza" and "The 12 Athletes of Hercules", as well as smaller sector trade fairs

of third organizers. From the responses described previously, it appears that the participants mainly visit TIF, which has a Business-to-Consumer (B2C) character, and secondarily the sectoral trade fairs with the same character. On the contrary, the more specialized trade fairs that have a Business to Business (B2B) character are of clearly less interest to citizens.

## 2. Objectives - Expectations

Regarding the objectives and expectations of visiting the trade fairs, as shown in Figure 3, the respondents as a whole state that the main reason for their visit is to obtain information at a rate of 73.3% and fun-entertainment at a rate of 70.7%. This is followed by direct purchases with a percentage of 31.2%, networking and contact with partners with 22.8% and commercial reasons with 6.7%.

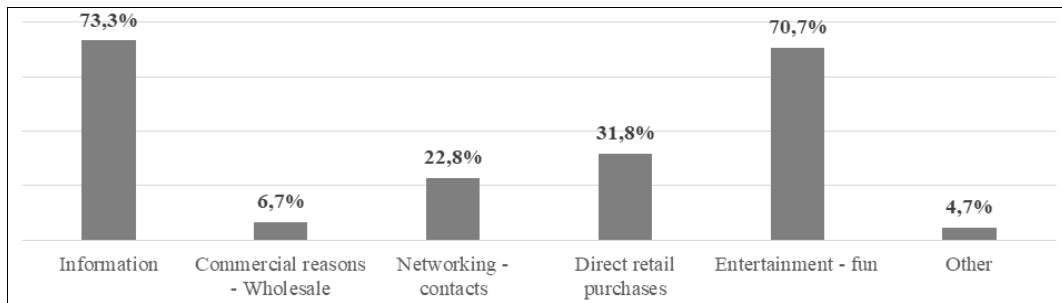


Figure 3. What was the reason/objective of your visit to these trade fairs?

## 3. Objectives –Expectations in relation to the type of trade fair

Then by specifying the analysis of the visitors' objectives/goals per trade fair, it appears that the responses are shaped according to the nature of each trade fair. Therefore, the reasons for visiting the general trade fair (TIF) and the trade fairs addressed to the general public (Book Fair, ART Thessaloniki, etc.) are different from those of the specialized sectoral trade fairs (Detrop, Freskon, etc.). As can be seen in Table 2, the respondents visit the TIF for fun-entertainment (69.5%), for information (66.7%) and for direct retail purchases (20.2%). On the contrary, in the sectoral trade fairs organized in Thessaloniki, the majority of respondents state that the reason for their visit is information. A typical example of this trend is the large percentage gathered by information as a reason for visiting Detrop/Oenos/Artozymba (80.5%) and Freskon (78.3%). An exception to this general trend is the Sportexpo in which the main reason for visiting is fun-entertainment (60.4%).

Table 2. Objectives per trade fair

	Information		Commercial reasons-Wholesale		Networking-Contacts		Direct retail purchases		Entertainment-fun		Other	
	N	%	N	%	N	%	N	%	N	%	N	%
<b>TIF</b>	498	<b>66.7%</b>	23	3.1%	61	8.2%	151	<b>20.2%</b>	519	<b>69.5%</b>	18	2.4%
<b>Agrotica/ Zootechnia</b>	102	76.7%	17	12.8%	21	15.8%	7	5.3%	27	20.3%	7	5.3%
<b>Detrop/ Oenos/ Artozymba</b>	62	<b>80.5%</b>	8	10.4%	23	29.9%	3	3.9%	19	24.7%	1	1.3%
<b>Freskon</b>	18	<b>78.3%</b>	3	13.0%	8	34.8%	2	8.7%	0	0.0%	1	4.3%
<b>Philoxenia/ Hotelia</b>	87	70.2%	10	8.1%	50	40.3%	7	5.6%	17	13.7%	5	4.0%
<b>Infacoma</b>	31	72.1%	2	4.7%	17	39.5%	4	9.3%	6	14.0%	2	4.7%
<b>Kosmima</b>	21	39.6%	4	7.5%	7	13.2%	26	49.1%	8	15.1%	2	3.8%
<b>Book Fair</b>	117	70.5%	5	3.0%	18	10.8%	78	47.0%	57	34.3%	2	1.2%
<b>Sportexpo</b>	21	39.6%	2	3.8%	5	9.4%	3	5.7%	32	<b>60.4%</b>	2	3.8%
<b>Art Thessaloniki</b>	53	60.9%	2	2.3%	19	21.8%	11	12.6%	44	50.6%	5	5.7%
<b>Other</b>	24	51.1%	2	4.3%	4	8.5%	17	36.2%	26	55.3%	1	2.1%

From the qualitative research we found that for Zootechnia's visitors the reasons for visiting are usually many. Most of them said that they visit the trade fair to catch up with developments in the industry, to get to know new products and machines, to be informed and to make new acquaintances with exhibitors - potential partners. Some, in addition to general interest, also had special commercial interest, as they had prearranged meetings with specific exhibitors. There were few visitors who had a scientific interest and intended to attend the workshops and conferences organized alongside the trade fair. Also, there were quite a few visitors who intended to combine business interest with entertainment. Characteristically on this issue, one of the visitors with a rather patriarchal perspective stated: *"We come to see machines and to get away from our wives for a while! Of course, it would be useful to attend some of the events-conferences that take place here, because they say useful things that help us, but we do not have good information about these events and we do not have the time. In two days coming from Grevena, we can't do everything..."* (IN.VI.14, Male, Grevena, Farmer).

For Detrop's visitors, the reasons for visiting are purely professional. Most aim to discover new products and meet new suppliers that may lead to new partnerships: *"I am here as a hosted buyer and the goal is to find new suppliers, new products to be able to introduce to the New Zealand market. Generally, in New Zealand they are looking for differentiated quality products and Greece has such products to offer. I'm looking for these products at the fair"* (IN.VI.39, Male, Auckland, New Zealand, Trade of Greek Products in New Zealand). Several also stated that the objective of their visit was to renew contacts with existing suppliers. One visitor stated that he comes to the trade fair for

professional networking not only with exhibitors but also with other visitors. Finally, no visitor stated that they were coming for entertainment, except for one who was not a professional in the industry.

From the above answers it is observed that any differences in the goals of the visitors from the trade fairs and the different spatial practices they follow have to do with the different nature of each industry and its professionals. For example, professionals in the agricultural-livestock sector, as more simple people, try to combine visiting trade fairs with entertainment and fun activities. On the other hand, people in the food and beverage industry, as more technocrats, executives of large companies, visit the fairs purely for professional purposes only. After all, they have to be accountable to their business, evaluating their visit to the trade fair, their goals and achievement, but also the contacts they made.

In order to make the differentiation of the objectives/goals of the visit even clearer, the trade fairs organized in Thessaloniki were grouped into three categories according to their nature, as follows:

- Trade fairs addressed to the general public (Business-to-Consumer - B2C): TIF, Book Fair, Sportexpo and Art Thessaloniki.
- Trade fairs addressed to Businesses in the sector (Business to Business - B2B): Freskon, Infacoma and Kosmima.
- Mixed trade fairs (B2C & B2B): Agrotica/ Zootechnia, Detrop/Oenos/Artozima and Philoxenia/ Hotelia. These trade fairs in the first days of operation are usually purely commercial events for trade visitors only and in the last 1-2 days they are open to the general public.
- Other Fairs or Events, such as theme parks, smaller sectoral trade fairs and festival-events.

As can be seen in Figure 4, respondents visit B2C trade fairs mainly for fun-entertainment (39.4%) and for information (37.3%). On the contrary, they visit B2B trade fairs, which are purely commercial events, mainly for information (43.7%), followed by networking-contacts with partners (19.1%) and direct purchases (19.1%). Also, they visit trade fairs with a mixed nature (B2C & B2B), mainly for information (53.4%) and secondarily for networking-contact with partners (19.8%).

Finally, in the other fairs/events, due to the range of events classified in this category, the responses show dispersion. Specifically, 34.4% of respondents state that the reason for visiting such fairs/events is to get information, 31.1% for direct shopping/retail and 23.3% for fun/entertainment.

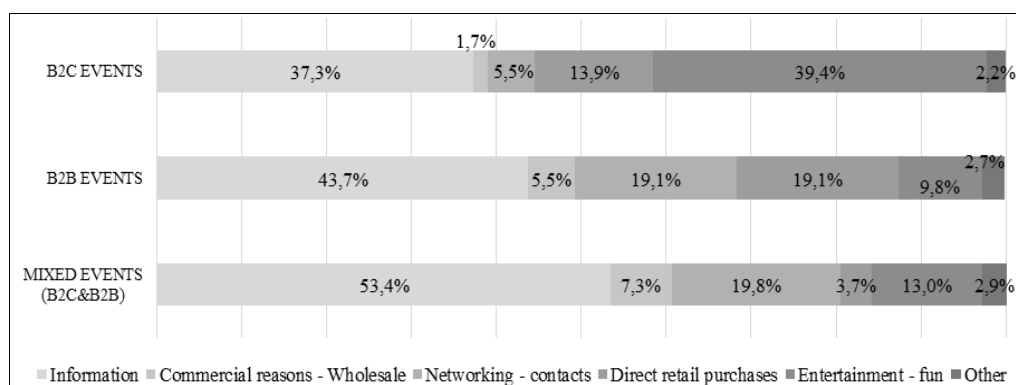


Figure 4. Objectives (grouped answers according to the nature of the events)

At this point, the paradoxical finding identified in our research should be clarified, which essentially highlights an informal practice. First of all, we must mention that direct purchases at B2B trade fairs are not allowed, but the respondents give this answer in a significant percentage of 19.1%. Possibly they see a product and after the end of the trade fair they turn to the company to buy it. This common practice appears to be captured by our survey participants as direct/retail purchases.

In order to fully clarify the specific practice that may be against the official policy of the trade fairs, but is an existing and usual practice in the trade fairs of Thessaloniki, four interviews were conducted with those involved on the specific subject. In particular, three interviews were conducted with executives of the TIF-HELEXPO Trade Fairs Department, two of whom are Project Managers of major trade fairs that are organized annually in Thessaloniki. From these interviews, it emerged that this specific practice is common, despite the fact that the organizer tries in various ways to prevent it, as retail sales within trade fairs creates malfunctions in the trade fair itself, while in many cases it also involves tax violations. Specifically, on these issues, an interviewee specifically stated:

*“We are aware of this specific issue and we are trying to prevent it. There is an express ban on retail sales within the trade fair regulations and we emphasize this to our exhibitors. In fact, in order to avoid retail sales, all exhibitors together with their declaration of participation sign a responsible declaration that they will not carry out retail sales during the trade fairs”.*

Also, when asked how they manage to get into the trade fairs that are closed to the general public and only professionals are allowed to enter (only by showing a Business Card), the interviewee said the following:

*«Non-professional visitors come to trade fairs either with invitations given by exhibitors or with some other person's business card that they find on their own».*

In addition, the interviewees were asked about the way in which the retail sale is carried out, as well as the receipt of the goods during the trade fairs. On these issues, one interviewee stated:

*«Retail sales can be conducted in many ways within the trade fair. The visitor should agree with the company to have the product sent to him, or to pick it up on the spot, if it is a small item, such as e.g. a piece of jewelry. Especially for on-site sales, it is common for the delivery to take place on the last day of the fair».*

Finally, in order to cross-reference the above information from the other side, the citizen-buyer who visits the trade fairs in Thessaloniki, an interview was conducted with a citizen who follows such practices, who mentioned:

*«I go to these kinds of trade fairs when I want to buy something specialized and get it at a wholesale price. I will mention the example, when I wanted to buy a cross for a baptism that I was the godfather of, I visited the jewelry fair in Thessaloniki to see crosses. Inside the trade fair I chose a cross, closed it on the spot and after the trade fair closed, I went and got it from the merchant's shop. This way I achieved the best quality at the best possible price».*

#### 4. Fulfillment of Visitors' Objectives – Expectations

The degree of satisfaction of the respondents' objectives/goals for their participation in the Thessaloniki trade fairs seems to be quite high, as the majority of the sample answers positively, while the percentages of respondents who answer negatively are small. Specifically, as shown in Figure 5, 54.2% of the respondents state that the objectives/goals of their visit to the trade fairs in Thessaloniki were achieved to a large extent, 22.2% to a moderate extent and 20.8% to a very large extent. On the contrary, the percentages of negative responses are extremely low, as 2.1% state that their objectives were achieved a little and only 0.7% that they were not achieved at all. These responses show the high degree of satisfaction of the general public with the trade fairs organized in Thessaloniki, with the mean score equal to 3.93 (S.D.=0.75).

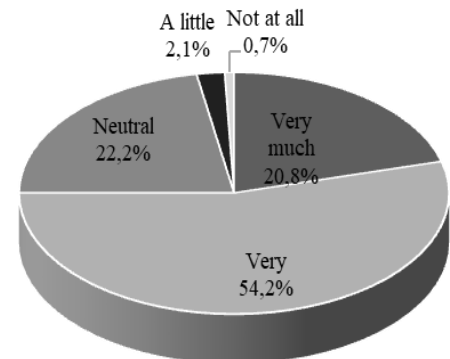


Figure 5. Objectives achievement

From the qualitative research we found that the degree of achievement of the interviewees' goals from their visit to Zootechnia, shows a generally positive trend. In particular, most of Zootechnia's visitors appear quite satisfied with the achievement of the objectives of their visit: *“For the most part yes, we are satisfied. We see the machines and tools, which we need in our work. Things evolve; we see new things so that we too can improve the quality of our lives and our work”* (IN.VI.06, Man, Karditsa, Livestock Farmer). On the contrary, a small part of the visitors declared moderately or slightly satisfied, which considers that the event is smaller than other years with fewer exhibits: *“I'm 80% happy with what I saw. I would like a few more things on my field, namely animals. Of course, I made some contacts and gathered a lot of information. Now at home we will study all this...”* (IN.VI.18, Man, Kilkis, Livestock Farmer).

A similar trend, and even stronger, is shown by the visitors of Detrop, the vast majority of whom are satisfied with the achievement of the objectives of their visit. At Detrop, industry professionals are given the opportunity to see producers, suppliers and products mainly from Northern Greece, gathered together: *“We are quite satisfied. Because we work with several producers throughout Greece, so it's an opportunity to see them all gathered together at the trade fair and especially those suppliers from Northern Greece who are all here”* (IN.VI.31, Woman, Stockholm, Oil Wholesale). At the same time, the change in attitude of the producers-suppliers regarding their flexibility in cooperation is commented positively: *“I am very pleased. Producers have also changed, compared to a few years ago when their attitude was different. For example, now they also translate the products into French. The mindset has changed. Change due to crisis. The crisis helped to move the world a little and open its minds and eyes because the markets are unlimited. We have a great product like Greece; it's a sin not to have a brand name”* (IN.VI.40, Male, Brussels, Greek Restaurant Owner). Finally, the percentage of those who appeared little or not at all satisfied was small.

From the above responses, a positive trend can be seen for both trade fairs in terms of the achievement of visitors' goals. This shows that the visitors found what they were looking for in the particular trade fairs. This trend is also evident from the degree of repeatability of visits. It seems that visitors attend these trade fairs consistently at almost every event. Specifically, from the sample of interviewees of Zootechnia, the majority visit the trade fair without fail, in fact many visit both Zootechnia and Agrotica, the two most important trade fairs in the agricultural sector, every year. The rest have visited the trade fair other times in the past, while only one visitor stated that he is coming for the first time. Correspondingly, from the sample of Detrop visitors, most of them visit the trade fair continuously and several have visited the trade fair in the past. The number of those visiting the trade fair for the first time was small. From the above answers, it follows that the Zootechnia and Detrop trade fairs are an institution for each industry, steadily gathering the interest of people in the industry, even in a form of tradition. Also, the steady participation of people in the industry suggests that the two specific trade fairs meet the expectations of their visitors, or part of them.

#### 5. Reasons for rejection and non-attendance of Thessaloniki trade fairs

Respondents who have not visited a trade fair organized in Thessaloniki in the last five years were asked to explain why they did not visit any of them with an open-ended question. The respondents cited as the reasons for their non-participation, the lack of interest on their part. For example, one respondent said: *“the subject matter of today's trade fairs does not concern me”*. Moreover, the respondents mention other reasons that have to do with more subjective issues such as lack of mood and health problems: *“I no longer feel like visiting trade fairs and being in crowds”*, and *“due to health problems I can't visit trade fairs and walk through the hall area with a lot of people”*. Also, the difficulty of accessibility to the trade fair center is mentioned as a reason for non-participation, and more specifically, issues related to the lack of parking spaces, difficulty in moving and the distance from the place where they live. For example: *«I don't visit the trade fairs because it is difficult to access the area with so many people, there is nowhere to park the car...”* and *“I don't visit the fairs because I have to use the buses which I avoid because of overcrowding, if I use the car I will struggle to park”* and *“I live in an area*



*that is far from the fair and it takes a lot of time to come and this seems like a hassle to me*". At the same time, the lack of time is mentioned: *"I don't have the required time to visit trade fairs. A visit to a trade fair takes a lot of time that I don't have to spare"*. Finally, another reason mentioned is that the trade fairs are exclusively for professionals: *"trade fairs are only of interest to businesses, to the public most trade fairs are of no interest"*.

From these answers it appears that the city population that does not visit the city fairs, follows this practice as a combination of subjective and objective factors. The subjective factors that lead to such practices, such as lack of personal interest, discomfort from crowds, long distance from the residential area, etc. cannot be addressed, but objective factors, such as difficult accessibility, the cost of visiting, etc. can be addressed in order to attract more citizens of the city to Thessaloniki's trade fairs. In addition, the respondents who do not currently visit the trade fairs organized in Thessaloniki state that they would be interested in a car trade fair, a fashion trade fair (clothing-shoes), a trade fair about new entertainment technologies and electronic games, as well as an event with activities for children. From these answers, a general trend can be seen that Thessaloniki lacks more trade fairs and events that have to do with the free time of the modern family.

## DISCUSSION

The survey results showed that the reasons/objectives for visitors to attend trade fairs are a mix of different factors. Therefore, the trade fairs in the Greek reality are not treated exclusively as a sterile economic event where only commercial transactions are carried out, but are treated as a simulation of the market in the broadest sense. According to Weber (Fragopoulos, 2008, p. 17), the market is the core of the urban phenomenon. Since ancient Greece, the concept of the market included and combined broader features, such as gathering, democracy, political discussion that accompanied the purchase of necessary products, financial transactions and even entertainment.

These results are in contrast to previous findings (UFI, 2017), where trade fair visitors state exclusively financial parameters as the reason/goal for their participation in the trade fairs, in contrast to the variety of reasons/goals declared by Thessaloniki trade fair visitors. This differentiation highlights the "hybrid" nature of Thessaloniki's trade fair activity, which moves beyond the narrow limits of the economic events prevailing internationally. Therefore, trade fairs in Thessaloniki combine many different features and play a broader and multifunctional role.

However, it is also important to note that the reasons/objectives of visitors to the trade fairs of Thessaloniki differ depending on the nature and targeting of each trade fair: the main reason for visiting the trade fairs addressed to the general public is entertainment, while those of the specialized sectoral trade fairs are mainly business-related. However, even in the sectoral trade fairs there is a significant percentage in several cases that mentions fun-entertainment as an incentive. So, the well-noticed trend of bleisure travelers who seek entertainment during their business travel (Kachniewska, 2016; Lichy and McLeay, 2018; Aydın and Özgürel, 2021; Sohaili et al., 2022) is confirmed, while it appears to be closely related to the type of trade fair, although it is evident to a greater or lesser degree in all trade fairs.

This finding is a step forward in research efforts, as it confirms the tendency of business travelers to participate in leisure activities, with differences in the degree of participation depending on the type of trade fair. Thus, we distinguished three different types of bleisure visitors with a decreasing degree of participation in leisure activities: a) visitors of B2C trade fairs; b) visitors of B2B trade events; and c) visitors of mixed events (B2C and B2B). Of course, there are some underlying factors that influence these incentives, such as industries, participant demographics, and event planning. However, these factors are directly linked to the type of the trade fair. It certainly deserves further investigation in future research.

The survey's findings are of practical importance, firstly for the organizers of the trade fairs, as they have to satisfy a specific need of the visitors in order to achieve the objectives of the trade fairs, but also for the local tourism development agencies, who can exploit this market for tourism development of host areas. The need for fun-entertainment can be met both within the venues and in the host area, as for example in the context of familiarization trips which will give the visitors the opportunity to get to know the wider area. But also within the context of the events themselves, the organizers should take into account the needs of their visitors.

Moreover, a paradoxical practice of retail sales at trade fairs was also found. This informal practice goes against the official policy of trade fairs, but it happens at the Thessaloniki trade fairs. Such practices demonstrate the hybrid nature of the trade fair activity in Thessaloniki, where in the midst of the crisis citizens adopt informal practices and visit trade fairs with the aim of finding the best product at the lowest possible price. Finally, the need for more trade fairs related to the leisure time of the modern family was highlighted, another sign of the hybrid character of the trade fair activity in Thessaloniki.

## CONCLUSION

The present research reveals some interesting cues for both research and managerial purposes. Understanding the motivations of trade fair visitors primarily concerns organizers and the realization of trade fair goals. At the same time, it is useful information for the host regions that can take advantage of an important tourist market. The tendency to combine business trips with leisure is confirmed, while it is found that the type of trade fair has an effect on this tendency. This finding is important both at the level of organizing trade fairs, but also at the level of managing the tourism development of destinations that host trade fairs.

However, the results cannot be generalized, as the research was conducted in a specific spatial and temporal context. These are the main limitations of the study, along with the need to include underlying factors associated with the type of the trade fair (type of industry, demographic characteristics of attendees, event design, etc.). The study should continue in this direction, as the hybrid nature of the trade fair activity of Thessaloniki is of great research interest.

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validation, D.K. and A.S.; formal analysis, D.K. and A.S.; investigation, D.K. and A.S.; data curation, D.K. and A.S.; writing - original draft preparation, A.S.; writing - review and editing, D.K.; visualization, A.S.; supervision, I.F.; project administration, A.S. All authors have read and agreed to the published version of the manuscript.

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#### Appendix 1. Questionnaire A. Demographics

**1. Gender:** ☐ Male ☐ Female

**2. Age:** ☐ 15-24 ☐ 25-29 ☐ 30-44 ☐ 45-64 ☐ 65+

**3. Education Level:**

- ☐ Primary Education and below ☐ Secondary Education (Junior High School, High School, etc.)  
☐ Post-secondary Education (Institute of Vocational Training etc.) ☐ Higher education (University, Technological Educational Institute)  
☐ Postgraduate Studies-PhD

**4. Profession:**

- ☐ Student ☐ Freelancer/Self-Employed  
☐ Private/civil servant ☐ Housekeeping/Retired  
☐ Unemployed ☐ Other

**5. Area of Residence:**

- ☐ **Eastern Suburbs** (Thermi, N Raideostos, Rysio, Tagarades, Panorama, Hortiat, etc.)  
☐ **Eastern City Areas** (Malakopi, Toumpa, Papafi, Depo, Charilaou, Analipsi, Faliro, Ag. Triada, Kifisia-Voulgari, Trochiodromika, Triandria, Kalamaria, Pylaia, etc.)  
☐ **City Center** (Center, Saranta Ekklesies, Dioikitirio, Port, Station, Xirokrini, Fix-Lachanokipi, Ano Poli-Eptapyrgio, Agios Dimitrios, Agios Pavlos, etc.)  
☐ **Western City Areas** (Ampelokipoi, Menemeni, Kordelio, Evosmos, Neapoli, Polichni, Stavroupoli, Sykies, etc.)  
☐ **Western Suburbs** (Sindos, Diavata, Kalochori, N. Magnesia, Pefka, Retziki, Asvestochori, Efkarpi, Oreokastro, etc.)

**B. Visit to Trade Fairs of Thessaloniki**

**6. Have you visited any trade fair organized in Thessaloniki in the last five years?**

- ☐ Yes ☐ No

**6.1. If so, which of the following trade fairs did you visit (multiple answers possible)**

- ☐ TIF ☐ Agrotica/Zootechnia ☐ Detrop/Oenos/Artozoma  
☐ Freskon ☐ Philoxenia/Hotelia ☐ Infacoma ☐ Kosmima  
☐ Book Fair ☐ Sportexpo ☐ Art Thessaloniki ☐ Other

6.1.1. What was the reason/objective of your visit to these trade fairs? (multiple answers possible)

	Information	Commercial reasons-Wholesale	Networking-Contacts	Direct retail purchases	Entertainment-fun	Other
TIF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agrotica/ Zootechnia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Detrop/Oenos/ Artozoma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Freskon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Philoxenia/ Hotelia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Infacoma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kosmima	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Book Fair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sportexpo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Art Thessaloniki	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**6.1.2. To what extent were the reasons/objectives of your visit achieved?**

- ☐ Very much ☐ Very ☐ Neutral ☐ A little ☐ Not at all

**6.2. If not, why don't you visit any of the trade fairs organized in Thessaloniki?**

.....  
 .....

**What would be the theme of a trade fair that, if organized in Thessaloniki, would attract your interest?**

.....

.....

.....

## Appendix 2. Interview Guide

**A. Visitor Profile**

A.1. What is your profession; / What do you do for a living?

A.2. In which area do you live?

**B. Trade fair visit - Effectiveness**

B.1. For what reason (objectives) did you visit the trade fair?

B.2. To what extent are these reasons / objectives achieved?

B.3. Do you visit other similar trade fairs?

- If so, which ones in Greece and which ones abroad?

B.4. Are the objectives of your visit to this trade fair different from other trade fairs you visit?

B.5. Is this the first time you are visiting this trade fair?

- If not, do you regularly visit this trade fair?

## Appendix 3. Interviews with Visitors at the Zootechnia and Detrop Trade Fairs

id	Gender	Area	Profession	Trade Fair	Date
IN.VI.01	Male	Thessaloniki	Agriculturalist, Animal Feed Trade	Zootechnia	1/2/2019
IN.VI.02	Male	Goumenissa	Livestock farmer	Zootechnia	1/2/2019
IN.VI.03	Male	Ioannina	Veterinary, Public Servant	Zootechnia	1/2/2019
IN.VI.04	Male	Igoumenitsa	Farmer-Livestock farmer	Zootechnia	1/2/2019
IN.VI.05	Male	Thessaloniki	Veterinary, Municipal Employee	Zootechnia	1/2/2019
IN.VI.06	Male	Karditsa	Livestock farmer	Zootechnia	1/2/2019
IN.VI.07	Male	Kozani	Livestock farmer	Zootechnia	1/2/2019
IN.VI.08	Male	Skopje	Director of Insulating Materials Factory	Zootechnia	1/2/2019
IN.VI.09	Female	Amyntaeo	Farmer	Zootechnia	1/2/2019
IN.VI.10	Male	Serres	Livestock farmer	Zootechnia	1/2/2019
IN.VI.11	Male	Preveza	Livestock farmer	Zootechnia	1/2/2019
IN.VI.12	Female	Katerini	Farmer	Zootechnia	1/2/2019
IN.VI.13	Male	Thessaloniki	Owner of a Biogas Unit	Zootechnia	1/2/2019
IN.VI.14	Male	Grevena	Farmer	Zootechnia	1/2/2019
IN.VI.15	Male	Katerini	Livestock farmer	Zootechnia	1/2/2019
IN.VI.16	Male	Thiva	Agriculturalist	Zootechnia	1/2/2019
IN.VI.17	Male	Kilkis	Farmer-Livestock farmer	Zootechnia	1/2/2019
IN.VI.18	Male	Kilkis	Livestock farmer	Zootechnia	1/2/2019
IN.VI.19	Male	Cyprus	Agriculture student	Zootechnia	1/2/2019
IN.VI.20	Male	Xanthi	Farmer-Livestock farmer	Zootechnia	1/2/2019
IN.VI.21	Female	Serres	Organizer of Agricultural Conferences	Zootechnia	1/2/2019
IN.VI.22	Male	Trikala	Farmer	Zootechnia	1/2/2019
IN.VI.23	Male	Chalkidiki	Livestock farmer	Zootechnia	1/2/2019
IN.VI.24	Male	Thessaloniki	Agriculturalist	Zootechnia	1/2/2019
IN.VI.25	Male	Athens	Animal feed	Zootechnia	1/2/2019
IN.VI.26	Γυναίκα	Thessaloniki	Veterinary	Zootechnia	1/2/2019
IN.VI.27	Male	Thessaloniki	Farmer-Livestock farmer	Zootechnia	1/2/2019
IN.VI.28	Male	Xanthi	Livestock farmer	Zootechnia	1/2/2019
IN.VI.29	Male	Glasgow	Representative of German Food Products	Detrop	4/3/2019
IN.VI.30	Male	Kassel	Wine importer in Germany	Detrop	4/3/2019
IN.VI.31	Female	Stockholm	Wholesale of Oil	Detrop	4/3/2019
IN.VI.32	Female	Rotterdam	Export Development Consultant	Detrop	4/3/2019
IN.VI.33	Male	Belgium	Trade in Organic Foods	Detrop	4/3/2019
IN.VI.34	Male	Thessaloniki	Chemical engineer	Detrop	4/3/2019
IN.VI.35	Male	Thessaloniki	Food Trade	Detrop	4/3/2019
IN.VI.36	Male	Kavala	Trade of Confectionery Products	Detrop	4/3/2019
IN.VI.37	Female	London	Trade of Greek Products in Great Britain	Detrop	4/3/2019
IN.VI.38	Female	Volos	Trade of Greek Products in Russia	Detrop	4/3/2019
IN.VI.39	Male	Auckland, New Zealand	Trade of Greek Products in New Zealand	Detrop	4/3/2019
IN.VI.40	Male	Brussels	Greek restaurant owner	Detrop	4/3/2019
IN.VI.41	Female	Moscow	Trade of Greek Products in Russia	Detrop	4/3/2019
IN.VI.42	Male	Thessaloniki	Food trade	Detrop	4/3/2019
IN.VI.43	Male	Serres	Food trade	Detrop	4/3/2019
IN.VI.44	Female	Thessaloniki	Restaurant owner	Detrop	4/3/2019
IN.VI.45	Male	Kavala	Food wholesale	Detrop	4/3/2019
IN.VI.46	Male	Athens	Food wholesale	Detrop	4/3/2019
IN.VI.47	Male	Ioannina	Food trade	Detrop	4/3/2019
IN.VI.48	Female	Athens	Food trade	Detrop	4/3/2019
IN.VI.49	Male	Drama	Wine trade	Detrop	4/3/2019
IN.VI.50	Male	Thessaloniki	Food and beverage trade	Detrop	4/3/2019
IN.VI.51	Male	Thessaloniki	Food and beverage trade	Detrop	4/3/2019

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## TOURISTS' ATTITUDE TOWARDS DESTINATION FOOD IMAGE DETERMINANTS

**Pramathadhip KAR** 

Faculty of Hospitality & Tourism Management, Siksha "O" Anusandhan University, Bhubaneswar, Odisha, India;  
Institute of Hotel Management (IHM), Bhubaneswar, under Govt. of India, e-mail: pramathadhip.kar@gmail.com

**Ashish MOHANTY** 

Faculty of Management Sciences, Siksha "O" Anusandhan University, Bhubaneswar, Odisha, India, e-mail: ashishmohanty@soa.ac.in.

**Sasmita MOHANTY** 

Faculty of Hospitality & Tourism Management, Siksha "O" Anusandhan University, Bhubaneswar, Odisha, India, e-mail: smohanty@soa.ac.in

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**Abstract:** The aim of this research article is to analyze the various dimensions which impact the destination food image in the state of Odisha, India. The framework of the study espoused five independent variables – attitude, social media, local food experience, food culture and advertisement and the dependent variable – destination food image, which studied the associations between them. A sample of 270 respondents were obtained via convenient sampling method. The study applied descriptive statistics, factor analysis, correlation analysis and regression analysis to run the data by using SPSS 23.0 and to examine the relationships between the constructs. It was found that all the dimensions had a positive and significant impact on destination food image. Practical implications in food tourism, destination image & food image are discussed. Recognising the value of regional delicacies and their market would help the hospitality and tourism sector. The study's conclusions are thought to be helpful to marketers who see that travellers are becoming pickier and more demanding in their quest for distinctive experiences provided by travel locations.

**Keywords:** Food Tourism, Local Food, Destination Food Image Determinants, Tourist Attitude, Tourism Sector

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### INTRODUCTION

In 2012, when social media started to gain widespread use, food tourism began to gain popularity. Since then, it has become the primary factor influencing traveller destination selection (World Food Travel Association, 2020). According to Cole (2016), every third passengers spend on food, and over eighty- eight per cent of tourists view food as an essential characteristic of the holiday location. Food is regarded as a manifestation of a location's and its inhabitants' culture. It may therefore be used as a marketing tool and is a crucial component of every tourism offering in any location. According to Puspanjali Mohapatra and Soumendra Nath Biswas (2017), there is a direct connection between cuisine and tourism, and both have an effect on the socioeconomic status of the host community. Moreover, one of the important factors has been the gastronomy experience a traveller goes through which has a major influence on making an informed decision to choose a travel destination as well as shaping his or her overall travel experience (Kovalenko et al., 2023). Today food of a particular region or nation has a lot of significance, especially in terms of being a symbol of culture. Hence, it can be said that food is one of the indicators that aids in promoting tourism and it stems from the fact that local foods does have a greater impact in identifying and marketing a tourist destination. This not only adds value to the whole tourism experience but also enhances a mutually-beneficial relationship between local foods and tourism (Lai et al., 2017, Quan and Wang, 2003). The role of food tourism is to generate awareness about food as an important subject and a medium that helps in the sustainability of tourism (Long, 2003). According to recent research, the idea of the destination picture is separated into two parts: the cognitive image and the affective image (Smith et al., 2015). According to Qu et al. (2011), a person's attitudes, convictions, and perceptions with relation to a location are referred to as their cognitive image. According to Qu et al. (2011), an affective image is connected to the tourists' feelings and emotions towards the location. In other words, an image may be the outcome of the fusion of cognitive and emotive traits. Tourists will therefore form favourable opinions of a location if it has appealing qualities. Food is one of these qualities. Previous studies have demonstrated the significance of food as a motivating factor for travel. According to Folgado-Fernández et al., (2017), after landscape, lodging, and climate, cuisine plays the most role in tourists' perceptions of a destination. Local cuisine promotes the local culture, making it both a tourism incentive and one of a nation's key characteristics (Björk and Kauppinen-Räsänen, 2016).

Tourists are more inclined to eat local cuisine when they have a favourable mental impression of the meal. But little is understood about the concept of food imagery, which has highlighted the necessity for additional research on this topic. Studies have examined the motivations behind eating locally and how that relates to travel intentions (Levitt et al., 2017), in addition the perceptions of food images and the intentions of foreign tourists to return to eat locally - in the case of Ho Chi Minh City, Vietnam (Gurbaskan, 2019). Currently there is a dearth of study on the factors influencing how a dining location is perceived. Local culinary has its own importance and role in the tourism sector. It has also garnered a lot of

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\* Corresponding author



attention in the recent past by several scholars. A model to understand how tourists' perceptions of a destination's food image can affect their evaluation of the food experience and their behavioural intentions needs to be researched (Köster and Mojet, 2015). This model is based on evaluations of advantages in culinary tourism development.

As a result, the discussion on how food destination image affects revisit intention is the main goal of this study. The study aims to highlight the importance of regional cuisine to visitors as well as the creation and promotion of destination tourism products in the Indian state of Odisha. To assess the relationship between the dimensions – attitude, social media, local food experience, culture & advertisement and destination food image, Osman et al., (2021) carried out research amongst international tourists in Malaysia and found all the dimensions had a positive and significant relationship except social media. Keeping in view the empirical research on factors influencing food destination image (Osman et al., 2021) is scarce and in spite of this fact, the impact of food image on traveller's destination has not been systematically investigated with limited attention given to the development of a measurement scale based on tourists' perception (Hashemi et al., 2023). In order to assess the potential and viability of food tourism in the state of Odisha, India, the current study intends to investigate the elements influencing destination food image (Figure 1).

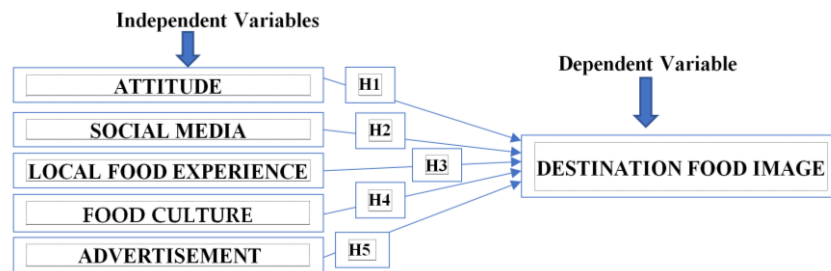


Figure 1. Hypothetical conceptual framework (Source: Conceptual framework by Osman et al., 2021)

## LITERATURE REVIEW AND RESEARCH HYPOTHESES DEVELOPMENT

**Attitude.** The definition of attitude is a propensity that can be either pleasant or dislikeable and is shaped by one's upbringing and educational experiences. The person will then respond consistently to a particular thing as a result (Pereira et al., 2019) it will have influence on their thoughts and how they respond to it. Similar to this, Kim and Kwon (2018) claimed that an individual's behaviour would be affected by the attitude they create. In light of this, a customer's positive attitude towards a certain cuisine would encourage them to buy, try, and maybe suggest it to others (Choe and Kim, 2018). According to Omar et al., (2015), a person's attitude can have a significant impact on whether or not they accept and choose a particular dish. In this situation, their disposition might influence whether they plan to visit or return to a particular place (Roustas and Jamshidi, 2019).

**H1:** Attitude dimension is significantly and positively related to destination food image

**Social Media.** According to Faizi et al., (2013), social media refers to the exchange of information or data on a real time basis via various platforms. The website allows users to upload their multimedia content, such as images and movies. Social media, according to Manning (2014), is a brand-new type of media that facilitates interpersonal communication. For instance, one person can use social media to share their eating experience by sharing their opinions about the products and services in a certain nation, which in turn may impact how others view food. The use of social media is important in this study as more and more people share by uploading their travel experiences making it as a vital tool for promotion (Radzi et al., 2014).

**H2:** Social media dimension is significantly and positively related to destination food image

**Local food experience.** Although the word local does not carry any specific definition, however, it is often referred to as an area or location in the closest neighbourhood. Similarly, the term local food may be explained as any food that is prepared and served to the local people of that particular region (Stephan et al., 2019). Through the delivery of its own cultural status and elements, local food allows tourists to understand the intricacies and the nitty-gritty of regional cuisine and its rich heritage and culture. This was backed up by Frochot's (2003) argument that local cuisine may represent cultural experiences and identity while also giving visitors a favourable impression of the region's cuisine. According to Rozin's (2007) theory, people tend to select foods they have previously consumed and those are positively associated to past exposure or experience. Desirable food experiences, such as those derived from the senses of taste and smell, can fulfil tourists' psychological as well as physiological demands (Roosbeh et al., 2013). Food can be a host of many things such as an attraction, an experience and a learning for the travellers. It is a fore gone conclusion that tourists usually end up spending more when they travel to a particular destination. It is therefore, in such a scenario, the role of food tourism is to develop and offer varieties of food and beverages that cater to their taste buds which will create a lasting experience and repeat business. This experience of the tourists may translate into them taking up food related researches in various tourist destinations leading to development of food tourism (Sojasi Qeidari and Hosseini Kahnouj (2023).

**H3:** Local food experience dimension is significantly and positively related to destination food image

**Food Culture.** A culture is stereotype pattern of thinking, beliefs, behaviours, customs and norms that are passed on from one generation to the other. Anything that is common and relatable is usually shared among people forming a culture, of that particular region or the state (Johnson, 2013). This according to (Lebron, 2013), is also referred to as society. Similarly, food can be seen in the same vein where different regions or places have their own distinct food culture, for example, eastern region, northern region, southern region and the western region. The state of Odisha offers varieties of popular cuisines to the tourists.

**H4:** Food culture dimension is significantly and positively related to destination food image

**Advertisement.** Advertising is nothing but drawing the attention of the general public towards a product or service by

providing useful information. And, by providing the most accurate information possible, it has the power to change people's minds and attitudes (Frolova, 2014). There are numerous other ways to advertise, including through TV shows, social media, print ads, and even propaganda. A well-designed culinary tourism advertisement can help a country project a positive image, claim Mirtaghiyan et al., (2013), which will eventually draw in more foreign travellers. Using persuasive advertising that had a direct impact on how visitors responded to the publicity (Mirtaghiyan et al., 2013). The greatest approach to advertise local food to tourists is by employing a variety of catalogues, posters, brochures, banners, and virtual billboards. These apart, there are various aspects such as economic, social, cultural along with different tools of advertising that help in the development of food tourism destinations (Chen and Rahman, 2018; Woyo and Slabbert, 2020).

**H5:** Advertisement dimension is significantly and positively related to destination food image

**Destination Food Image.** According to Stern et al., (2001), an image might relate to a company, a product, a brand, or a physical location. It can also refer to a consumer's mental patterns of beliefs and emotions. Finally, it can refer to messages from advertising or public relations. According to Nelson (2016), an image is something that a person sees or perceives through his lens or filters that involve ideas, thoughts, attitudes, and impressions. In the similar lines, the concept of food has gone a sea change and has become a crucial deciding factor for the tourists or travellers in determining their reasons to visit a particular destination (Lee and Scott, 2015). Food images are thus yet another way that people's perceptions, comments, and attitudes towards food are expressed. Chi et al., (2013; 2019) maintain that factors contributing towards building food image are behaviour and pleasure derived by a tourist in devouring the local delicacies. However, a study by Lertputtarak, 2012 contradicts this idea by attaching equal weightage to both the food served and the ambiance that attracts the tourists. These views have also been voiced by (Osman and Nazari, 2020). This study examines on how the destination food image is being impacted by dimensions social media, food culture, local food experience, and advertisement.

## MATERIAL AND METHODS

**Data Collection –** The researchers administered structured questionnaire to elicit primary data from the respondents. Whereas, the secondary data was gathered from a variety of online resources, including books, journals, research papers, and other relevant materials. **Sample Size, Sampling Method & Procedure -** An online survey was utilised in conjunction with the non-probability convenience sampling approach to conduct the study and the data was collected from nearby locations. For the study, 270 responses were gathered from the domestic tourists who visited the state of Odisha and tasted Oriya local foods. Using SPSS 23.0 software, statistical procedures including factor analysis, regression analysis, correlation analysis, and descriptive statistics were used to assess the validity of the hypotheses.

**Questionnaires for the Study -** This study uses a standardised questionnaire that contains two parts. The Respondent's Demographic Profile is included in Part-A, while the Part-B contains Hsu (2014) has four items that were used to gauge attitude. Four items to measure destination food culture by Cheng et al., (2018), five items were taken from Wan Mohd Zain (2019) to measure local food experience, and five items from Pattanachai (2015) to measure social media. In order to quantify advertising, four items from Jaafar et al., 2012 were used. Five-point Likert scale were used to score all the items.

## ANALYSIS OF DATA

The Table 1 presents the statistical characteristics of respondents and and Figure 2 provides the graphical representation of the same. Out of the whole sample, 171 people (63.33 percent) were female, while the remaining 91 people (36.67 percent) were male. Regarding the age range, 110 of them, or 40.75 percent, are under 30, and 79 respondents, or 29.25 percent, are under the age group (30–40), and 55 respondents, or 20.38 percent, are under the age group (41–50).

Furthermore, according to the research, 69 of them—or 25.56 percent of the sample—were undergrads, and 111 of them—or 41.11 percent of the sample—were graduates. Within the yearly income bracket, eighty respondents (or 29.63%) fell between the range of Rs. 31,000 and Rs. 40,000, while just thirty-eight respondents (or 14.07%) fell between the range of Rs. 50,000 and Rs. 50,000. The Table 2 displays the descriptive analysis of the variables. According to the Table 3, the sample is adequate and the data is appropriate for factor analysis since the KMO statistics value is .813, indicating a good partial correlation and is significant at  $p < 0.05$  (Kaiser, 1974). The Table 4 shows that the indicators are internally consistent, with a Cronbach Alpha of .772 for 22 indicators and six variables (Nunnally, 1978).

Table 1. Statistical characteristics of respondents

Parameters	Classification	Distribution	Percentage
<b>Gender</b>	Male	99	36.67
	Female	171	63.33
<b>Age</b>	Less than 30 years	110	40.75
	30 to 40 years	79	29.25
	41- 50 years	55	20.38
	51 to 60 years	15	05.55
	Above 60 years	11	04.07
<b>Education</b>	Under Graduate	69	25.56
	Graduate	111	41.11
	Post Graduate	90	33.33
<b>Annual Income (INR)</b>	Less than Rs.20,000	40	14.81
	Rs.20,000 – Rs.30,000	62	22.97
	Rs.31,000- Rs.40,000	80	29.63
	Rs.41,000- Rs. 50,000	50	18.52
	Above Rs.50,000	38	14.07

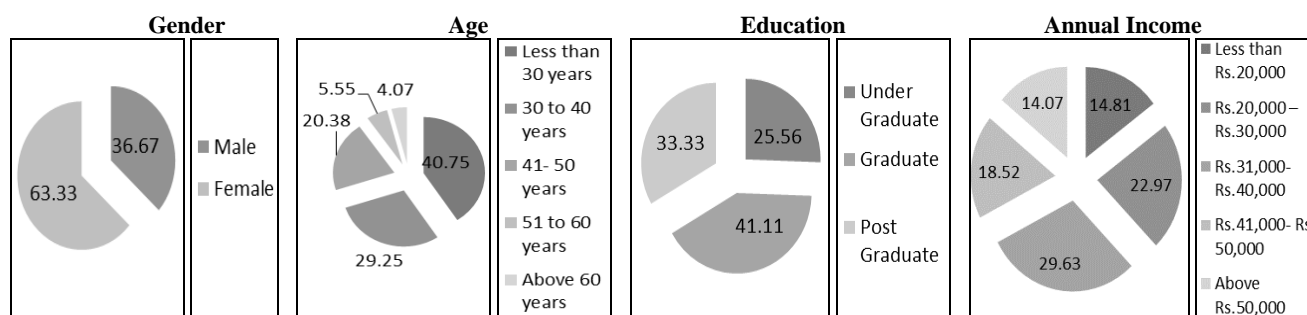


Figure 2. Statistical characteristics of respondents (graphical representation) (Source: Primary data)

Table 2. Descriptive analysis (Source: Primary data)

Items	Mean	Standard Deviation
Attitude	3.82	0.80
Social Media	3.71	0.87
Local Food Experience	3.73	0.79
Food Culture	3.63	0.78
Advertisement	3.86	0.82
Destination Food Image	3.69	0.77

Table 3. KMO and Bartlett's test of sphericity (Source: Primary data)

KMO and Bartlett's Test		
Bartlett's test of sphericity	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.813
	Approx. Chi-Square	8996.081
	Df	759
	Sig.	.000

Table 4. Reliability analysis (Source: Primary data)

Cronbach's Alpha	Sample Size	Number of Items
.772	270	22

Table 5. Communalities (Source: Primary data)

No.	Items	Initial	Extraction
1	It is prudent to eat local food	1.000	.853
2	I feel a sense of contentment and fulfillment when I consume local food	1.000	.781
3	I derive pleasure and a gratifying experience in tasting local food	1.000	.765
4	I feel the local food tickle my taste buds	1.000	.741
5	Social media is an effective tool to promote local foods in Odisha	1.000	.841
6	Social media is an important channel for local food businesses	1.000	.780
7	There are several advantages of social media over traditional marketing to have online local food promotion.	1.000	.744
8	Content especially in form of videos by YouTube or food vloggers help the travelers to get an update on varieties the local cuisine has to offer.	1.000	.769
9	There is an impact of social media in local food sales in the repeat purchase order	1.000	.828
10	Local food is one of the major motivators for travelers to undertake their particular trip	1.000	.771
11	The reasons to taste local food according to me are the novel experience and culture of destination	1.000	.758
12	A sense of appeal is the deciding moment for any tourist who is looking for to experience new food	1.000	.767
13	Local food experience of a tourist is determined by the type of food, the surroundings and the people.	1.000	.772
14	Local food experience is encouraged by the extraordinary feeling a tourist goes through while consuming the food.		
15	A tourist's attitude towards local food is bounded by culture.	1.000	.711
16	One gets to know a lot about culture and people from their food, their interactions, their warmth and their welcoming nature.	1.000	.745
17	Local food experiences can be viewed as a chance to learn about local cultures and experience new flavours destinations	1.000	.739
18	Local food endures the tourists to realize and glorify culture by the means of tangible resources.	1.000	.768
19	Local foods in Odisha are not advertised and marketed properly	1.000	.711
20	I would like to know more about available local foods at affordable prices and taste	1.000	.742
21	I would like more information about the benefits of local foods	1.000	.666
22	Consumers need more information about places where local foods can be purchased	1.000	.719

The results of Principal Component Analysis via extraction method in the Table 6 show that the communalities fluctuate widely between .666 and .853. Due to the considerable and robust interrelationships between each variable and the other variables. Extraction Method: Principal Component Analysis.

**Rotation Method:** Varimaxwith Kaiser Normalization. a. Rotation converged in 5 iterations.

The output for variance %, Eigen values, and factor loadings is displayed in the above table. More than 75% of the dataset's variation was explained by the components with Eigenvalues of one or above.

**1<sup>st</sup> Factor:** Four indicators in all were put into the first component (Attitude) to represent the attitude dimension with

Variable Table 6 shows that the loadings values range from .822 to .861, with an EV of 9.398 and an AV of .920, which together account for 40.63 percent of the variance. The substantial variation this component exhibits explains why attitude is a key predictor of destination food image.

**2<sup>nd</sup> Factor:** The social media component was represented by loading five variables in total into the second factor. The values of the factor loadings range from .813 to .869. The EV is 6.515, the AV is .911 (Table 6), and these values account for 56.75 percent of the cumulative variance. The variation explains that the social media has a major role in how people perceive destination cuisine.

**3<sup>rd</sup> Factor:** A total of five indicators were put into component three (local food experience) to reflect the local food experience dimension. Table 6 shows that the values of the factor loadings range from .831 to .873, the EV is 4.843, and the AV is .910. These values account for 69.86 percent of the total cumulative variance. The variation accounted for by this component indicates that the perception of destination cuisine is influenced by local culinary experiences.

**4<sup>th</sup> Factor:** Four variables in all were loaded into the fourth factor food culture to depict the dimension of food culture with The values of the factor loadings range from .833 to .880, with an EV of 3.919 and an AV of .877 (Table 6). These values account for 76.08% of the total cumulative variance. This illustrates how a key aspect influencing destination food image is food culture.

**5<sup>th</sup> Factor:** Four indicators in all were included in this factor to represent the advertising dimension. According to Table 6, the factor loadings values range from .807 to .846, the EV is 2.898, and the AV is .873. These values account for 79.18% of the total cumulative variance. This clarifies why the element of advertisement has a significant role in determining the destination food image.

Table 6. Factor loading, eigen value & cumulative variance (Source: Primary data)

Name of Factors	Indicators	Factor Loadings	Initial Eigen Values	Var %	Cum %	Alpha
Attitude	It is prudent to consume local food	.822	9.898	40.631	40.631	.920
	I feel a sense of contentment and fulfillment when I consume local food	.843				
	I derive pleasure and a gratifying experience in tasting local food	.852				
	I feel the local food tickle my taste buds	.861				
Social Media	Social media is an effective tool to promote local foods in Odisha	.828	6.515	16.120	56.751	.911
	Social media is an important channel for local food businesses	.869				
	There are several advantages of social media over traditional marketing to have online local food promotion.	.855				
	Content especially in form of videos by YouTube or food vloggers help the travelers to get an update on varieties the local cuisine has to offer.	.841				
Local Food Experience	There is an impact of social media in local food sales in the repeat purchase order	.813				
	Local food is one of the major motivators for travelers to undertake their particular trip	.851	4.843	13.115	69.866	.910
	The reasons to taste local food according to me are the novel experience and culture of destination	.831				
	A sense of appeal is the deciding moment for any tourist who is looking for to experience new food	.873				
Food Culture	Local food experience of a tourist is determined by the type of food, the surroundings and the people.	.839				
	Local food experience is encouraged by the extraordinary feeling a tourist goes through while consuming the food.	.842				
	A tourist's attitude towards local food is bounded by culture.	.880	3.919	6.222	76.088	.877
	One gets to know a lot about culture and people from their food, their interactions, their warmth and their welcoming nature.	.857				
Advertisement	Local food experiences can be viewed as a chance to learn about local cultures and experience new flavours destinations	.846				
	Local food endures the tourists to realize and glorify culture by the means of tangible resources.	.833				
	Local foods in Odisha are not advertised and marketed properly	.831	2.898	3.101	79.189	.872
	I would like to know more about available local foods at affordable prices and taste	.846				
	I would like more information about the benefits of local foods	.811				
	Consumers need more information about places where local foods can be purchased	.807				

From the analysis of Table 7 it is found out that all the above- mentioned variables are positively correlated. To evaluate the provided hypotheses and determine the causal link between independent and dependent variables, a multiple regression analysis was conducted (Field, 2005; Hair et al., 2010). The outcomes of the dimensions' individual multiple regression analyses are shown in Tables 8.0, 8.1, and 8.2.

The above Table 8 shows that value of R Square is .749 which indicates that 74.9 per cent variation in dependent variable was explained by the independent variables mentioned above. The regression model's F-ratio is displayed in the Table 8.1. The dependent variable's variance will increase with increasing F ratio values. At the .000 level, the regression analysis in this case is significant with a F ratio of 301.678. From the above table it can be inferred that all the independent variables significantly impact the dependent variable wherein their coefficient values at  $p < 0.05$ .

Table 7. Correlation analysis (Source: Primary data)

Variable	Pearson Correlation	ATD	SME	LOFE	FOCL	ADVT	DFOIM
ATD	Correlation	1	0.62**	0.63**	0.60**	0.69**	0.64**
	Sig. (2-tailed)		0.00	0.00	0.00	0.00	0.00
SME	Correlation	0.62**	1	0.71**	0.64**	0.65**	0.63**
	Sig. (2-tailed)	0.00		0.00	0.00	0.00	0.00
LOFE	Correlation	0.63**	0.71**	1	0.58**	0.69**	0.60**
	Sig. (2-tailed)	0.00	0.00		0.00	0.00	0.00
FOCL	Correlation	0.60**	0.64**	0.58**	1	0.67**	0.61**
	Sig. (2-tailed)	0.00	0.00	0.00		0.00	0.00
ADVT	Correlation	0.69**	0.65**	0.69**	0.67**	1	0.59**
	Sig. (2-tailed)	0.00	0.00	0.00	0.00		0.00
DFOIM	Correlation	0.64**	0.63**	0.60**	0.61**	0.59**	1
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	

\*\*Correlation is significant at the 0.01 level (2-tailed); \*Correlation is significant at the 0.05 level (2-tailed). ATD: Attitude, SME: Social Media, LOFE: Local Food Experience, FOCL: Food Culture, ADVT: Advertisement, DFOIM: Destination Food Image.

Table 8. Multiple regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimates
1	.866	.749	.746	.32554

a. Predictors (Constant): Attitude, Social Media, Local Food Experience, Food Culture & Advertisement

b. Dependent Variable (DV): Destination Food Image

Table 8.1. Analysis of variance (ANOVA)

Source	SS	Df	Mean Square	F	P
Regression	131.232	5	26.246	301.678	0.000
Residual	23.101	264	0.087		
Total	154.333	269			

a. Predictors (Constant): Attitude, Social Media, Local Food Experience, Food Culture & Advertisement

b. Dependent Variable (DV): Destination Food Image

Table 8.2. Coefficients; \*dependent variable (dv): destination food image (Source: Primary data)

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig.
	B	Std. Error	Beta		
Attitude> Destination Food Image	0.671	.033	.702	14.654	.000
Social Media> Destination Food Image	0.644	.029	.732	15.601	.000
Local Food Experience> Destination Food Image	0.636	.020	.651	13.776	.000
Food Culture> Destination Food Image	0.633	.027	.628	11.321	.000
Advertisement> Destination Food Image	0.597	.029	.612	10.489	.000

## DISCUSSION

The study made a sincere endeavour to evaluate the underlying linkages between the dependent variable, the destination food image in Odisha, India, and the independent variables, attitude, social media, local food experience, food culture, and advertisement. It specifically looked at whether these factors significantly affect the perception of destination meals in the Indian state of Odisha. The model proposed by the study was precise and trustworthy. The study's findings also showed that destination food image was significantly and favourably impacted by each of the aforementioned aspects. Theoretically, the findings of these links support previous research by Pereira, Gupta, and Hussain (2019), which shown that attitude is the primary element influencing customers' perceptions of destination foods. The results also demonstrated the significant influence of social media on Odisha's destination food image.

This is consistent with research by Radzi et al. (2014) and Manning (2014), who discovered that social media is an effective promotional tool for sharing travel experiences with friends, coworkers, and even random strangers. Manning (2014) found that social media facilitates interpersonal communication channels to share opinions and views on eating experiences. When anticipating the food image of a location, local culinary experience is crucial. In a similar vein, this study's conclusions showed a strong correlation between destination food perception and local culinary experience.

This is corroborated by earlier research that found that having a pleasurable eating experience can meet the physiological and psychological needs of tourists (Roozbeh et al., 2013) and that tourists' perceptions of local cuisine are likely to be altered by their sensory experiences with taste and smell (Getz, 2000). Food perception has been shaped by food culture. As people from different parts of a country have different cuisine cultures, the study's findings indicate that food culture has a significant impact on the destination's perception on food in Odisha. These findings also support an earlier study by Lebron (2013), which explained that culture is a sense of identity and belonging to a group or society, and that food is no different. Ultimately, the study's conclusions demonstrated a strong correlation between destination food image and advertisement. When information is delivered in an eye-catching manner and is accurate, it has the power to alter visitors' opinions about regional cuisine. This is consistent with research by Mirtaghiyan et al. (2013), who claimed that a strong advertisement may assist establish a favourable image and draw in visitors from other countries, and Frolova (2014), who described how advertisements can affect people's thoughts and attitudes towards food.

## CONCLUSION

This study has highlighted a number of elements that are necessary to improve the perception of destination cuisine. The study discovered that the perception of Odisha as a destination for food is greatly influenced by attitude, social media, local culinary experiences, food culture, and advertising. In a nutshell, the findings of the study showed that these new facets add credence to the body of work amply supported by the empirical evidence. The determinants examined in this study have shown that they are important and needed to strengthen the destination food image. This might help the Odisha tourism industry by drawing more visitors, which would increase the state's tourism revenue. Hence, our study has revealed that the above mention dimensions play a pivotal role in contributing to Odisha destination food image.

In addition to its rich cultural legacy and customs, Odisha is well-known for its regional food. As a result, it has grown to be a popular tourist destination for visitors who go to Odisha state to savour the local delicacies. The people in charge of overseeing and promoting tourism in the state of Odisha—tourism planners, government organisations, and the local community—must take action to maintain visitors' interest in the state's many tourist destinations by offering the best environments, excellent local cuisine, a willingness to adopt new trends, and positive perceptions.

## Limitations of the study

The cross-sectional analysis of data involving only five dimensions are the limitations of the study. Hence, in the future research on this related domain can employ a longitudinal study involving a greater number of related dimensions to appropriately understand the changing dynamics involved over a period of time. Further, the present study has taken the sample of domestic tourists only. Future study can focus on the foreign tourists as well to provide a better understating on the interrelationship between the dimensions.

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## SPATIAL COVERAGE ANALYSIS OF BUS STOP SET AND ITS RELATIONSHIP TO THE SURROUNDING LAND USES. CASE STUDY, MANIZALES, COLOMBIA

Jorge Alberto MONTOYA\* 

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: joamontoyago@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, Manizales, Colombia, e-mail: daescobarga@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, Ciudad Universitaria Edificio, Bogotá, Colombia, e-mail: camoncadaa@unal.edu.co.

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**Abstract:** The main objective of the research is to determine the efficiency in population and area coverage of the set of bus stops to existing land uses in the city, allowing the identification of possible shortcomings, which leads to the formulation of restructuring proposals in terms of the location of the stops. The research methodology to be applied includes the use of geo-statistical models of accessibility based on GIS-type digital tools, supported by the collection of field information and road inventories. As a main result, it is obtained that the stop-system coverage allows the access of more than 80% of the population in a trip time by walking less than 5 minutes. Likewise, it is possible to identify a robust redundancy concerning the system of stops. Thus, it is concluded that the research process facilitates the evaluation and identification of possible interventions, guaranteeing a better coverage of the stops set regarding the city's existing activities.

**Keywords:** land uses, public transportation, bus stops, planning, accessibility

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### INTRODUCTION

This research is part of the doctoral process of engineer Jorge Alberto Montoya Gómez, under the research Methodological Proposal for Variable Coverage Calculation from Public Transport Stops, Through the Application of Geographical Accessibility Models. Public transportation plays a fundamental role in shaping land use in urban areas, significantly influencing accessibility and the spatial distribution of activities. The availability and efficiency of public transportation directly impact the mobility of urban residents and workers, determining where they choose to live, work, and recreate (Jhonson, 2023). Recent research, such as that conducted by García at 2023, highlights that a well-planned public transportation system can promote urban densification and diversification of land uses by facilitating access to various areas of the city (García et al., 2023). This approach helps reduce dependence on private transportation, promoting a more sustainable and equitable development in urban environments.

In conclusion, public transportation not only enhances the connectivity and mobility of citizens but also influences the structure and function of land uses, contributing to comprehensive urban development. On the other hand, growth and development of an urban center are directly linked to the provision of an adequate and operative transportation system, given the population's travel needs concerning the location of employment, services, and other activities required in their daily lives (Murray et al., 1998; Urbano et al., 2012). However, on multiple opportunities, urban planning focuses on the implementation of measures to facilitate individual transportation, thus providing more infrastructure and services for private vehicles, leaving aside the functionality of public transportation systems, resulting in greater problems of congestion, environmental impact, public health, among others (Jakob et al., 2006; Nurdden et al., 2007).

These impacts caused by private transport have led to a new wave of review and projection of public transport systems as a structuring axis of development, a contribution to the mitigation of environmental impacts (Miller et al., 2016), and improvements in the population's quality of life (Saif et al., 2019). As a result, transport system evaluation methodologies (Seker and Aydin, 2020), with emphasis on user accessibility (Saif et al., 2019), access to the system (Murray et al., 1998; Kaszczyszyn and Sypion-Dutkowska, 2019), safety (Araya et al., 2022), land use (Geurs and van Wee, 2004), and others.

However, these evaluation methodologies, although they allow estimating or visualizing the operational condition and the resulting benefits, do not allow a cross-cutting assessment of the various fields that may influence the behavior of users

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\* Corresponding author

and/or the system, resulting in insufficient or conflicting intervention proposals regarding issues parallel to transportation. A clear example of this is the structuring of bus stops, where their location is based on general demand points and operational coverage radii, which are between 250 and 400 meters (Ibeas et al., 2010; Furth and Rahbee, 2000), seeking a balance between walking distance for users and the shortest stopping time for the displacement of vehicles (Giannopoulos, 1990). However, this methodology rarely considers important aspects such as the safety of the area where the stop is proposed, the surrounding slope, the vehicular flow and, most importantly, the land use on which it will operate. And it is that the conception of land use as a primary element of the "new urbanism", developed for decades (Newman and Kenworthy, 1996), has a direct relationship with transport systems, considering that the current conception is the urban development oriented to transport (Segura and Jiménez, 2019), in which the development poles (activities - land uses) and the existing infrastructure for the interaction of these activities are determined, ensuring more efficient use of land allowing the functions that generate more trips to be concentrated in the proximity of public transport and thus minimizing dependence on private vehicles (Vecchio, 2021). In this vein, assessing the relationship between land use and bus stop coverage ensures a better perception of the best location of bus stops and improves access conditions for users.

As a prelude to the development of the methodology, it is necessary to understand and differentiate the terminology of accessibility, which has been known since the twentieth century second decade (Batty, 2009) but recognized mainly by definition established by Hansen in 1959, "the potential of opportunities for interaction" (Hansen, 1959). However, although Hansen's definition is considered as the fundamental basis of accessibility, as an example of this we have the definition of Dalvi and Martin "ease with which some land use activity can be achieved" (Dalvi and Martin, 1976), the definition of Ben-Akiva and Lerman "the benefits provided by a transportation/land use system" (Ben-Akiva and Lerman, 1985) and the definition proposed by Burns in 1979 "the freedom of individuals to decide whether or not to participate in different activities" (Burns, 1979). Although each definition has significant support, within the research, we chose to define accessibility as a measure of the potential for interaction between human settlements based on the use of a mode of transportation and the limitations of its scope, given the existence of barriers (Geurs and van Wee, 2004; Morris et al., 1978). This to characterize how accessibility is "measured" since there are different ways of quantifying it according to the needs of each research. The location-based (Geurs and van Wee, 2004) is used as an accessibility measure for the analysis, considering the stops layout in the study area and the surrounding land use. It is also related to contour assessments due to the visualization structure in which the information is presented.

Considering the above, this research proposes to perform a cross-sectional analysis of access coverage to Public Transportation Systems, considering bus stop locations, existing population, and surrounding land use through the application of geographic accessibility models based on GIS software, complemented with sociodemographic analysis. All this is to determine the efficiency in population and area coverage of the set of bus stops to existing land uses in the city, allowing the identification of possible shortcomings and characterize if the current bus stop location guarantees the correct access to the transport system, in addition to indirectly assessing its efficiency. The proposed study area is the city of Manizales, the capital of the department of Caldas, Figure 1, located on the western flank of the central mountain range of the Colombian Andes. Manizales has a total population of 458,442 as of 2023, according to the report submitted by the National Administrative Department of Statistics - DANE (Dane, 2018), of which 434,006 correspond to the urban area. The city's topography has a strong variation due to its high mountain location, resulting in difficulties of expansion or particular adaptations for urban development. Regarding the functionality of its public transportation system, it has a total of 66 active transportation routes and 2 aerial cable lines, distributed in 8 companies, which operate independently in the modality of semi-automobile, taking responsibility for the service provided (Alcaldía de Manizales, 2017).

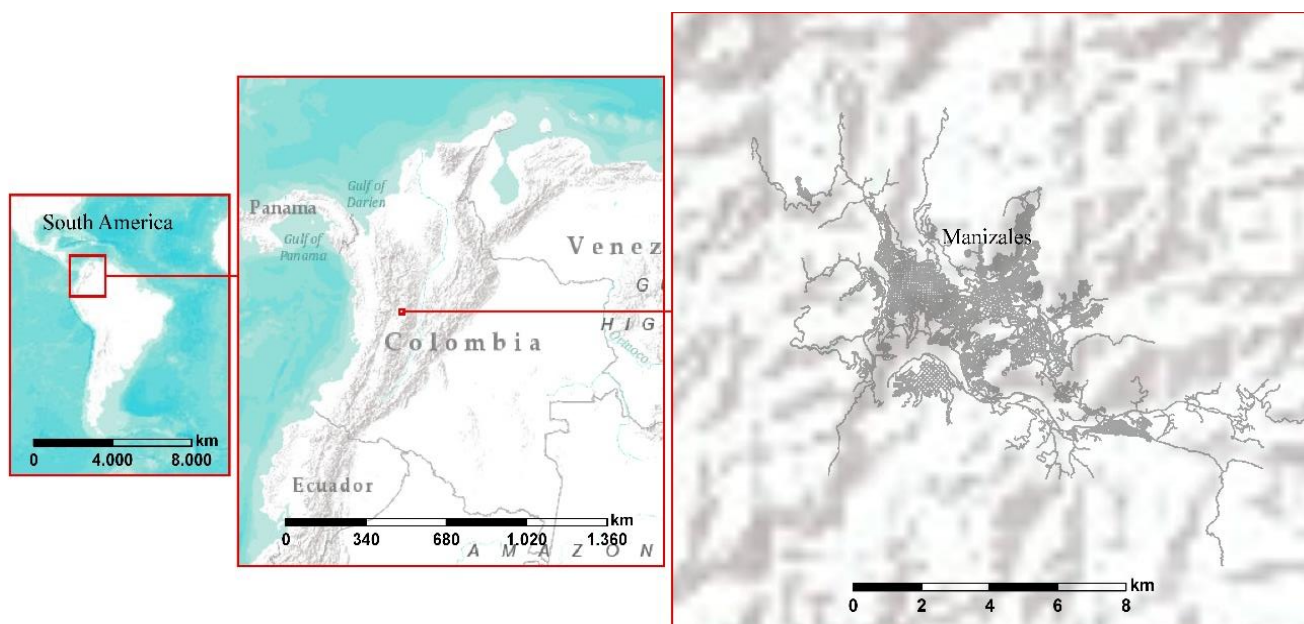


Figure 1. Study area location (Source: authors)

## MATERIALS AND METHODS

The methodological structure used, Figure 2, has a total of 4 stages, starting with the data collection, in which the current information is reviewed, continuing with the structuring and review of data, where the status of the inputs is verified. The measures of accessibility and coverage are established to structure the results obtained from the analysis. Each stage used in the methodology operates sequentially and is described below.

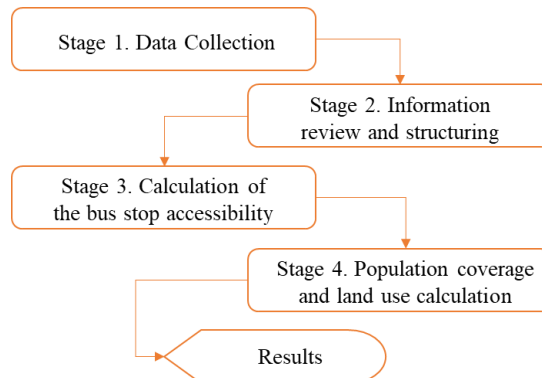


Figure 2. Research methodology (Source: authors)

Phase 1 – Data Collection: As a first methodological stage, we proceed to collect the necessary data for the analysis structuring, including the information base of the public transport system bus stops of Manizales - Villamaría, composed of a total of 1214 stops, as well as the pedestrian infrastructure network, on which the cost of displacement will be determined (Alcaldía de Manizales, 2017). At the same time, information on land use is obtained from the current Land Use Plan (Alcaldía de Manizales, 2017), composed of 5 categories -Institutional, Industrial, Residential, Mixed (commerce, residential, services), and Structuring Mixed (commerce, services, residential on the main axis of the city). In addition to the layer of population information and socioeconomic condition, which is characterized by socioeconomic strata, representative of the purchasing power of the population by groups from 1 to 6, where 1 represents the most unfavorable condition and 6 the population with the greatest economic capacity (Dane, 2023). It is important to clarify that, due to the proximity of Manizales to Villamaría, the operation of the transport system operates for both municipalities. However, the objective of the research is focused solely and exclusively on the urban area of Manizales since the information obtained on land use, and the population does not include data related to the municipality of Villamaría. Figure 3 shows the base information collected.

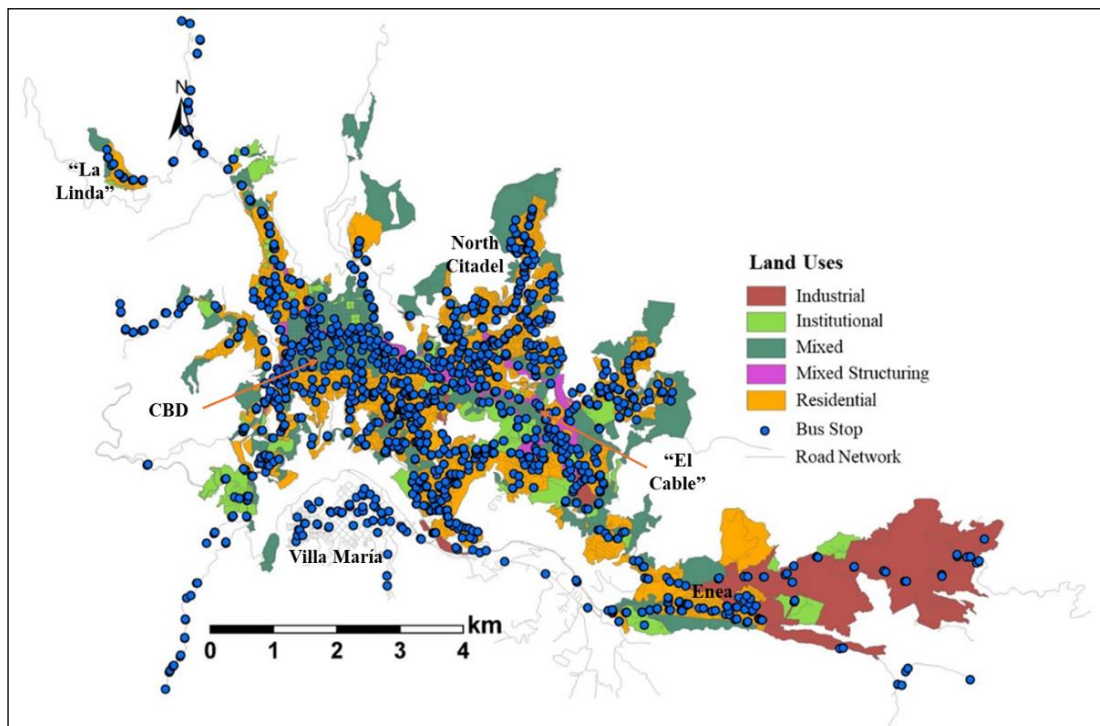


Figure 3. Baseline data collected (Source: authors)

Phase 2 – Information review and structuring: Once the basic information has been compiled, the data needed for the analysis is reviewed and structured. The connectivity condition and components of the pedestrian infrastructure network are reviewed, corroborating the speed, directionality, and lengths of each associated section. The process is performed using the Topology extension of ArcMap, valuing each of the rules required for the execution, as shown in Figure 4. Regarding



the bus stops, their location is verified by field verification, modifying the location of some points that do not have the correct location. This verification is done by using GPS and ArcMap restructuring. In Figure 5, The photographic record carried out by the authors of some city bus stops can be observed, which show the basic features, including shelter, seating, and signage. On the other hand, the information coming from the Land Management Plan is kept in its original structure, except for the population information, which is updated according to the population projections defined by DANE.

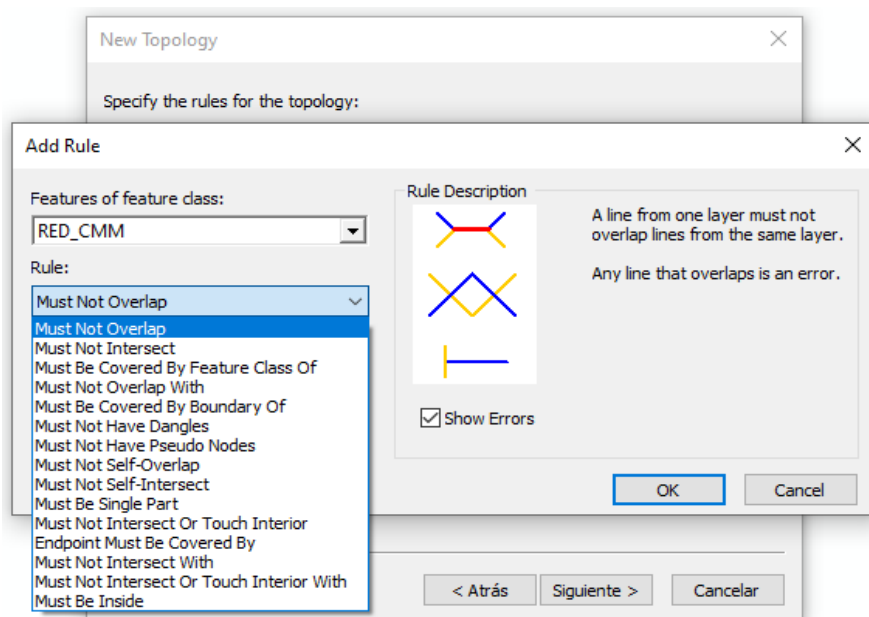


Figure 4. Topology (Source: authors)



Figure 5. Bus Stop revision (Source: authors)

**Phase 3 – Calculation of the bus stop accessibility:** The following methodological step is determining users' travel costs to the nearest stop. This procedure includes the travel time calculation for each network segment using Eq. 1 (Montoya et al., 2021), which is required to determine the minimum path from each network node. The shortest path definition is based on Dijkstra's algorithm (Dijkstra, 1959), where the evaluation of the existing path from each network node to each of the available stops is performed by iteration (Eq. 2) (Montoya et al., 2021), to select the one with the lowest cost of the

multiple available ones. The operational process of analysis is performed using the new closets facility extension of ArcMap, linking the bus stops as Facility and the network nodes as Incidents.

$$Tv_i = \frac{x_i}{S_i} \times 60 \quad (1)$$

Where  $Tv_i$  is the travel time of arc  $i$ ,  $X_i$  is the length of arc  $i$  and  $S_i$  is the arc velocity.

$$Tvmin_i = \min(Tv_{ij}) \quad (2)$$

$$j = 1:n, \quad Tv_{ij} = \min\{Tv_{ij_1}, Tv_{ij_2}, \dots, Tv_{ij_m}\}, m = Roads$$

Where  $Tvmin_i$  is the minimum travel time to the nearest stop  $j$ , from node  $i$  of the multiple paths  $m$  available.

Once the displacement times of each node are obtained, the accessibility curves are constructed using the Geostatistical Wizard extension of ArcMap, considering the ordinary Kriging as interpolation method (Eq. 3) (Montoya et al., 2021), and the incorporation of semivariogram for the correlation assessment of the existing data (Eq. 4) (Montoya et al., 2021),.

$$Z(S_o) = \sum_{i=1}^N \lambda_i Z(S_i) \quad (3)$$

Where  $Z(S_i)$  is the measured value at location  $i$ ,  $\lambda_i$  the weighting for the measured value at location  $i$ ;  $S_o$ , the prediction location and  $N$  the number of measured values.

$$\gamma(h) = \frac{\sum (Z(x+h) - Z(x))^2}{2n} \quad (4)$$

$Z(x)$  is the value of the variable at site  $X$ ,  $Z(x+h)$  is the value of the variable separated from the previous site by a distance  $h$  and  $n$  is the number of pairs separated by this distance.

Phase 4 – Population coverage and land use calculation: After defining the displacement cost of each network node using the accessibility curves, the population, and land use information is cross-referenced by superimposing layers, allowing a time value to be assigned to each land use polygon and associated population. Subsequently, the information is processed using the Microsoft Excel tool, resulting in population coverage and land use.

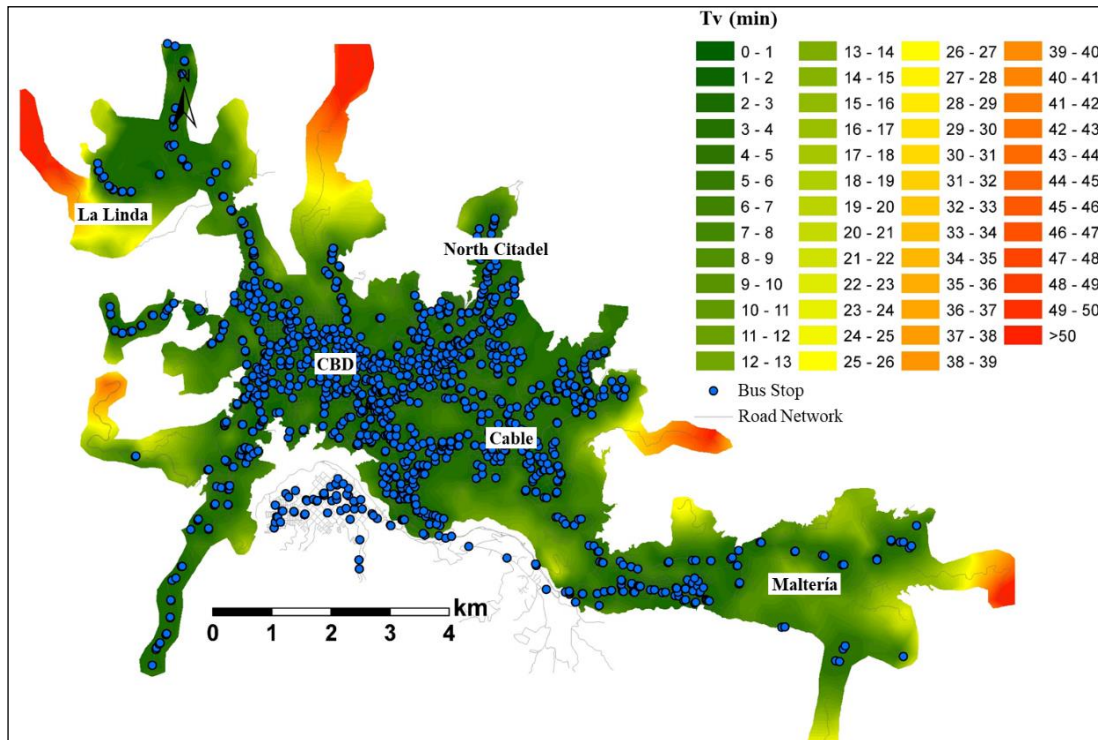


Figure 6. Accessibility curves (Source: authors)

## RESULTS AND DISCUSSION

As a result of the assessment made of the set of bus stops, Figure 6 shows the behavior of accessibility at 1-minute intervals for the area of Manizales. It is possible to observe that most of the city's urban area can be accessed in a travel time of fewer than 13 minutes, thus allowing users of the transport system to use the system in a relatively low base time. However, there are some areas of the city with requirements of up to 50 minutes or more. On the other hand, there is a high concentration of bus stops towards the inner part of the city, inferring a higher demand for users.

However, this high number of bus stops could significantly impact the system's operation. Regarding land use defined by the municipal administration vs. travel time, Figure 7, there is a general coverage of up to 37 minutes to get from any of the areas to the nearest stop. The following Figure 8 and Figure 9 show the percentage of coverage achieved by population and type of land. Figure 8 shows that the population can access at least one bus stop in a travel time of fewer than 5 minutes for an accumulated percentage of more than 80% for each stratum, with strata 1 and 6 being those



with the least accessibility, despite having a positive evaluation. This behavior allows relating the location of the stops to the city's population, in which if a standard walking speed of 4.32 km/h is considered, it is possible to affirm that any user would have a bus stop in a radius of fewer than 360 meters, being within the recommended interval defined by other authors (Ibeas et al., 2010; Furth and Rahbee, 2000). However, the coverage value is 50% of the population.

In that case, there is a time requirement of at least 2.4 minutes, translating into an average distance to a stop of 172 meters, a value lower than the recommended in theory. This behavior affirms that, in a large part of the city, there is an oversupply of bus stops, which could affect the system's operability.

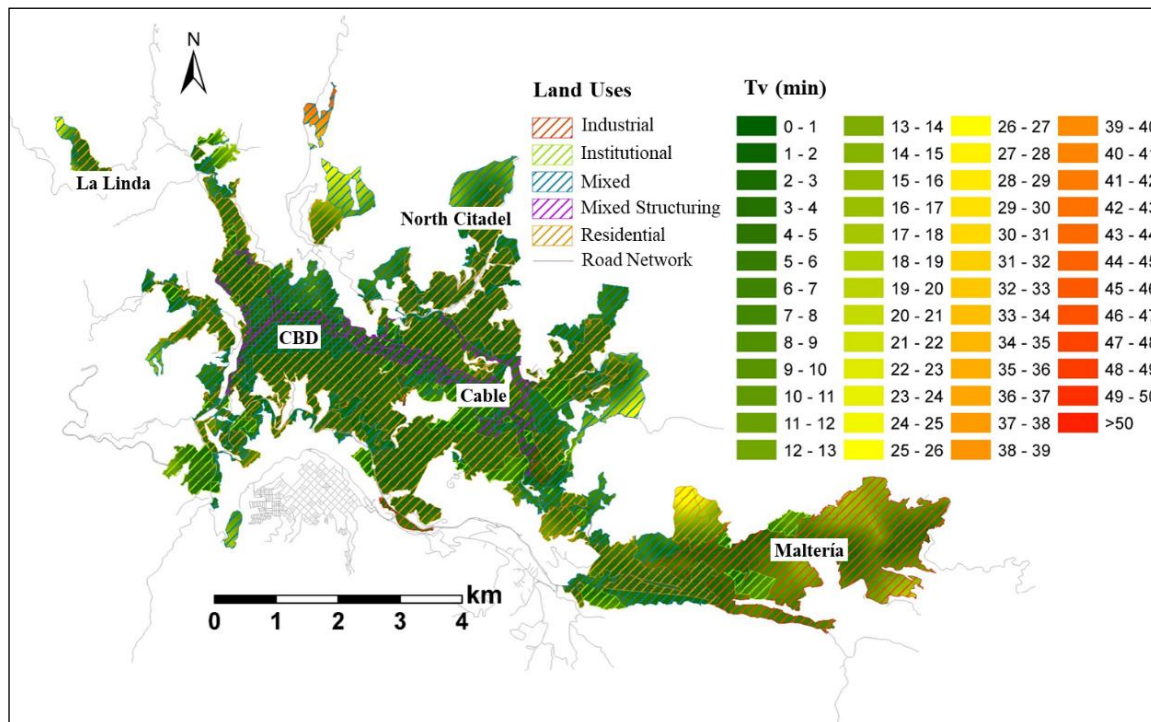


Figure 7. Accessibility curves vs. land uses (Source: authors)

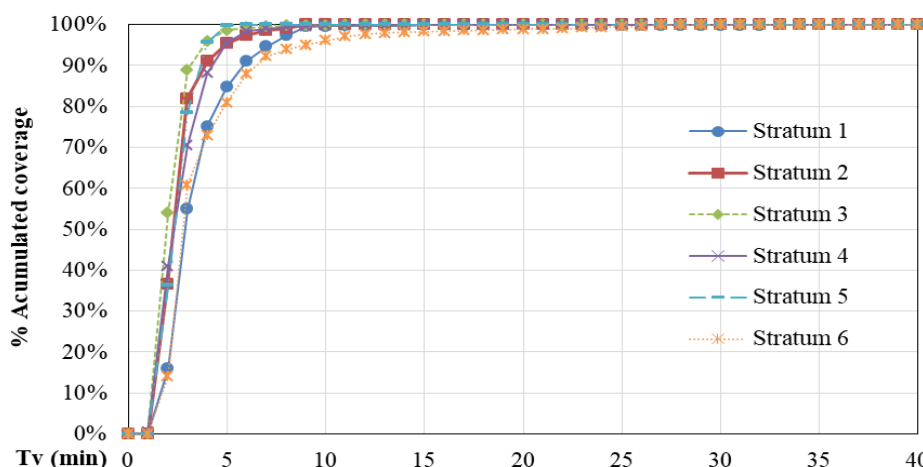


Figure 8. Cumulative percentage of population coverage by socioeconomic stratum to all bus stops (Source: authors)

Regarding Figure 9, the evaluation of coverage by land use is shown for the set of bus stops. The location of the bus stops obeys the distribution of the population in the residential and mixed land uses, which host more than 87% of the population. However, a more critical requirement in access time is observed for the institutional, industrial, and mixed land uses, which host labor, educational, commercial, and service activities, allowing us to infer that the current layout favors the types of trips with origin at home and not the conditions of origin in the daily activities. This evidenced behavior leads to great alerts regarding how the stops are located since by not allowing an adequate distribution (balanced), people require a longer walking distance to access places of interest, even more so at the end of long and tiring days, causing increases in access times and loss of interest in the use of the service, which results in a higher probability of migration to other modes of transportation such as motorcycles. As a general assessment, it is possible to state that the current bus stop layout in the study area facilitates access to the system users from their homes. However, the current layout lacks a balance that facilitates displacement from the points of daily activity, reaching times of up to 10 minutes, which exceed the 400-meter radius recommended for the location of the bus stops.

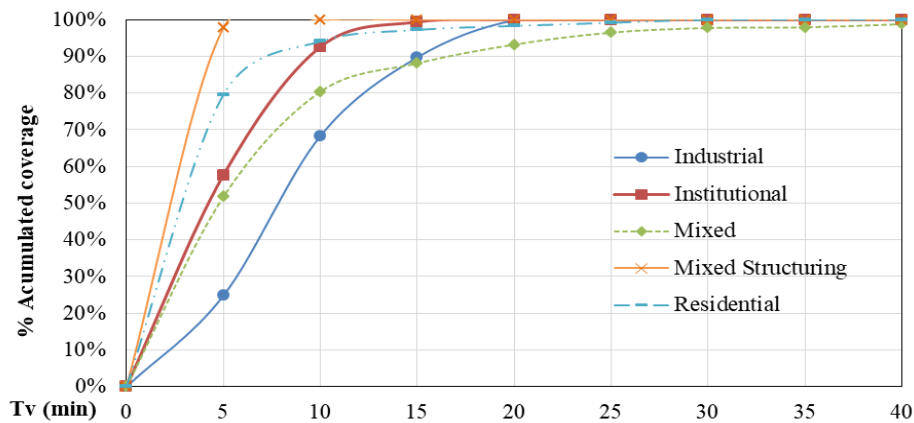


Figure 9. Cumulative percentage of coverage by land use (Source: authors)

On the other hand, although there is no valuation of accessibility within the transportation system, it can be stated that, given the conditions of redundancy and oversupply of stops, high delays can be caused in the operation of the service, considering the detention times, passenger boarding and alighting, as well as the energy cost when accelerating and decelerating the transport units, which could result in a higher operating cost that would eventually deteriorate the system. In this sense, a redistribution of the current location of the stops should be chosen, in search of a more outstanding operational balance, with a fair value according to the existing methodologies and considering the different land uses of the city.

## CONCLUSION

The main conclusion of the study is that, although the current design of bus stops ensures adequate access to the transportation system by providing low travel times to users, there is an excess in the distance required for 50% of the population, which could be detrimental to the system in terms of efficiency and convenience. Furthermore, it is observed that the current design of bus stops predominantly favors residential areas of the city, leaving some gaps in work areas. This could result in a migration between transportation modes and affect accessibility and mobility in these areas. The joint assessment of population coverage, stratification, and land use provides a more comprehensive view of the operational condition of the transportation system, facilitating the identification of areas for improvement and the implementation of strategies to optimize service provision without sacrificing its operational effectiveness.

Accessibility plays a crucial role in the evaluation of bus stops and their relationship with land use. This interconnection is essential for understanding how the characteristics of the urban environment influence the efficiency and effectiveness of the public transportation system. The strategic location of bus stops, based on the distribution of population and economic activities, directly affects the accessibility and convenience of the service for users. Furthermore, assessing accessibility can reveal disparities in public transportation coverage, which can influence mobility and residents' quality of life. Therefore, considering accessibility in the planning and design of bus stops is essential to ensure equitable and efficient access to public transportation, which in turn can contribute to the promotion of sustainable urban development and greater social inclusion.

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## CONTRIBUTION OF GIS IN HEALTH PLANNING, CASES OF ONCOLOGY IN ALGERIA

**Manel NAILI\*** 

Laboratoire d'Analyse Urbaine et Environnementale, University Of Badji Mokhtar, Department d'Aménagement,  
Annaba, Algeria e-mail: manel.naili@univ-annaba.org

**Djamel TELAJDIA** 

Laboratoire d'Analyse Urbaine et Environnementale, University Of Badji Mokhtar, Department d'Aménagement,  
Annaba, Algeria e-mail: manel.naili@univ-annaba.org

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**Abstract:** Geographic Information Systems (GIS) have become an essential tool in health planning, allowing for the analysis and visualization of spatial data to improve healthcare. In Algeria, the use of GIS in oncological care is still in its early stages, but has the potential to greatly enhance the planning and delivery of cancer services. This study aims to assess the contribution of GIS to health planning in the provision of oncological care in Algeria. Specifically, we will examine how Network analysis can be used to identify areas with high accessibility, map out healthcare facilities and resources, and optimize the allocation of resources to improve access to cancer treatment. A review of existing literature on the use of GIS in health planning and oncological care will be conducted, along with an analysis of cancer incidence data in Algeria. GIS software will be used to map out accessibility rates, healthcare facilities, and population distribution to identify areas in need of improved oncological services. The results of this study will provide valuable insights into how GIS can be utilized to enhance health planning in the provision of oncological care in Algeria. By identifying areas with high accessibility rates and mapping out healthcare resources, policymakers and healthcare providers can better allocate resources to improve access to cancer treatment and ultimately improve patient outcomes.

**Keywords:** GIS, accessibility, road network, Oncology, Algeria

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### INTRODUCTION

The use of geographic information and geomatics tools is a reality no longer demonstrated. Experience around the world has so far raised many questions about the role that these tools should now play in the management of territories. This work explains to us the methods of analysis of medical geography and how this discipline, taking into account the contributions of other social sciences, can be used to improve the practice of health planning.

The East makes it possible to highlight atypical territories in terms of links between social inequalities and health inequalities which require a more in-depth analysis. "Finally, the cartographic comparison between epidemiological and social indicators is very delicate" (Telle-Lamberton et al., 2016). In 2017, Bonastre et al analyzed the effects of the recomposition of the supply in oncology based on the evolution of access distances and departmental referral rates. However, the supply of care marks centralizations and concentrations in certain territories, which reflect a spatial inequality in the distribution of the supply of care, in this subject Bonastre et al note that "First of all, as in other therapeutic areas, a policy of concentrating the supply of cancer care has been implemented to improve the quality of care" (Bonastre et al., 2017).

Equity in the quality and quantity of care offered are the fundamental values of the health planning process. Given the great importance of the oncological service in urban and rural spaces, many humanities, applied sciences, planning and geography have paid great attention to the capabilities and diversity of the service. Cancer is classified as a non-communicable disease. According to Ferlay cancer is "the second cause of death in the world, cancer causes around 10 million deaths per year. Nearly one in six deaths is due to cancer worldwide (Ferlay et al., 2021). In 2014 Hamdi-Cherif declared that: "cancer is currently one of the main public health problems in Algeria" (Hamdi-Cherif et al., 2014). As the cases of cancers are continuously increasing in Algeria and the internal elements of contemporary urban planning evolve, the criteria for health planning differ in terms of geographical distribution and correlation.

It was becoming difficult to maintain the centrality of oncological services due to the large size of the wilayas and the need to be located near residential areas. This makes oncology services one of the most important services to plan for distribution in the wilayas to ensure their access as soon as possible. The planning of their distribution is an important and essential determinant of the effectiveness of this service. In terms of geographic information, the use of references has become practical, that is to say, that we use the cartography of certain reference data, which have known geometric characteristics (data, projection system, "coordinates" of location, degree of precision of the data, etc.), and which are useful for geo-referencing and geo-research of information.

The importance of cartography is crucial in the geography of health to facilitate the analysis and interpretation of several indicators in this subject. In 2021, Laurent and other researchers examined how to apply a spatial approach

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\* Corresponding author



(relational and geographical) to the journeys of breast cancer care for their better integration within their territories where they affirmed that: “Maps can help define how to develop integrated and patient-centered care services” (Laurent, 2021).

In the context of the geography of health and non-communicable diseases, in 2020, Léa Prost, proposes, via “the mobilization of geographical approaches, a (different) reading of the risks of carcinogenic exposure in adults. It shows that the geography of the disease is not only the reflection of the geography of the risk factors and that the circumstances in which these exposures take place are complex, in particular because they are part of the articulation of individual trajectories and territorial trajectories” (Léa, 2020). By leveraging master data management, city departments can pull together all of their data efforts in a unified strategy accessible to all members concerned. This approach will better support everyone. The data on the road network of the wilayas are part of the strategic data for the management of these wilayas. These markers are used in many commercial applications, whether for administrative reasons, to inform the place of residence of families, but also for technical reasons, to locate interventions on the public road, and finally, to adapt the infrastructures to the needs of the population. The two researchers used GIS technology as the latest applied fields that help support contemporary geographic studies by providing a mechanism to analyze spatial data and relate it to descriptive information (attribute data) to yield positive or negative results.

On the other hand, Tina and Abdelmadjid, 2024 confirms that The Network Analyst extension which resides in the GIS produced the best routes between the port locations and the activity areas on the road network based on the time and length of the journey. Other research confirms that geographic information systems are the best ecosystem for acquiring, managing, analyzing, mapping and representing spatial information (Gianluca et al., 2024) GIS (Geographic Information Systems) plays a crucial role in health planning, especially in the field of oncology in Algeria. Here are some of the contributions of GIS in health planning for oncology in Algeria. To effectively plan for the distribution of oncological services in the wilayas, it is important to consider factors such as population density, accessibility, and existing healthcare infrastructure. Geographic information systems (GIS) can be utilized to analyze these factors and determine the most strategic locations for oncology services. GIS technology allows for the visualization and analysis of spatial data, making it easier to identify areas with high demand for oncological services and areas that are currently underserved.

By overlaying demographic data, transportation networks, and existing healthcare facilities on a map, planners can identify optimal locations for new oncology centers. Additionally, GIS can be used to model different scenarios and assess the potential impact of different distribution strategies. By simulating the effects of different location decisions, planners can make informed decisions that maximize the accessibility and effectiveness of oncological services in the wilayas. Overall, the use of GIS technology in the planning of oncological services distribution is crucial for ensuring that these essential services are accessible to all residents in a timely and efficient manner. By leveraging the power of geographic information, planners can optimize the distribution of oncology services and improve the overall quality of cancer care in the wilayas.

The are in specialized centers can lead to spatial inequality in access to care for patients living in remote or rural areas. This can result in longer travel distances and increased costs for patients seeking treatment. Geographic information systems (GIS) and geomatics tools can be used to analyze these spatial inequalities and help health planners make informed decisions about the distribution of healthcare services. By mapping out access distances and referral rates, planners can identify areas that are underserved and in need of additional resources.

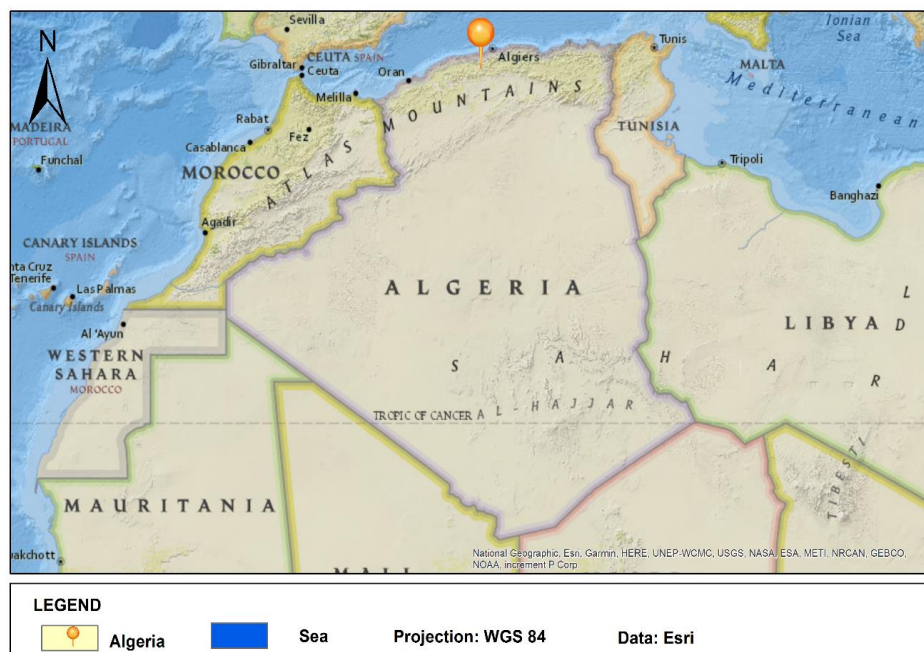


Figure 1. Study area (Source: Realized by authors)

In addition, medical geography can also be used to study the social determinants of health and how they impact health outcomes. By analyzing the relationship between social inequalities and health inequalities, planners can develop

targeted interventions to address the root causes of these disparities. Overall, the use of geographic information and geomatics tools in medical geography can help improve the practice of health planning by providing valuable insights into the spatial distribution of healthcare services and the social factors that influence health outcomes. By taking a holistic approach that incorporates the contributions of other social sciences, planners can develop more effective and equitable healthcare policies that benefit all members of society.

## MATERIALS AND METHODS

### 1. Study Area

Algeria, situated as the gateway to Africa, holds significant prominence due to its expansive geographical area, covering 238,741 square kilometers and housing a population of approximately 43 million inhabitants (Lagha and Bachi, 2018). The country itself is marked by a diverse range of physical features, economic circumstances, social customs, and governmental initiatives. Originally divided into 48 wilayas, the administrative organization of Algeria has been updated to encompass 58 wilayas, as per the latest division established by law n° 19-12 in 2019 (Figure 1). This adjustment aims to enhance the management of this vast territory (Naili and Telaidjia, 2022).

### 2. Data source

In any location-allocation model, the location of facilities the set of demand points and the supply networks by which facilities fulfill the needs of demand points are essential. In this study, we relied on several data sources for various purposes (Table 1). Firstly, we utilized data on the location of oncology services (oncology service locations (the facilities) in Algeria, and their respective capacities were obtained from the MSPRH for the year 2021) to identify the available facilities in the study area. This information was crucial for understanding the existing infrastructure and its spatial distribution. Secondly, we obtained data on population distribution (collected from MSPRH for the year), which helped us identify the demand points for the service users. This demographic information allowed us to assess the potential accessibility and coverage of the oncology services. Lastly, we incorporated data on the road network (GIS database was built using OSM map to build a network dataset. This dataset served as a foundation for analyzing travel times, distances, and routes between the population locations and the oncology service facilities. By combining these data sources, we aimed to study the spatial dynamics of oncology services and their accessibility to the population.

Table1. Data sources and their utilization in the study

Data	Source	Use
Location of oncology service	MSPRH	To determine the location of available facilities
Population location	RGPH	To know the demand points of the service users
Road network	OSM	TO build the network dataset

### 3. Method

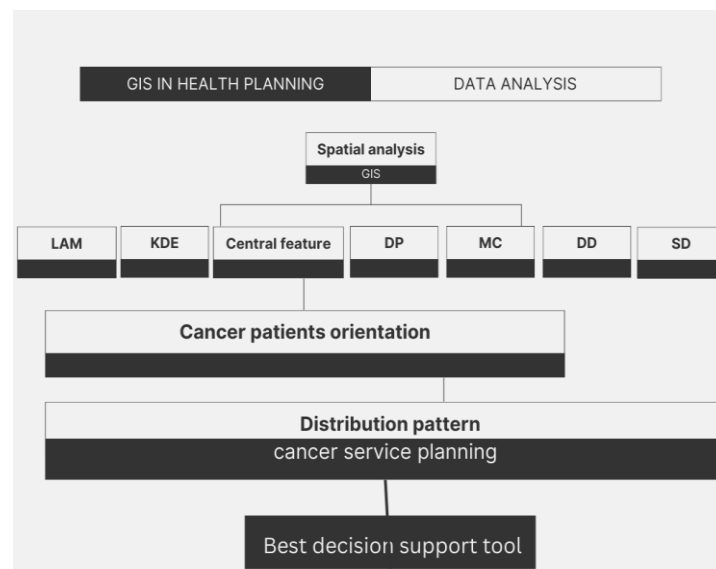


Figure 2. Method of using GIS in health planning

#### 3.1. Location allocation modeling (LAM)

Minimizing weighted impedance or p-median modelling available by Arc GIS software was used in our study to identify a certain number of oncology services between a range of candidate facility locations in Algeria reducing the overall distance of travel from the districts to their closest oncology services (Figure 2). In p-median allocation problem solutions, Facilities are situated in such a manner that the amount of all weighted costs between the demand points and the solution facilities are reduced. The objective function is to make Z as small as possible (Church and Murray, 2008) Mathematically, the P-median problem can be summarized as follows:



Components:  $Z$ : objective function to be minimized;  $\sum_{i \in I}$ : sum over all demand areas;  $\sum_{j \in J}$ : sum over all possible facilities;  $a_i$ : weight or cost associated with demand area  $i$ ;  $d_{ij}$ : distance between demand area  $i$  and facility  $j$ ;  $x_{ij}$ : binary variable indicating whether demand area  $i$  is assigned to facility  $j$ ;  $p$ : number of facilities to be located;  $(i, j)$ : pair of demand area and facility;  $X_{ij}$ : binary variable indicating whether demand from demand area  $i$  is assigned to facility  $j$

Units: Geographic coordinates ( $X, Y$ ) for demand areas and facilities; Distance units for  $d_{ij}$  (e.g. miles, kilometers); Binary values (0,1) for  $X_{ij}$  and  $x_{ij}$ .

Minimize  $Z = \sum_{i \in I} \sum_{j \in J} a_i d_{ij} x_{ij}$  (1) (Daskin, 2009).

Subjective to possible constraints, an individual demand site must be assigned to a facility described as:

$\sum_{j \in J} x_{ij} = 1$  for all  $i$  (2) (Daskin, 2009).

Demand must be assigned to an open facility as follows:

$x_{ij} \leq \sum_{j \in J} x_{ij}$  for all  $(i, j)$  (3) (Daskin, 2009).

The number of facilities ( $p$ ) must be located (the number of communities assigned to themselves equals the number of facilities to be located):

$\sum_{j \in J} x_{jj} = p$  (4) (Daskin, 2009).

All demand from an individual demand site is assigned to only one facility:

$X_{ij} = (0,1)$  for all  $(i, j)$  (5) (Daskin, 2009).

where  $Z$  is the objective function;  $I$  the set of demand areas (usually nodes of a network); the subscript  $i$  an index denoting a particular demand area;

$J$  is the set of candidate facility sites (usually nodes of a network); the subscript  $j$  an index denoting a particular facility site;  $a_i$  the number of people from demand site  $i$ ;  $d_{ij}$  the distance separating place  $i$  from candidate facility site  $j$ .

$d_{ij} = 1$  if demand at place  $i$  is assigned to a facility opened at site  $j$  or  $= 0$  if demand at place  $i$  is not assigned to that site.  $p$  is the number of facilities to be located. Road network coverage was used for the P-median model, and it was applied using oncology services as  $p$  and the location of population as  $i$  (demand location).

ArcGIS network analysis was used to produce the P-median location-allocation model for Algeria oncology services (Figure 8). This output helped us to the optimum location of each oncology service. For example, Annaba center was allocated to four Provinces. The Allocation function of ArcGIS produces a table output that defines the optimum health care centre allocations, including the name of the health centre and its assigned Provinces.

### 3.2 Kernel density estimation (KDE)

Kernel Density Estimation (KDE) is one of the useful tools for determining the spatial intensity of a point process, and understanding and predicting potential event patterns (Gavin et al., 1993). It describes the global trend of a parameter, and the KDE method uses kernel density interpolation to reveal the distribution of event points in the study area (Silverman, 2018).

### 3.3. Distribution pattern (DP)

One of the most important analyses in urban planning is statistical analysis especially the spatial distribution of facilities based on the principles of proximity (Batty, 2013). To analyze the pattern of the spatial distribution of oncological service. We will use a set of analyses found in the distribution pattern extension.

### 3.4. Central feature (CF)

The Central Feature tool identifies the most centrally located feature in a point, line, or polygon feature class. Distances from each feature centroid to every other feature centroid in the datasets are calculated and summed, then the feature associated with the shortest accumulative distance to all other features (weighted if weight is specified) is selected and copied to a newly created output feature class (Anselin et al., 2004).

### 3.5. Mean center (MC)

The mean center is the mean  $x$ ,  $y$  and (if available)  $z$  coordinate of all entities within the study area. It allows you to track changes in the distribution or compare distributions of different types of entities (Getis, 2010).

### 3.6. Directional distribution (DD)

A common way of measuring the trend for a set of points or areas is to calculate the standard distance separately in the  $x$ -,  $y$ - and  $z$ -directions. These measures define the axes of an ellipse (or ellipsoid) encompassing the distribution of features. The ellipse is referred to as the standard deviational ellipse since the method calculates the standard deviation of the  $x$ -coordinates and  $y$ -coordinates from the mean center to define the axes of the ellipse (Anselin et al., 1992).

### 3.7 Standard distance (SD)

Measuring the compactness of a distribution provides a single value representing the dispersion of features around the center. The value is a distance, so the compactness of a set of features can be represented on a map by drawing a circle or a sphere with the radius equal to the standard distance value. The Standard Distance tool creates a circle polygon or a multipatch sphere if your data is  $z$  enabled.

## RESULTS

### 1. Access to oncology services:

Access to oncology services is a multidimensional concept that describes people's ability to use health services when

and where they are needed. It describes the relationship between attributes of service and the characteristics of service delivery systems. Using maps for health service locations is an important GIS application. There are four main ways of measuring accessibility to health locations which include: (a) Spherical distance, which measures the distance along a great circle connecting two points (used for small-scale investigations); (b) Euclidean (straight-line) distance, which works with projected geographical coordinates; however, it fails to consider transportation routes and barriers to movement; (c) Manhattan metric, which is used to calculate distance with areas that follow a grid pattern road network; and (d) network distance, which computes the length of the shortest path along the transport network. Looking at these four accessibility techniques, network distance is selected because it is the more accurate and real index that produces accessibility zones that take into account the road network of the study area.

To further analyze the location and distribution of oncology services, the drive-distance analysis technique was applied for our study. To, calculate the travel distance between oncology service locations in Algeria, the ArcGIS software was used to define the route connecting health center locations and to sum the estimated travel distance along each road segment in the route. Therefore, our work has applied the same travel time values (30 min) to oncology services in Algeria

To more accurately analyze the accessibility of oncology services in our study, we calculated 100 km 300 km 600 km travel distances for oncology services, then selected nearby oncology services for each province (demand point) using the extension ArcGIS Network Analyst and generated network service areas and nearest facility, for each health center location in Algeria. The resulting service area is a region that covers all accessible routes (i.e., streets that are within 100,300 or 600 km travel Distance to oncology services) come about, closest facility path is the shortest route to the nearby oncology services of each province (demand point).

Figure 3 shows, which parts of the study area, have low accessibility based on the criteria of 100,300 and 600 km travel Distance. These parts are located mainly in the north, and southwest of our study area. Based on this output, several areas of Algeria have low accessibility to oncology services because they fall outside the 100,300 or the 600 km drive-Distance service area. These are located in the western, eastern, and southern Algeria.

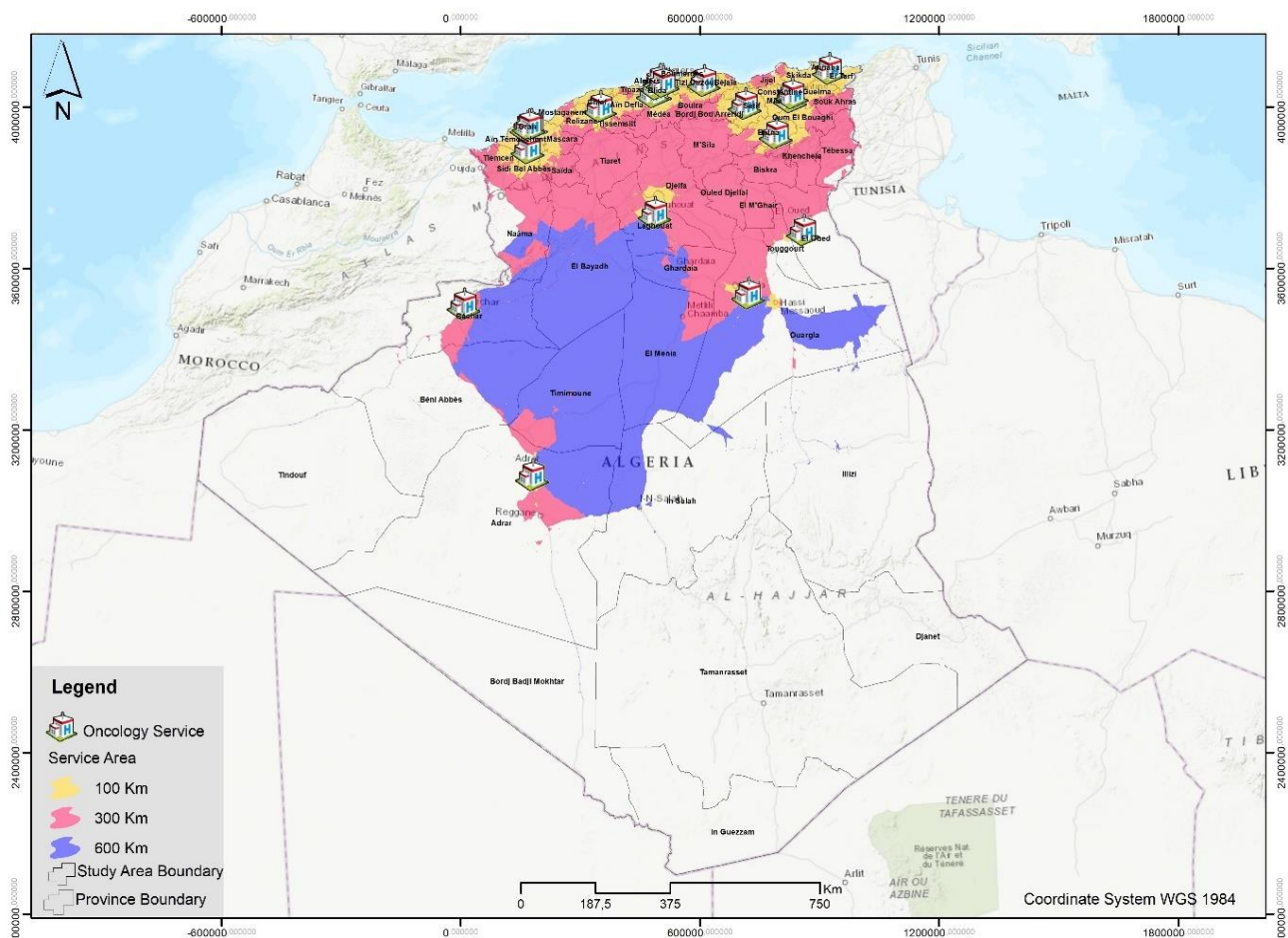


Figure 3. Drive-Distance service areas for oncology services in Algeria (Source: Realized by authors)

## 2. Closest facility path

The closest facility path available through Arc GIS software was used in our study to find out how well oncology services are served, depending on one or more nearby services of each province based on travel distance. Figure 4 shows; which parts of the study area, have low accessibility based on one or more nearby services for each province, and these parts are mainly located north of our study area. Based on this output, in general, the analysis of the closest facility gave us negative results due to the lack of any oncology service close to some provinces and others close to more than one service.

### 3. Kernel density estimation

We applied KDE to map the distribution of population location and oncology services in Algeria. The implementation of this function is based on Quadratic Kernel developed by Silverman. The bandwidth calculated was 9512.5 m and it was used for the kernel density estimation. The density surface allows for visualizing the distribution of oncology service occurrences in terms of concentration (Figure 5).

Figure 4 illustrates this trend, showing a gradual expansion of oncology services from high concentrations in the northwest to lower concentrations in the east, south, and northeast regions of the study area. The density is indicated by varying color intensities, with darker colors representing higher densities and lighter colors indicating lower densities. The population density surface can serve as a visual representation of the concentration of demand for oncology services.

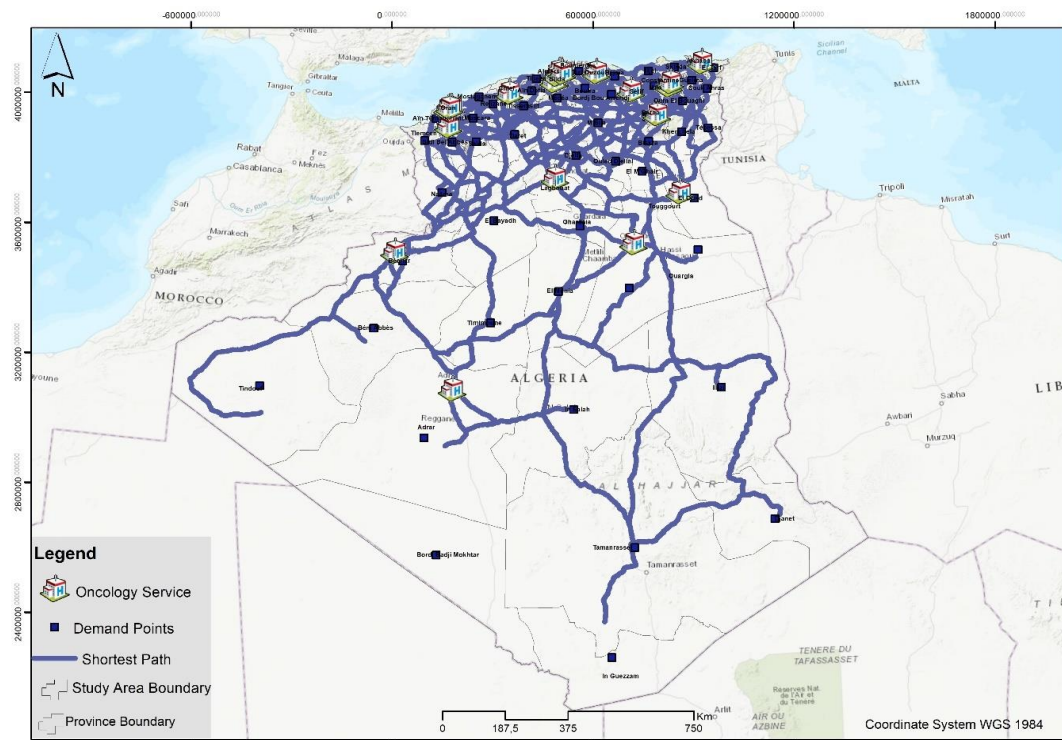


Figure 4. Closest facility path for oncology services in Algeria (Source: Realized by authors)

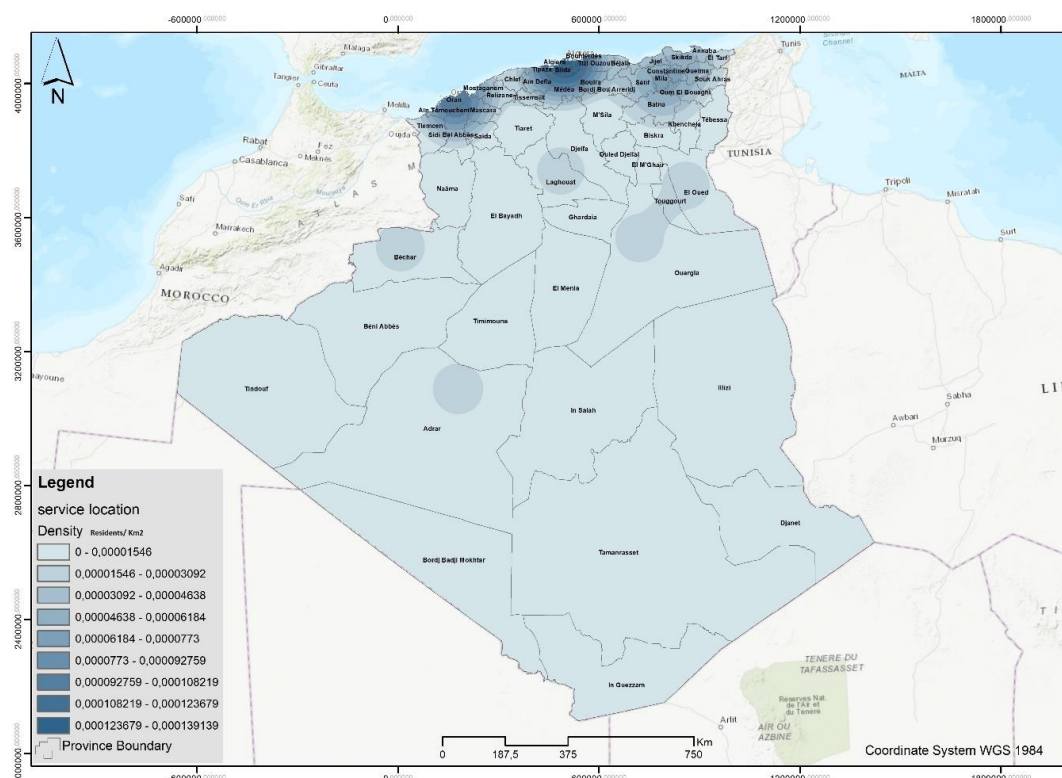


Figure 5. Kernel density estimation for oncology services in Algeria (Source: Realized by authors)



As depicted in the Figure 6, the demand for oncology services was predominantly concentrated in the northeastern parts of the study area, while it was relatively lower in the western, southern, and northwestern regions. By examining the population density surface, we can gain insights into the spatial distribution of the demand for oncology services and identify areas with higher levels of demand. Upon conducting a comparison between the expansion of oncology services and the density of population locations, we arrived at the conclusion that the distribution of oncology services is influenced by the density of population location

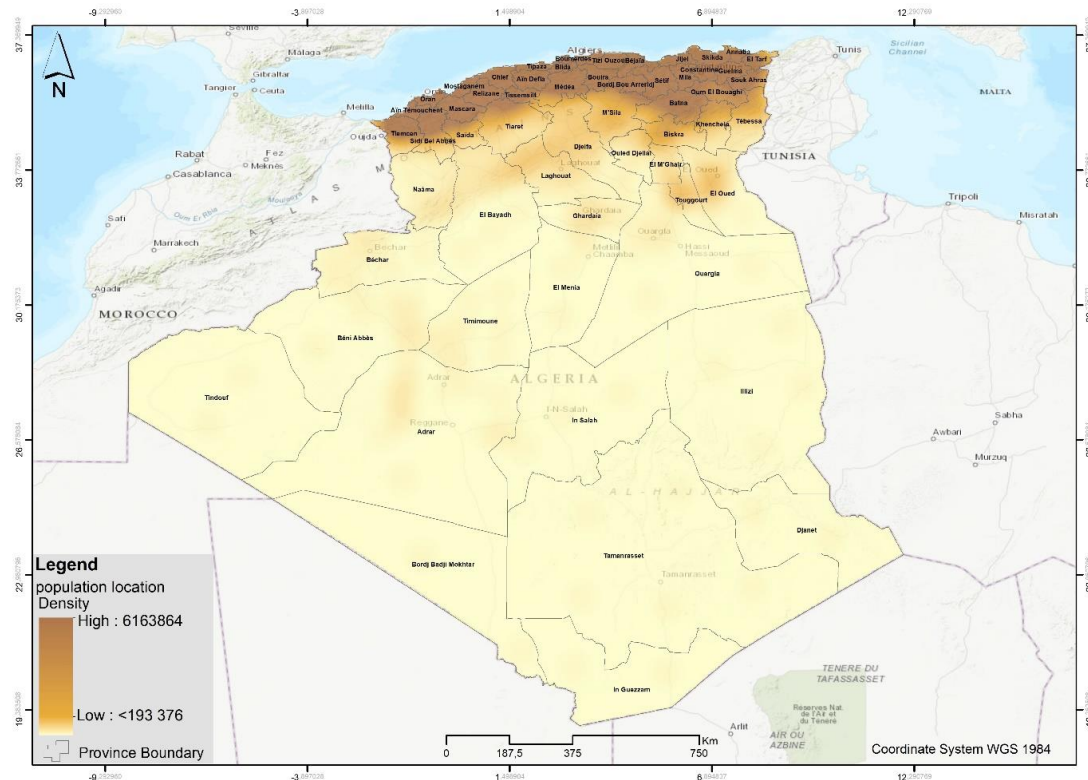


Figure 6. Density of population locations (Source: Realized by authors)

### 3.4. Special Autocorrelation Analysis

The results of the Special Autocorrelation Analysis (Figure 7), using Moran's I, indicate that the observed pattern of clustering is unlikely to be the result of random chance, given the z-score of 2.17, which corresponds to a significance level of less than 5%. The Moran's index value is calculated as 1.05, with a corresponding p-value of 0.029864 (Anselin, 1995)

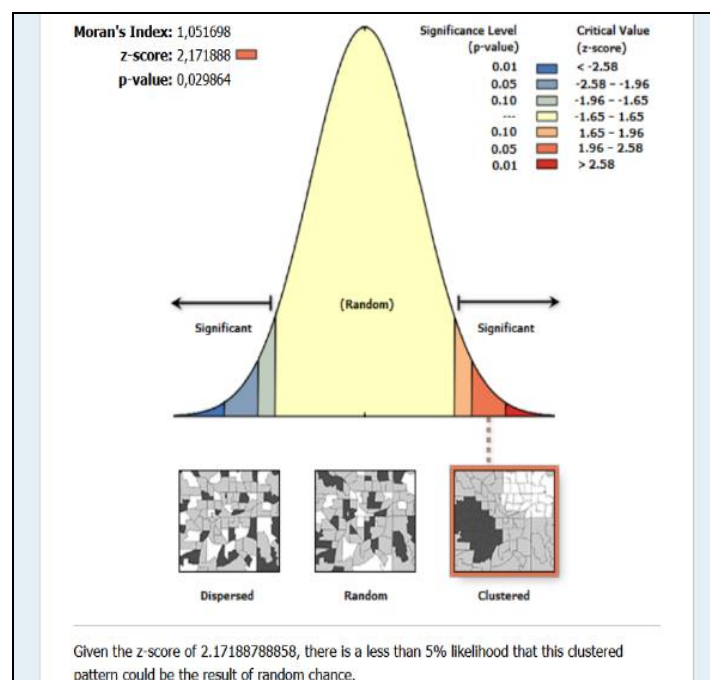


Figure 7. Spatial autocorrelation report (Source: Realized by authors with ArcGIS Software)

The analysis reveals an uneven distribution of oncology services, with a significant concentration in the northern part of Algeria. The result of the spatial statistical analysis returned five values within the software interface: Observed Mean Distance, Expected Mean Distance, Nearest Neighbour Ratio, zscore and P-value respectively the average nearest neighbor ratio automatically by dividing the observed average distances by the expected average distances with expected average distances being based on a hypothetical random distribution with the same number of facilities covering.

Figure 7 shows that there is less than 5% (0.05 level of significance) likelihood that the spatial pattern of the distribution of oncology services in Algeria is clustered and this could be a result of random chance and it may not be unconnected with the clustering number of oncology services in our study area.

### 3.5. Location-Allocation analysis for cancer patients Orientation

The Location-Allocation analysis gave us negative results because there are one or more locations in oncology services could not be reached by one or more locations in Provinces. The network may have areas that are disconnected, unbuilt, or disconnected due to turn restrictions, restriction attributes, or barriers. Incomplete network connectivity may result in a non-optimal solution, so only 19 oncology services are present in the solution set see Figure 7 Locating 23 services will not result in a better solution because some services have redundant locations. The location-allocation performed using the minimize weighted impedance (P-Median) problem type chose oncology services so that the total sum of weighted impedances (Province allocated to an oncology service multiplied by the impedance to the service) is minimized (Figure 8).

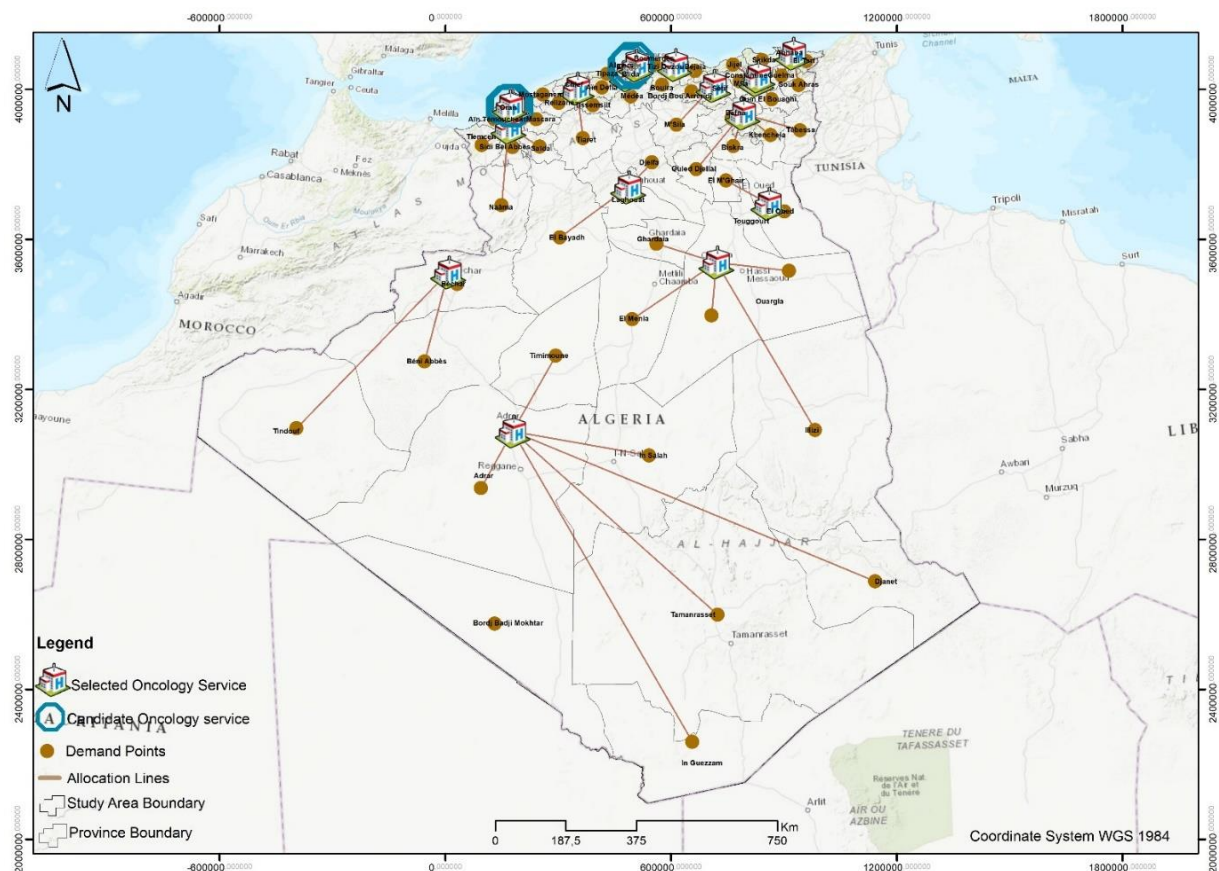


Figure 8. Location-Allocation map for cancer patients Orientation (Source: Realized by authors)

### 3.6. Interpretation of the distribution pattern:

Our methodology for analyzing the distribution pattern of analogical services in our study area (ALGERIA) has yielded significant findings Figure 9. Firstly, we determined that the central analogical service is located in the province of Blida, situated in the northern region of Algeria. Furthermore, the Mean Center of analogical services is identified in the province of Djelfa, which is positioned in the central part of Algeria.

Additionally, our directional distribution analysis reveals a distinct contraction pattern observed among the analogical services in our study area. This pattern demonstrates an extension from the southwest (SW) to the northeast (NE) region of Algeria. Moreover, the results of the Standard Distance analysis indicate that the analogical services are dispersed around their mean center, suggesting a spatial distribution that deviates from a concentrated or clustered arrangement.

Table 2. Interpretation of the distribution pattern of analogical services

Central Feature	Blida
Mean Center	Djelfa
Directionel Distribution	SW-NE
Standard Distance	Intersect With 46 Wilaya

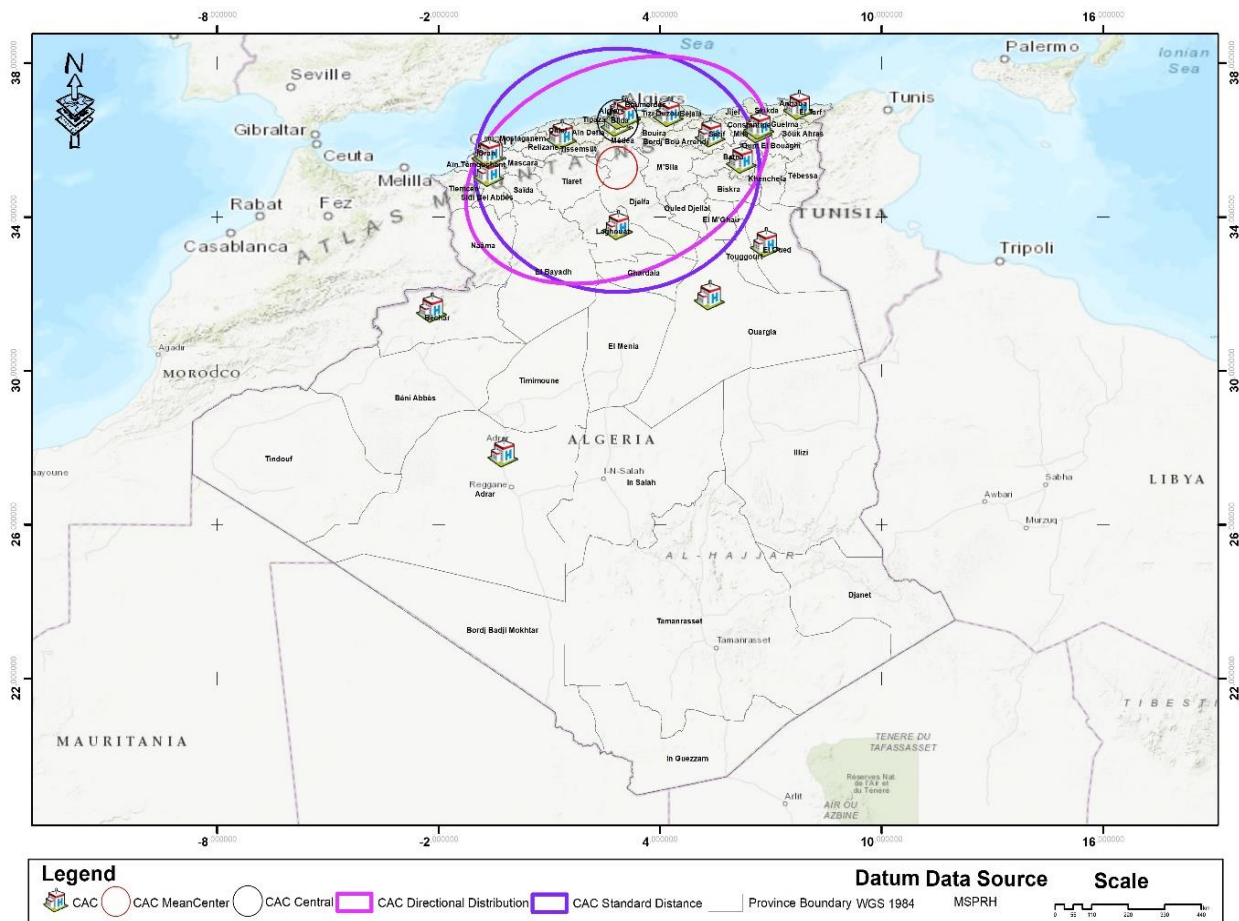


Figure 9. The distribution pattern of oncological services in Algeria (Source: Realized by authors)

## CONCLUSION

In summary, Geographical Information Systems (GIS) play a vital role in advancing oncology access and shaping the future of healthcare in Algeria. This technology provides critical spatial data to enhance cancer care delivery, optimize oncological service accessibility, and bridge healthcare gaps. By configuring and effectively utilizing GIS and the various data sources, oncological accessibility in Algeria can be improved for the benefit of patients and the healthcare system as a whole. GIS enables policy-makers and healthcare providers to make data-driven decisions, identifying service coverage disparities and incorporating these findings into strategic planning for oncological services. This insight leads to more patient-centered approaches in cancer care, improves patient journeys, and ultimately results in better treatment outcomes and quality of life for cancer patients in Algeria. ArcGIS is a collaboration for using, creating, and sharing maps, applications, and data, including authoritative base maps. Finally, a survey of oncology services in Algeria was carried out based on the GIS network analysis technique and using the GIS spatial statistical analysis function, it could define the distribution of inequalities services. This methodology could help planners and public health decision-makers to manage the distribution of future oncology services in Algeria.

The most important results of this study were:

- The analyses used in this study are very valuable, and they have helped us to manage and organize the health sector in Algeria.
- Spatial statistics and location-allocation can represent the first step in building a strategic plan to develop the supply of oncology care in our study area as part of a broader plan to improve the health system as a whole and therefore to improve the economic conditions in Algeria.
- Location-Allocation and the new course are very valuable tools to assess the orientation of cancer patients.
- Further research should use dynamic modeling to further illustrate this mutual relationship. Additionally, the inclusion of the concept of Spatial Decision Support Systems (SDSS) based on GIS technology should be considered in future analyses.

As we look forward to future directions for GIS in oncological service accessibility, it is crucial to stay abreast of technological advancements and further develop policies to support the integration of GIS technology in cancer service planning. In doing so, Algeria can continue to progress in providing equitable healthcare access, leading to healthier communities and improved patient outcomes in the 58 wilayas of Algeria.

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## MOTIVATIONAL FACTORS AND FINANCIAL SUPPORT FOR ENTERING SUSTAINABLE ECOLOGICAL DESTINATIONS AS IMPULSES FOR SUSTAINABLE TOURISM AND ENVIRONMENTAL PROTECTION: A CASE STUDY ON THE EXAMPLE OF NATIONAL PARKS

**Kristína ŠAMBRONSKÁ** 

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

**Anna ŠENKOVÁ** 

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

**Stela KOLESÁROVÁ** 

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

**Erika KORMANÍKOVÁ** 

The University of Prešov, Department of Tourism and Hotel Management, Faculty of Management and Business,  
Prešov, Slovakia, e-mail: erika.kormanikova@smail.unipo.sk

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**Abstract:** The study offers significant findings that illuminate the main motivational factors for tourists to visit sustainable ecological destinations, specifically national parks. The research deals with the issue of sustainable tourism and its connection with environmental factors and the preferences of tourists. The aim of the study is to identify motivational elements encouraging entry into sustainable ecological destinations and participation in sustainable tourism with an accent on environmental protection. The research methodology includes data collection through the author's questionnaire. Based on the data from the author's questionnaire, the four most important motivation factors of the respondents can be identified: the beauty of the landscape, avoiding stress, escaping from crowds and interest in local culture and gastronomy. These results clearly show that tourists interested in sustainable tourism with an emphasis on the ecological pillar are motivated by the opportunity to experience the beauty of nature, local culture, and cuisine, as well as escape from the stress and crowds of traditional tourist destinations. The finding that tourists are willing to pay the entrance fee to national parks under certain conditions (for example, the use of funds for environmental protection, etc.) has important implications for the management policy of national parks.

**Keywords:** tourism development, sustainability, sustainable tourism, ecotourist, national park, motivational and financial factors, environmental protection, eco destination

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### INTRODUCTION

The number of tourism participants increases from year to year. In recent years, not only academics, workers in tourism, but also tourists themselves realize that their behavior and acceptance of the environment as well as its inhabitant's matter, and that every "step" they take leaves an invisible mark. A significant role is played by sustainable destination management. Its role is to plan, coordinate and implement tourism solution strategies to ensure the long-term sustainability of the destination, which help tourists and residents get the most out of the destination while minimizing damage to its natural resources (Algas, 2023). The environmental consequences of mass tourism can be disastrous for a destination. Whether it's the accumulation of garbage, air pollution, noise and light smog can disturb natural habitats.

In some cases, tourists can negatively affect the natural environment of wild animals, causing negative human-animal conflicts (Deb et al., 2023). Both natural and local resources, such as water, will deteriorate as destinations struggle to accommodate visitor numbers for which they were not designed. However, as destinations begin to increase tourism development to maintain their competitiveness, they may begin to use unsustainable practices to create more accommodation facilities and other tourism infrastructure (Gallagher, 2021).

One of the destinations that stimulate the desire for the beauty of nature are attractive mountain areas that are often declared national parks or protected areas. Their environment encourages the development of tourism and recreation. Tourists to natural destinations are mainly attracted by the natural attractiveness and intactness of the territory (Špulero

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\* Corresponding author

al., 2016). The development of tourism must fully respect the dominant regulations that result from the regulations and laws related to territorial protection and from the visitor regulations. Tourism itself creates its own favorable development as well as the favorable development of the entire destination, if it is monitored and managed by the destination management and provided that the elements of sustainability are observed. If the development of tourism is unmanaged, negative phenomena such as environmental impacts occur over time (e.g. high noise level, air, and water pollution, changing opinions and the landscape due to the construction of high-rise hotels and large-scale urbanization) (Ivancsóné and Horváth, 2023). The significant expansion of human activities can cause environmental disruption, which threatens the sustainability of ecosystems and the preservation of biodiversity in destinations (national parks). Positive examples of efforts to protect nature and traditional living spaces in support of tourism can be found all over the world (Špulerová et al., 2016). For example, the Stara Planina Nature Park in Serbia has half of its area undisturbed, while the remaining area is grazed by cattle. The intensity of use of the park's territory is adjusted in relation to its area, so that biodiversity benefits, not harms. In Germany, there are subsidies for forest owners that are financed from European sources and support sustainable management in the national park (for example, in the Thuringia Forest Nature Park) (Gális et al., 2022).

The basic principle of sustainable tourism with an emphasis on ecology is respect for the destinations visited, for wild animals, plants and for the people who live there. The idea is to keep popular destinations, such as national parks, intact for future generations to discover and appreciate. Reasons for the solution of the study:

- the basic principle of sustainable tourism with an emphasis on ecology is respect for the destinations visited, for wild animals, plants and for the people who live there.
- To support the fact that popular destinations (for example, national parks) must be developed with an emphasis on sustainable tourism so that future generations can discover and appreciate them,
- stimulus for monitoring the opinions of visitors to national parks and tourist destinations located in them,
- visitors' opinions are the main determinants of motivation when choosing a holiday in a sustainable destination by visitors and tourists
- an important aspect is also the determination of the attitudes of tourists to the entry fees to national parks in the Slovak Republic
- provide important information for the development and management of sustainable tourism and environmental protection in tourism.

## **LITERATURE REVIEW**

### **1. Visitors to sustainable destinations with a dominant ecology orientation**

According to the international organization The International Ecotourism Society, visitors who prefer sustainable destinations with an emphasis on ecology are referred to as "ecotourists", experienced travelers who are likely to have higher education and higher financial income. Ecotourists expect from their ecotourism experiences discovery, personal growth from an emotional, spiritual, and intellectual point of view (Bricker, 2017). Some of the earliest studies on ecotourism attempted to classify ecotourists based on setting, experience, and group dynamics. The typology of ecotourists and their characteristics as a segment are covered in studies by, for example, Kusler (1991), Lindberg (1991), Weaver and Lawton (2002), Matušiková (2019), Carvache-Franco et al. (2020), Beall and Boley (2021), Ajuhari et al. (2023) and others.

Sustainable and ecological tourism is becoming more and more popular, it can be concluded that it is part of the lifestyle (Zainal, et al., 2024). Eco-friendly hotels, eco-friendly tours, and sustainable travel destinations and options are popping up everywhere. Thanks to tourism, people realize the value of the original natural environment (Uher et al., 2021; Aji et al., 2024).

Sharma and Gupta (2020) focus on understanding the pro-environmental behavior of tourists in protected areas and national parks in India, with the aim of mentioning the negative impacts of tourism on the environment. As a result of their findings, biospheric value has the greatest influence on the new environmental paradigm, as well as awareness of consequences and taking responsibility significantly predict pro-environmental personal norms and behavior of nature-based tourists. Ghazvini et al. (2020) assess the attitudes of domestic and foreign tourists regarding the appropriate use of national parks as well as their environmental concerns regarding the national parks visited. The authors point to the appropriate use of national parks, while emphasizing the role of distiller management. Al Fahmawee et al. (2023) found in a study that tourists' intentions to engage in sustainable ecotourism are negatively affected by subjective norms, while tourists' attitudes are positively affected by these norms (Sutiksno et al., 2024). The environmental behavior of tourists is also addressed by other authors (for example, Gao et al., 2023; Paul and Roy, 2023). Tang et al. (2023) deal with the behavior of tourists in cities and in the countryside with an emphasis on green consumption. Lee et al. (2021) discusses sustainable intelligence by discussing and investigating visitors' knowledge and experience regarding the impact of tourism on the environment as well as their ability to apply this knowledge and experience in demonstrating proactive behavior towards sustainable tourism (Huo et al., 2024).

### **2. National parks as destinations of sustainable ecological tourism**

As part of nature protection, large-scale protected areas have been declared in Slovakia, which include national parks and protected landscape areas (Dzurov Vargová and Matušiková, 2023). A national park is understood as an area with an area of more than 1000 ha, predominantly with ecosystems substantially unchanged by human activity or with a unique and natural landscape structure forming supra-regional biocenters and the most important natural heritage, in which the preservation and protection of nature is superior to other activities (Žoncová et al., 2020). The role of national parks goes beyond the typical understanding of nature conservation. It concerns the protection of species, ecosystems, and landscapes.

They are of great social, cultural, and economic importance and influence the development of the regions in which they are located (Sumarmi et al., 2024). One of the most important and difficult challenges for national park managers is to ensure that the functions of national parks are appropriately and sustainably linked to nature conservation. On the one hand, it is about meeting the needs of those who visit the parks for various reasons, and on the other hand, reducing (or appropriately directing) the pressure on the environment through such an approach (Zygmunt et al., 2023).

In the period of the past years (2022-2023), several national parks considered the introduction of an entrance fee, so far on a voluntary basis. They were inspired by the good practice operating abroad for a long time. In the territory of Slovakia, there is an entrance fee to only one national park, the Slovak Paradise (2.5 euros/person) (Slovak Paradise, 2024). The arguments for this decision are in the effective use of the obtained funds, which would be used for nature protection, support and development of soft tourism, for improving the services of the national parks administration, but also for the modification of tourist trails, the construction of new and reconstruction of existing trails, trail markings, collecting garbage, location of mobile toilets, education of visitors and overall increase in safety and other areas (Gális et al., 2022). The introduction and successful functioning of the entrance fee to the national park can be documented not only by the example of the Slovak Paradise, but also by examples from abroad. In the case of the Tatra National Park, entrance fees make up 37% of total income. Revenues from entrance fees (which most Polish national parks have in place) represent 15% of revenues for Gorczański National Park (Antalová and Šíroký, 2020).

Australia also has established fees for largely entering the parks, where the amount of the fee is determined by individual states (for example, Tasmania has an entrance fee to all its national parks, while Queensland does not charge fees, only in about five national parks, mainly for interpretation services). National parks are also charged in the USA and Canada, even in some developing countries (Shoji et al., 2023). Research on entry (user) fees has been conducted from various perspectives, including function, use, and fairness (Miller et al., 2018; Schumann et al., 2019; Zou, 2020; and others). Čech et al. (2021) focused on the importance of caves and their attendance in national parks. A preliminary survey by the Gális et al. (2022) revealed that the introduction of entrance fees would bring positive impacts for national parks (on the example of the Tatra National Park), a decrease in the value of recreation associated with a stay and activities in the national park by at least 30% (which means a reduction overtourism in the Tatras) and the regrouping of potential visitors to other natural areas (TANAP, 2024).

This would prevent unwanted development of the national park. Furthermore, as part of the research, tourists (88% of respondents) stated their willingness to pay annually from 23 to 26 euros for the entrance to the national park, which would bring an income of six to eleven million euros per year (Gális et al., 2022). Despite the results of the survey, the introduced entrance fee would range from 3.5 euros to 5 euros per person and day, with the fact that selected groups of the population (children, pensioners, and disabled persons) would be entitled to a discount.

## MATERIALS AND METHODS

The aim of the study is to identify motivational elements encouraging entry into sustainable ecological destinations and participation in sustainable tourism with an accent on environmental protection. In connection with the goal and based on the literature study, research questions (RQ) were formulated, which the authors asked themselves in a broader scope:

RQ 1: Does permanent residence affect the attitude towards sustainable development of the environment among tourists during their vacation?

RQ 2: Does a sustainable ecological destination encourage ecological behavior in its visitors during the visit?

RQ 3: Are tourists who are interested in sustainable environmental development willing to pay for entry to an ecological destination? Subsequently, hypotheses were established that correspond and more precisely define the issue of the research questions.

**H1:** There is a statistically significant difference between the place of residence and the relationship to sustainable environmental development in the destination.

**H2:** There is a statistically significant relationship between tourists' natural ecological behavior and preference for sustainable ecological destinations (national parks).

**H3:** There is a statistically significant relationship between the attitude towards sustainable environmental development and the willingness to pay for entrance to the national park (as an ecological destination).

The main method of the research was the author's questionnaire. As part of the compilation of the questionnaire and its determination for the respondents, three criteria were established, with which the respondents were familiar, as two were related to the selection of respondents. An age criterion was established, which was also related to the item "education" in the questionnaire. For the question "education", a minimum university education was entered.

The reason for this decision by the researchers was the fact that children in primary and secondary school are led to an ecological mindset and within the taught subjects there is content focused on environmental elements, but a 15-year-old individual does not decide on a vacation. The authors believe that parents should be the primary role model (right after the school education process).

In conclusion, it is the parents who decide and motivate the child's life direction and style. Due to this, a minimum completed high school education and a minimum age of 19 respondents were selected. From the mentioned criteria, the last one logically followed, where in the question regarding social status (employment), choosing the option "student" means a university student. In the case of university students, they are relatively independent individuals, with individual (not just family) participation in tourism, while they can also finance it individually.

The third criterion was determined using the arithmetic mean, which was used to evaluate the factors leading to visiting national parks. Resulting values up to 1.99 were the most important or represented the highest level of agreement. The resulting values of the arithmetic mean from 2.5 represented the least important values, respectively the lowest degree of agreement. A total of 653 visitors to national parks were approached, 582 were willing to participate in the research (N=582 respondents). The research took place in the months of May - August 2023, as it is the most visited period of the national parks.

## STUDY AREA

In Slovakia, there are nine national parks (Figure 1). They are visited annually by approximately five million tourists, of which half of the tourists visit the Tatra National Park. The Low Tatras, the Slovak Paradise or the Pieniny Mountains are also very popular. On the other hand, undiscovered destinations with unspoiled nature are, for example, Poloniny (Institute of Environmental Policy, 2022). The questionnaire was distributed among the visitors of the national parks: High Tatras National Park, Low Tatras National Park, and Veľká Fatra National Park. In the figure below, these national parks are marked in red.



Figure 1. National parks in the Slovak Republic Source: Kiska Travel (2022)

When evaluating the questionnaire, quantitative analysis was used, which focuses on numerical and percentage evaluation of data. Descriptive statistics (arithmetic mean, minimum, maximum, median, and standard deviation) were used as part of the quantitative analysis. Next, correlation analysis was used, which determines the existence of a relationship between two (or more) variables. The following methods were used within the correlation analysis, to evaluate the hypotheses:

- H1 - Mann-Whitney U-test - it is a non-parametric test that was used to compare the medians of two independent samples,

$$U = R_1 - \frac{n_1(n_1 + 1)}{2} \quad (1) \quad \text{Mann-Whitney U-test (Source: Vašaničová, 2021:60)}$$

Legend: U = Mann-Whitney U-test;  $R_1$  = Sum of rankings of the first group;  $n_1$  = number of respondents

- H2 – Pearson correlation coefficient – used for quantitative quantities that have an approximate normal distribution. The coefficient always takes values from the interval  $-1; 1$

$$r = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}} \quad (2) \quad \text{Pearson correlation coefficient (Source: Vašaničová, 2021:58)}$$

Legend:  $r$  = Pearson correlation coefficient;  $n$  = number of respondents;  $x_i$  = independent value;  $y_i$  = dependent value;  $\bar{x}$ ,  $\bar{y}$  = arithmetic means of values  $x_i$  and  $y_i$

- H3 – Spearman's correlation coefficient - was used to examine the correlation of two ordinal (ordinal) variables.

$$r_s = 1 - \frac{6}{n \cdot (n^2 - 1)} \cdot \sum_{i=1}^n (R_i - Q_i)^2 \quad (3) \quad \text{Spearman's correlation coefficient (Source: Vašaničová, 2021:61)}$$

Legend:  $r_s$  = Spearman correlation coefficient;  $n$  = number of respondents;  $R_i$  = order of values  $x_1, x_2, \dots, x_n$ ;  $Q_i$  = order of values  $y_1, y_2, \dots, y_n$

## Respondent's data

The total number of respondents was 582, of which 52% were women and 48% were men. An overview of the demographic and geographic characteristics of the respondents is presented in Table 1.

Table 1. Demographic-geographic characteristics of respondents (Source: authors' processing to the obtained data)

Age						
Variable	Frequency (N)	Arithmetic mean	Median	Minimum	Maximum	Standard deviation
Age	582	33.04	29	19	64	11.37
Residence						
The city			Countryside			
58.5 %			41.5 %			
Education						
High school	University I. degree		University II. degree		University III. degree	
43.90 %	33.50 %		22.00 %		0.69 %	
Social status						
Employee	Entrepreneur		Student	Pensioner		Other
56.10 %	5.50 %		36 %	1.80 %		0.60 %
Income (euro)						
Variable	Frequency (N)	Arithmetic mean	Median	Minimum	Maximum	Standard deviation
Monthly income	582	797.31	850	0	4000	637.71

From Table 1 it can be concluded that the average age of the respondents was  $33.04 \pm 11.37$  years. The youngest respondent was 19 years old, and the oldest respondent was 64 years old. The highest number of respondents lives in the city, which constituted 58.5%. 41.5% of the respondents said that they saw Vidiel as their place of residence. 43.9% of the respondents had completed high school education. The second most numerous groups were respondents who achieved a first-level university education, which represented 33.5%. In terms of social status (employment), the largest sample of respondents was employees 56.10%. The second largest group of respondents were students, 36%. The respondents indicated as "Other" option: unemployed or on maternity leave. In relation to income, as can be seen from Table 1, the respondents indicated the minimum amount of income to be reported by students of €0. It was a group of students (35% of the total "student") who subsequently stated that they do not work or have a part-time job. The maximum amount of monthly income stated by the respondents was €4,000. Average monthly income of the sample of respondents was  $€797.31 \pm 637.71$ . The median value was 850. It represents the amount that divided the monthly income into two equal halves.

## RESULTS AND DISCUSSION

The attitude of the respondents towards the sustainable development of the environment in destinations is generally very favorable (Figure 2). Visitors to national parks are aware of their fragility and the possibility of biodiversity disruption and the need to preserve their condition for the preservation of the environment and the national parks themselves as a place of relaxation, healing, education and for future generations.

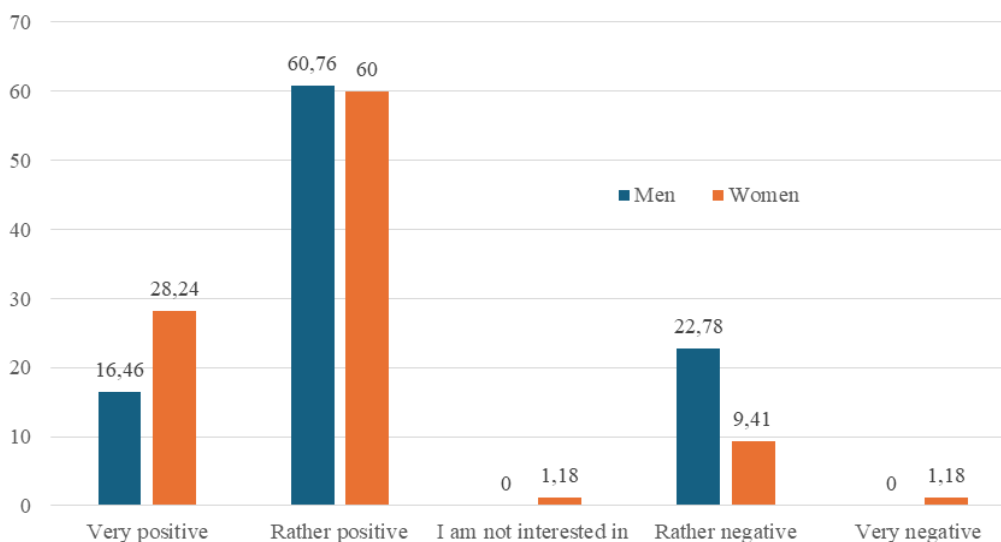


Figure 2. Relationship to sustainable environmental development in destinations from the perspective of gender in % (Source: authors' processing of the obtained data)

A very positive attitude towards the sustainable development of the environment in the destinations was stated by 22.56% of the respondents. Up to 60.37% of respondents characterized their relationship as rather positive. Respondents who are not interested in ecology made up 0.61%. A total of 16.46% of respondents have a cumulative rather negative to very negative relationship to the sustainable development of the environment in destinations. The relationship of the respondents to the sustainable development of the environment in the destinations regarding the gender of the respondents is shown in Figure 2. Women expressed a positive relationship to the sustainable development of the environment in the destinations in general (cumulative) 88.24%, while a positive relationship to the sustainable



development of the environment was found among men in destinations cumulatively 77.22%. The negative relationship to the sustainable development of the environment in destinations among women - as respondents - was cumulatively 10.59%. For men, a negative relationship to the sustainable development of the environment in destinations was found in 22.78%, while none of the male respondents indicated negative relationship.

Respondents prefer destinations that are in line with ecological principles, but not without reservations. Destinations that are in line with ecological principles are preferred by 22.56% and rather preferred by 60.37%. Only 0.61% said that they cannot assess it and do not solve it. Such destinations are rather not preferred by 15.85% and not preferred by 0.61% of respondents. In recent years, the subject of entry fees to national parks has often been raised in the Slovak Republic. The collected money was to be used for nature protection and support of the local population. Willingness to pay for national park entry was another area of study for the study.

Table 2. Willingness to pay for entrance to the national park and the amount of the one-time entrance fee  
(Source: authors' processing to the obtained data)

Willingness to pay	Relative frequency (% of respondents)	Fee amount €	Relative frequency (% of respondents)
Definitely yes	36.59	0	10
Rather yes	49.39	0.10 – 3	54
I can't judge	10.37	3,1 – 5	18
Rather no	3.05	5.1 - 10	8
Absolutely no	0.61	More than 10	0
<b>Total sum</b>	<b>100</b>		<b>100</b>

As can be seen in table 2, 36.59% of the respondents were willing to pay for the entrance to the national parks without reservations. 49.39% would probably agree with the fee. There were 10.37% of respondents who do not deal with the topic. Rather, 3.05% of respondents saw reluctance to pay, and only 0.61% of respondents were against any fees. From the answers, there is noticeable agreement with the voluntary contribution to the national parks. The amount of the entrance fee that the respondents had to pay ranges from 0.1 to 3 euros, possibly the respondents would consider an entrance fee in the range of 3.10 - 5 euros. As part of an additional, open question, the respondents commented on what motivates them (or would motivate them) to agree to the fee. First of all, they mentioned the reinvestment of selected funds in the protection of national parks (48%), improvement of services for visitors (adjustment and repair of routes, marking of routes, installation of information boards in appropriate places, offer of services in applications - information, etc.) (29 %), making inhabited areas more attractive and harmonizing them with the nature of national parks (10%), supporting the Mountain Service (7%) or educational activities for visitors or schools (6%). On the contrary, those respondents who expressed themselves negatively most often cited as the reason for their answer the uncertainty that the collected funds will go to the intended purpose (i.e. they will be reinvested in national parks) (88%).

Respondents, as visitors to national parks, have selection criteria based on which they choose destinations of this type. On the other hand, each national park presents its own offer and idea. The national park behaves in the same way, as a destination that is in line with sustainability with an emphasis on environmental protection. It is one of the factors that visitors consider when choosing a place for their vacation or stay. Table 3 shows selected factors that respondents consider when choosing a sustainable ecological destination - a national park.

Table 3. Percentage share of motivation factors among respondents (Source: authors' processing to the obtained data) (Evaluation criteria: 1 – very motivating, 2 – rather motivating, 3 – neither motivating nor not motivating, 4 – rather not motivating, 5 – not motivating at all)

Factors / Evaluation criteria	The number of respondents in%				
	1	2	3	4	5
Popularity of the area	31.10	38.41	16.46	11.59	2.44
Beauty of the country	76.22	21.34	2.44	0	0
Plant and animal diversity	34.76	37.80	18.90	7.93	0.61
Know the local culture and gastronomy	34.76	40.85	17.07	5.49	1.83
A lot of activities in nature	23.17	30.49	21.95	16.46	7.93
Ecological nature of the national park	17.68	40.24	29.88	9.76	2.44
Added value (education)	17.07	35.37	27.44	14.63	5.49
Meet people with similar interests	14.63	28.66	19.51	19.51	17.68
To explore the unknown	36.59	30.49	20.73	8.54	3.66
Stress prevention	52.44	32.93	11.59	3.05	0
Avoid the crowds of people	48.78	36.59	12.20	1.83	0.61

The data in Table 3 were processed with an arithmetic mean to evaluate the order of the factors and then find out which are the main factors in deciding on the choice of a national park (Table 4). From Table 4 it is possible to state the following. The most important factor influencing the respondents' decision when choosing a national park was the beauty of the landscape (1.26), followed by avoiding stress (1.65) and avoiding crowds (1.69).

Knowing the local culture and gastronomy (1.99) was the fourth factor, just below 2. The factor meeting people with similar interests (2.97) was close to the value of 3, which means that for the respondents this factor was the least important for their decision. Hypotheses were established within the study (see Methods).

Table 4. Frequency table of individual factors leading to visiting the national park (authors' processing to the obtained data)

Factor	Arithmetic mean	Ranking
Beauty of the country	1.26	1
Stress prevention	1.65	2
Avoid the crowds of people	1.69	3
Know the local culture and gastronomy	1.99	4
Plant and animal diversity	2.02	5
Explore the unknown	2.12	6
To explore the unknown	2.16	7
Ecological nature of the national park	2.39	8
A lot of activities in nature	2.55	9
Added value (education)	2.56	10
Meet people with similar interests	2.97	11

The normality of the data was determined by the Dominik Hansen test (Table 5). Testing took place at the  $\alpha = 0.05$  significance level. Due to the nature of the input data, appropriate tests were chosen for the hypotheses and each of the hypotheses was tested with a different mathematical-statistical test (Table 6).

Table 5. Testing the normality of input data hypotheses (Source: authors' processing to the obtained data)

Hypothesis	Dominik Hansen test	P value	Type of data
H1	66.756	$3.19239e^{-015}$	Non-parametric
H2	66.756	$3.19239e^{-015}$	Non-parametric
	3.37131	0.185323	Parametric
H3	66.756	$3.19239e^{-015}$	Non-parametric
	28.917	$5.25717e^{-007}$	Non-parametric

Table 6. Hypothesis testing (Source: authors' processing to the obtained data)

Hypothesis	Test type	Value	p-value	$\alpha$	Evaluation
H1	Mann-Whitney U-test	$U = 3570.50$	0.30629	0.05	Unconfirmed
H2	Pearson's correlation coefficient	$r = 0.6025$	0.0000	0.05	Confirmed
H3	Spearman's correlation coefficient	$r_s = 0.3032$	0.0001	0.05	Confirmed

By testing the hypothesis H1, p-value = 0.30629 was found, which is more than the significance level  $\alpha = 0.05$ . Hypothesis H0 cannot be rejected. It can be concluded that there is no statistically significant difference between the place of residence and the relationship to the sustainable development of the environment in the destination. By testing the hypothesis H2, the value of the Pearson correlation coefficient was determined  $r = 0.6025$ . The corresponding p-value was 0.0000, which is less than the significance level  $\alpha = 0.05$ . Pearson's correlation coefficient is statistically significant. Hypothesis H0 can be rejected. It can be concluded that there is a statistically significant relationship between the natural ecological behavior of tourists and the preference for sustainable ecological destinations (national parks). It is a direct correlation, as the coefficient takes on a positive value.

The strength of the relationship is great, as the correlation coefficient was in the interval  $\langle 0.5; 1 \rangle$ . By testing the hypothesis H3, the value of the Spearman correlation coefficient was determined  $r_s = 0.3032$ . The corresponding p-value was 0.0001, which is less than the significance level  $\alpha$ . Spearman's correlation coefficient is statistically significant. Hypothesis H0 could be rejected. It can be concluded that there is a statistically significant connection between the attitude towards sustainable development of the environment and the willingness to pay for entrance to the national park (as an ecological destination). This is a direct correlation, as the coefficient has acquired a positive value. The strength of the relationship was moderate, as the correlation coefficient was in the interval  $\langle 0.3; 0.5 \rangle$ .

## CONCLUSION

Based on the data obtained in the study from the author's questionnaire, it is possible to emphasize the 4 most important motivational factors of the respondents (when visiting an ecological destination - national parks), namely the beauty of the landscape (1.26), avoiding stress (1.65), avoiding crowds of people (1.69) and get to know the local culture and gastronomy (1.99). These findings suggest that tourists interested in sustainable tourism (with an emphasis on the ecological pillar, i.e. environmental protection) are motivated by a desire to experience the beauty of a given country, local culture, and cuisine, as well as to escape the stress and crowds of more traditional tourist destinations (often referred to as mass). These results are important for the development and marketing of sustainable and ecological tourism and its destination. Managers of sustainable destinations should focus on promoting the cultural and culinary aspects of their offers, creating tourism products with these elements as well as emphasizing the peace that can be found in the natural environment. Meeting people with common interests (2.97), the lowest score among the investigated factors (Table 4), indicates that even if socializing and meeting new people can be part of the motivation to participate in sustainable tourism, it is not the main motivation factor for tourists. Even though the current debate on charging for visiting national parks has stopped and the current government is not favorably inclined to the idea, it is possible to

favorably evaluate the finding (H3) that tourists are willing to pay a certain financial amount when entering protected parks. This is so provided that the funds will be used to protect the environment of the national park (i.e. ecological destination), improve services for visitors and education. The willingness to pay was a cumulative 85.98% among the respondents of the presented research, which is a very similar finding to the study presented in the chapter National parks as ecological destinations, where 88% of the respondents were listed.

Probably due to the time delay in the implementation (and various influences such as the energy crisis and rising prices, deterioration of living standards, etc.) of the research compared to the study of the Institute of Environmental Policy (in 2022), where the amount of the fee was 23-26 euros, the respondents of the presented research (in 2023) indicated their willingness to pay entrance fees to national parks in the amount of one-time entry from 0.10 to 3 euros per person per day. Which is a maximum of 9 euros in the case of an average visit to the national park 3 times a year (Tanap 2024). The educational contribution of the study lies in the findings, which are mainly within the framework of the tested hypotheses, the inclusion of the information found in the educational process as well as an incentive to monitor the opinions of visitors to national parks and tourist destinations in their vicinity, which are the main motivation factors when choosing a holiday in a sustainable destination by visitors / tourists.

It is important to find out the attitude of tourists towards charging for entrance to national parks. The practical importance lies, for example, in the documents for competent people who will decide on reopening the discussion of charging and as a document for comparing changes or agreement in the opinion of future respondents.

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## THE ROLE OF OPEN-AIR CALVARIES IN THE CONTEXT OF LANDSCAPE HERITAGE PROTECTION OF THE EASTERN SUDETES

Janusz ŁACH<sup>id</sup>

Department of Regional Geography and Tourism, Institute of Geography and Regional Development Wrocław University,  
Wrocław, Poland, e-mail: janusz.lach@uwr.edu.pl

Aneta MAREK<sup>\*id</sup>

Department of Regional Geography and Tourism, Institute of Geography and Regional Development Wrocław University,  
Wrocław, Poland, e-mail: aneta.marek@uwr.edu.pl

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**Abstract:** The article concerns the meaning and landscape functions of Small Calvaries located in the Eastern Sudetes in the border area of the Czech Republic and Poland. The publication aims to indicate the main typological features of this type of calvary, taking into account the current behaviour of residents having a common sarcastic heritage. Due to the subject, interdisciplinary research was undertaken in the direction of valorization as well as environmental interviews. The use of geo-sociological methodology made it possible to assess the landscape in terms of its contemporary functions and potential threats. The research allowed us to distinguish two types of landscape layouts: elliptical and linear of a historical nature, and modern, mainly linear. Sociological research showed the attitude of local communities to the sacred heritage in the Eastern Sudetes.

**Keywords:** Europe, the Eastern Sudetes, sacral landscape, little calvaries

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### INTRODUCTION

Calvaries, or groups of churches or chapels symbolising the stations of the Passion, were usually founded on hills to resemble Jerusalem. They were intended to represent the Passion path walked by Jesus Christ in Jerusalem on his way to Golgotha for crucifixion. This path is further enriched by stages such as the Cenacle, the Garden of Olives, the capture, the trials conducted by the Jewish high priests and the chapels commemorating the events after Jesus' death: the Resurrection, the Ascension and Pentecost. The first Calvary was established in Córdoba, Spain, in 1405, followed by Italy and Germany at the end of the 15th century. Today, there are around 708 calvaries of various types in Europe, ranging from Great Calvaries, through Little Calvaries known as open-air calvaries, monastic calvaries, church calvaries and cemetery calvaries. Calvaries began to appear in the Polish landscape in the 17th century. The first one is considered to be Kalwaria Zebrzydowska, representing the Great Calvary type. It was established in 1602 on the initiative of Mikołaj Zebrzydowski on Góra Żar (Mt Żar) in Pogórze Wielickie (Wielickie Foothills). Since 1999, it has been listed as a UNESCO World Heritage Site. Over a period of 400 years, 29 Great Calvaries were built in Poland. They were often founded on the initiative of magnates or wealthy monasteries. The foundation trend also emerged among less wealthy local landowners or ambitious parish priests. From the 18th century onwards, they led to the appearance of less grandiose so-called Little Calvaries ('open-air calvaries'), usually limited to outdoor Stations of the Cross with a few chapels.

These open-air calvaries, with their elaborate symbolism and sophisticated artistic expression often alluding to a folk (local) style, were often erected as votive offerings for favours received, becoming witnesses to the history of the local community. Due to their religious importance of 'untouchability', they became guardians of the past - connecting the landscapes of distant and contemporary times, defining this little-known European cultural heritage.

It is the Little Calvaries, therefore, that have become the focus of this article in a landscape-cultural context in order to protect these unique, distinctive architectural and landscape settings in the European territory. Little Calvaries from the area of the Polish part of the Eastern Sudetes, an area of exceptional dynamics of historical, cultural, social and religious changes occurring during the 16th - 20th centuries, was selected as a case study (Figure 1).

Centuries-old processes of urbanisation, industrialisation and agricultural intensification changed the landscape structure of the region, which was resisted only by enclaves of sacral landscapes as sacred "untouchable" sites. These landscapes, through the Landscape Convention adopted by the countries of the European Union in 2000, became the object of protection of the European natural and cultural heritage, contributing to the consolidation of European identity. Referring to the general principles of the Convention, a typology of landscapes for the area of Poland was developed in 2015 by Chmielewski et al. (2015) for the purpose of implementing landscape management policy. In this study, the Calvary landscapes, mainly those of the Great Calvaries, were classified as suburban and residential landscapes with the subtype of large-scale sacral complexes,

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\* Corresponding author

historically conditioned, constituting a forest-water-agricultural-settlement spatial composition without a clear definition of the landscape background. However, the aforementioned typology ignored the landscape essence of the Little Calvaries.

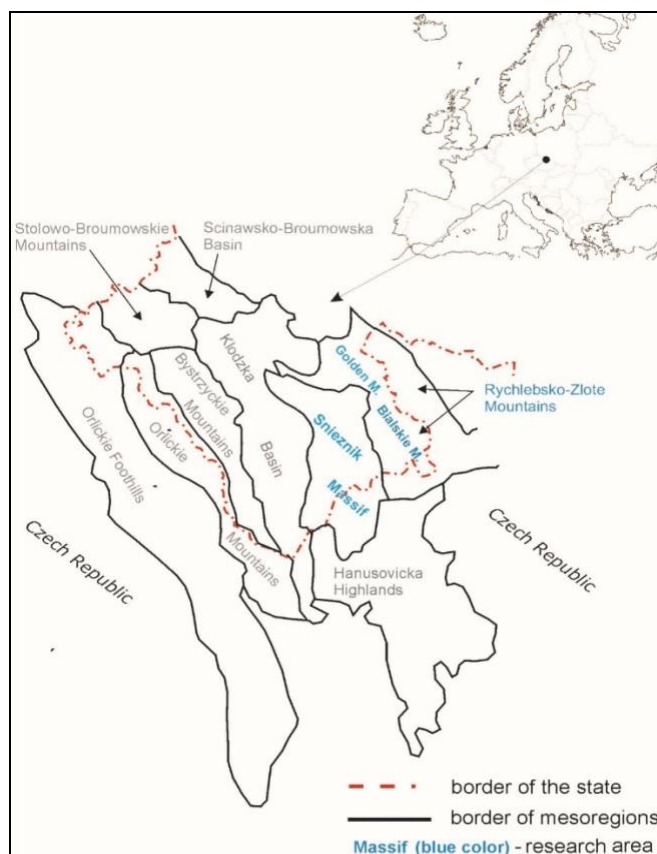


Figure 1. Location of the study area - location map of the Eastern Sudetes together with part of the Central Sudetes (Source: Rozenkiewicz and Łach, 2012)

The sacral landscape of the little calvaries of the Eastern Sudetes constitutes an interesting (niche) research theme, due to the nature of the religious-political-social-historical changes that took place during the 17th to 21st centuries. Given the numerous traces of human activity in the landscape of the Sudetes, it is worth noting that sacred buildings, including calvary buildings, are one of the dominant features of the mountain space. The undertaken research of landscape and cultural analyses on the preservation of unique calvary landscapes of the Polish part of the Eastern Sudetes requires from the authors a holistic research approach, i.e. determining the authenticity of individual components of the environment while preserving the specific features of the cultural landscape.

These components determine its unique character, making people identify with the essence of the place - the "genus loci". In the scientific literature, the Little Calvaries of the analysed area constitute a niche theme and are described rather rarely. So far, these sites have been the subject of interest of only a small number of landscape experts, while in the sphere of scientific research they remain a typical "terra incognita". The issue of calvarial complexes in the literature has been dealt with by Čičo (1992, 1998), Jackson and Henrie (1983), Liutikas (2015), Vaisvilaite (2002). Among Polish researchers, the interpretation and definition of sacral vs. religious landscapes and their functions is still under discussion by Jackowski (1999), Mitkowska (2003), Myga-Piątek (2012) and Andrejczuk (2013).

### AIMS

As a result of the conducted research, the authors set themselves the goal of supplementing the above typology of calvary landscapes in Poland and the Czech Republic in the cross-border zone, with the landscape type of open-air calvaries created outside or in close proximity to rural settlement units.

To achieve the goal, the authors set themselves several research tasks, including:

- carrying out an inventory and description of complexes of Calvary open-air museums in the Polish and Czech part of the Eastern Sudetes in terms of historical knowledge (review of source materials constituting a publication niche), architecture and art history, as well as geographical and landscape knowledge (morphological location, exposure of slopes, their coverage, number of objects included in the calvary complex). The inventory takes into account their state of preservation and their functions. The task is to identify the characteristic typological features of open-air calvary landscapes
- the so-called small calvary of mountain areas through the analysis carried out using the methods of Sowińska (2012) and Myga-Piątek (2007)), modified to determine the identity and landscape values as well as sacral calvary in the open air (Figure 2);
- assessment of landscapes of small calvaries to identify possible cultural and social threats to their protection;
- defining the role of the local community in the implementation and monitoring of the landscape policy;



- determination of the state of implementation of the landscape policy of the European Landscape Convention by the administrative authorities of the areas where complexes of open-air calvaries are located, representing landscapes of cultural and historical value.

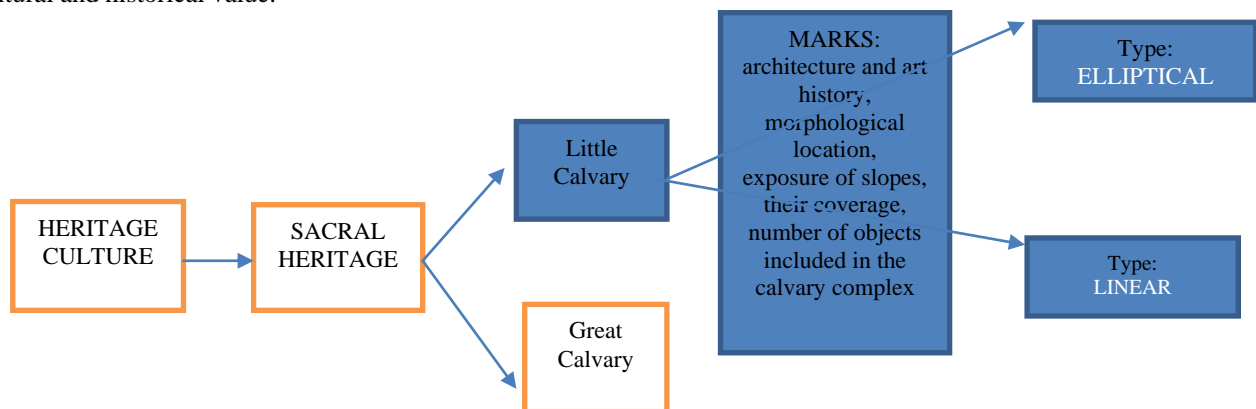


Figure 2. Main stages leading to the development of the typology of Little Calvary in mountain areas

## METHODS

Finally, it is considered important to attempt to develop a methodologically and tool-wise universal research toolkit that will enable similar work to be undertaken in the neighbouring regions of the Sudetes, including in the cross-border area. The following methods were important for the realisation of the research tasks: field survey of the Little Calvaries located in the Eastern Sudetes conducted in 2022 and 2023, which made it possible to obtain important documentary and descriptive information (topographic position of the founding of the complexes, land cover, historical information, state of preservation). For a more complete description, metrical documentation of the elements forming a given calvary complex was made, enriched with photographic documentation. The method of survey of sources and scientific materials concerning the research problem and the subject of the study was also applied (Figure 3).

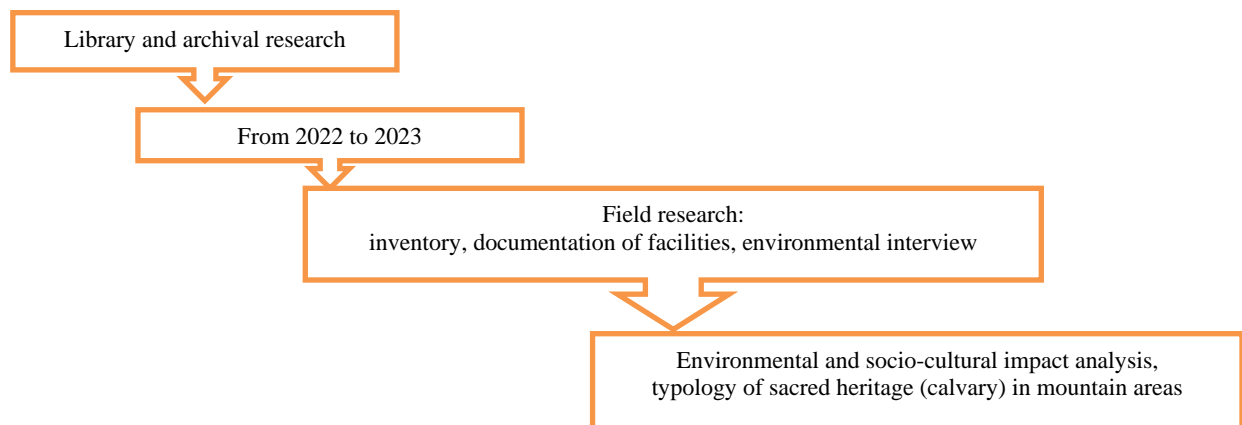


Figure 3. The main steps of methodology

To valorise the aesthetic, cognitive and spiritual values, a method of distinguishing tangible and intangible identifications of sacral landscapes, modified for the purposes of the research, was used, applied among others by Sowińska (2012) and Myga-Piątek (2007) based on a free-form community interview with visitors to the studied sites. In order to obtain data on the implementation of the principles of the European Landscape Convention by the administrative units of the study area, a targeted community interview was conducted with persons responsible for spatial management and observance of landscape policy in the district centres of Stronie Śląskie, Bystrzyca Kłodzka and Złoty Stok of the administrative area where the studied open-air calvaries are located.

## LITERATURE RESEARCH

### Historical background of the foundation of open-air calvaries in the Kłodzko Land from the 17th to the 21st century

The Eastern Sudetes region, as a physical-geographical unit, is historically assigned to the region known as the Kłodzko Land or Kłodzko County. The 16th century in Europe was a time of development and flourishing of the new Reformation currents initiated by Martin Luther (1483-1546). The preaching of the so-called "pure gospel" developed rapidly gaining adherents known as Protestants, who stood in opposition to the Roman Catholic denomination. The year 1524 was the date of the emergence of Protestantism in Lower Silesia, initiated by the von Dokna family living in Góra Śląska (Wiszewski, 2006). Protestantism appeared in the Kłodzko area seven years later in 1531 thanks to Jan von Bernstein, who pushed the Roman Catholic Church out of the region between 1531 and 1548. In the history of the Reformation period, an important episode was the Peace of Augsburg concluded in 1555, which stabilised religious life,

among others through the principle "*cuius regio, eius religio*", thanks to which the secular authorities could impose their religion on their subjects. For Protestants, this peace guaranteed freedom of worship within the authorities accepting the new religion, while Catholics were protected from the expansion of new faiths. The Habsburgs in charge of Lower Silesia in the 16th century - Ferdinand I Habsburg (1503-1564) and later his son Maximilian II (1527-1576) - initially applied a policy of moderate religious tolerance if it did not harm the foundations of the religious and social order. The result of such a policy was the fully peaceful Protestantisation of Silesia. Wiszewski (2006) estimates that in about 1570 almost 90% of the population opted for Lutheran teaching, which was observed in 1500 churches in the region.

This situation, however, began to change in the 1580s, when the Habsburgs began to build a state of strong imperial power supported by Catholicism. The attitude to the political direction taken was that 'Catholicism equals loyalty' whereas the followers of M. Luther were seen as potential rebels. This conviction became the basis for a complex current of change called confessionalisation, whose significant impetus for the approach became the findings of the Council of Trent (1545-1563). Relative tolerance was short-lived, because already in the 1590s the Kłodzko region experienced recatholicisation. The process of the return of the Catholic faith in the region was initiated by King Rudolf II (1552-1612), and its executors were the Jesuits residing in the college established in 1597 in Kłodzko (Lec, 2020).

The Thirty Years' War (1618-1648) also had a negative impact on the religious situation in the Kłodzko area. After its end, as a result of the Peace of Westphalia (1648), the Emperor of Austria had the right to take over the hereditary property of Protestant churches taken from Catholics in the 16th century. However, the process of taking over churches and the growing recatholicisation movement had already begun earlier in 1621 under the so-called Dresden Accord. By virtue of it, the emperor undertook to treat the Protestant population more leniently and to allow freedom of Lutheran confession (Harasimowicz, 2010). An exceptional county that did not conform to the arrangements of the Dresden Peace was the County of Kłodzko. Various repressive measures were applied against Protestants, Protestant clergy and teachers were expelled and their properties were confiscated forcing them to emigrate (Mazurski 1994-1996).

Between 1625 and 1626, almost the entire Protestant population of the Kłodzko area was induced to adopt the Catholic faith. A significant role in the process of religious change was played by the Jesuits, who gathered around them numerous followers through enriching the liturgy with singing, organising concerts, enriching and beautifying churches with frescoes of biblical themes, sculptures of saints, and most importantly, in the process of convincing people to the religion with education. Education became an important element of social and religious life among the wealthy inhabitants. It was due to them, among others, that the founding of calvary complexes of the New Jerusalem type was initiated by, among others, Daniel Paschasiusz von Osterberg in 1683 in Wambierzyce.

In the following 18th and 19th centuries, foundations of little calvaries by wealthy landowners or parish priests residing in the Kłodzko area took place. As a result of the Silesian Wars of 1740-1763, King Frederick II the Great took Silesia from Austria, and the County of Kłodzko became part of the administrative boundaries of Silesia. Through Article 6 of the Berlin Peace Treaty, the Catholic denomination in the Kłodzko County was granted inviolability, and ecclesiastical authority over the diocese was exercised by the Archbishop of Prague. The King of Prussia, on the other hand, undertook to maintain the status quo for the Catholic Church, preserving its possession status with regard to church buildings, the parish network and the existence of religious orders (Wąs, 2002).

## RESULTS AND DISCUSSIONS

Contemporary structure and function of "Little Calvaries" in the landscape of the Polish and Czech Eastern Sudetes

Of the many types of cultural landscape, the sacral landscape occupies an important place, encompassing a category of things and activities set apart by a particular community as sacred and therefore subject to religious veneration. The act of setting apart refers to the power of God and is intended to lead to the isolation of places dedicated for God for the purpose of worshipping him in order to evoke religious experiences (Jackowski et al., 1999). A landscape characterised by the presence in space of the sacred based on hierophany<sup>1</sup> or the manifestation of the sacred becomes the spirit of the place - *genius loci* (Park, 2003; Eliade, 2020). Sacral landscapes constitute a unique identity of place, infused with the spirit of place are mostly rooted in a non-material dimension, yet often combined with symbolism. However, the influence of the religion professed by a given society (civilisation) through material goods sets its spatial boundaries (Holly, 2014).

Sacral landscapes, especially outdoor ones, are an expression of the harmonious relationship between content and form against a natural background. Nowadays, however, they are subjected to increasing pressure to abandon them, but also to renew them often without preserving their historical-architectural context, introducing disharmonious elements not directly related to the Calvary content, e.g. Lourdes grottoes, sculptures of contemporary saints. Modern reconstructions of ancient sacral landscapes seek to define and enrich the unique heritage of the region shaped over the centuries by successive national, ethnic or religious changes, and now by the emerging identity and sense of a 'Little Homeland' among local people. Each object of worship located in a specific natural and cultural space is the basis defining the identity of a place as a human-determined landscape interior (Myczkowski, 2009). In the Christian tradition, the harmonious landscape of a calvary is the result of a centuries-old tradition of managing and transforming the environment, and is treated as human's participation in the work of creation (Plit, 2012). The elements conditioning the location of a calvary and thus defining its boundaries in a specific place are: the nature of the environment, historical, socio-economic conditions, cultural and architectural traditions, system of beliefs and rituals. According to

<sup>1</sup> According to Eliade (2020), hierophany confronts us with a historical document by manifesting itself in a specific historical situation through symbols (in relation to hierophanies defined as coherence). The function of the symbol is of exceptional importance for the magico-religious human experience.

Mitkowska (2003), the topography of a place played an overriding role in the location of a calvary. It often favoured the creation of a spontaneous Jerusalem landscape area. Pilgrimage stations and prayer routes were created with the participation of wealthy founders, following the example of the largest European calvaries. In the process of calvary locating in the natural-cultural landscape, according to Andrejczuk (2013), the boundaries are determined to a large extent by the function or function spectrum of intentional human activities.

This landscape is a natural and anthropogenic system, the main component of which is nature with its elements of the natural environment and the man. It is the human being who is responsible for the character of the functions depending on the objectives he or she sets for the landscape. The research problem undertaken is based on the ten functions of landscape analysis of Little Calvary presented by Andrejczuk (2013) paying attention to: spatial function, i.e. the provision of space, cognitive function, which enables education and development of man expanding their horizons of knowledge about humankind, the environment and relationships, sacral function, which satisfies needs of a higher order (spiritual) and aesthetic function, which provides aesthetic sensations and experiences necessary for their spiritual and moral development.

The word calvary refers to a complex of churches and chapels symbolising the successive stages of Christ's Passion. It defines the spatial arrangement of religious buildings in such a way that they can fulfil the function of a copy of Jerusalem, i.e. the place associated with the Passion and death of Jesus Christ. The creation of ideal copies of the Jerusalem landscape was typical of the period from the 15th to the 18th century, when Great Calvaries of the New Jerusalem type were created (Bilska-Wodecka, 2003). In the Middle Ages, magnates who made a pilgrimage to the Holy Land often erected chapels in their estates, referring to the Jerusalem prototypes, with the approval of the church or monastery authorities. Most of the believers could not afford to make the trip to Jerusalem, and so visiting the so-called 'sham' path of the Passion became an alternative to obtaining religious indulgences. In the following centuries, this symbolism began to lose its significance through, among other things, the architectural and landscape form manifested in the erection of a more modest, open-air Stations of the Cross, the so-called Little Calvary, usually consisting of 14 elements (Bilska-Wodecka, 2003).

The open-air Little Calvaries, symbolising the Stations of the Cross of Jesus Christ, in the area of the Polish part of the Eastern Sudetes are represented by 9 complexes with diverse locational, architectural and compositional features, determining religious and pilgrimage identity, as well as sensory and emotional identity, placed against a forest, meadow and settlement landscape (Table 1).

Table 1. Typological features defining landscape and sacral identity of Little Calvaries in the area of Eastern Sudetes  
(Source: own study based on field research using the method of Sowińska, 2012)

LP.	Location	Region	Natural context	Historical context	Architectural form and composition	Religious form of use	State of preservation	Legibility and openness	Uniformity
1.	Młynowiec Photo A Figure 4	Góry Bialskie (Rychlebsko-Złote Mountains)	S-W slopes of Gologóra 997 m, heights 630-700 m, along the Młynówka stream. The area is covered with coniferous forests. 50.277203N 16.9091853E	No source data	14 concrete crosses, diameter 47 cm by 90, on a sandstone pedestal 46x47x23 cm. The numbers of the Stations of the Cross are carved on the crosses.	No	Bad	Low degree of expressiveness of the space allowing it to be defined. Dense tree cover limits openness of form.	Structural, architectural, colour uniformity of Stations of the Cross maintained.
2.	Bolesławów „Suszyca” Photo B Figure 4	Góry Bialskie (Rychlebsko-Złote Mountains)	W slope of Suszyca at altitude 720-800 m. Valley of an unnamed stream (initial valley - episodically drained). The area is covered by mixed forest. 50.2484374N 16.9046247E	19th/20th century. A votive offering by a resident of Bolesławów for the return of his sons from the First World War.	14 wooden Stations of the Cross, 80-125 cm high. Chapel form with painting (34x25 cm) and lower information plaque (28x20x3cm). Stone grotto of Our Lady (folk character)	Yes	Very good	High degree of expressiveness of the space allowing it to be defined. Dense tree cover limits openness of form.	Structural, architectural, graphic, colour uniformity of the Stations of the Cross maintained. The disharmony of the Little Calvary is the stone Grotto of Our Lady.
3.	Stary i Nowy Gieraltów Photo C Figure 4	Góry Złote (Rychlebsko-Złote Mountains)	S slopes of Szewczyk 753 m and SW slopes of Czernik 832 m. The area is covered by mixed forest. 50.3039480N 16.9660449E	New Stations of the Cross since 2007.	14 wooden crosses with station numbers. The crosses are 200-230 cm high, 120 cm wide and have double alternating numbering with the same motif of Christ carrying the cross. An earlier model of the Calvary cross stands by the church in Stary Gieraltów.	Yes	Very good	High degree of expressiveness of the space allowing it to be defined. Forest and meadow complex does not limit openness of form.	Structural, architectural, colour uniformity of Stations of the Cross maintained.

4.	Bolesławów „Ogród”  Photo D Figure 4	Góry Bialskie (Rychlebski o-Złote Mountains)	N slopes of Zawada 778 m ("Skalska Kopa") + anthropogenic Gorge. The area is covered by a forest-meadow habitat. 50.2521685N 16.8905461E	Year 1833 Author unknown	Stone cross 63x168 cm on a stone mound 135 cm high, the Garden of Olives includes 4 sandstone sculptures - apostles John (130 cm long), Peter (140 cm), James (104 cm), Angel (82 cm), Jesus (116 cm). There are 3 stone crosses on the path to the Garden of Olives.	Yes	Very good	High degree of expressiveness of the space allowing it to be defined. Forest and meadow complex does not limit openness of form.	Structural, architectural, colour uniformity of Stations of the Cross maintained.
5.	Radochów "Cierniak"  Photo E Figure 4	Góry Złote (Rychlebski o-Złote Mountains)	S slopes and E ridge of Cierniak 591 m. The area is covered by mixed forest. 50.3538469N 16.8207765E	Year 1836 Founder Anton Wachsmann	The complex is formed by 216 steps, along which there are 3 stone crosses + two plaques with caravaca. At the top there are 14 brick stations in the form of edicules (320x107 cm), a chapel from 1857, and 2 statues (of Roch + Francis), a field altar and a grotto of Our Lady of Lourdes.	Yes	Very good	High degree of expressiveness of the space allowing it to be defined. Dense tree cover limits the openness of the form.	Structural, architectural, colour uniformity of the Stations of the Cross maintained. The sculptures of the two saints and the field altar together with the grotto of Our Lady of Lourdes are disharmonious elements.
6.	Złoty Stok  Photo F Figure 4	Góry Złote (Rychlebski o-Złote Mountains)	Góra Krzyżowa 489 m. The area is covered by mixed forest. 50.4371549N 16.8700057E	Author Sigmundt Kahler, 1792/ Maria Schramm 1856	14 stone Stations of the Cross lead around the summit with St. Anne's Chapel and a stone cross on a pedestal.	Yes	Good	High degree of expressiveness of the space allowing it to be defined. Dense tree cover limits openness of form.	Structural, architectural, colour uniformity of Stations of the Cross maintained.
7.	Stary Waliszów  Photo G Figure 4	The Krowiarek Range - Masyw Śnieżnika (The Śnieżnik Massif)	Żelazne Góry - summit of Krzyżowa 508 m. The area is covered by mixed forest. 50.3337100N 16.6983926E	Year 1736 Founder Count von Oppersdorf as a votive offering for the healing of his daughter.	Baroque Chapel of the Holy Cross, surrounded by 14 stone (sandstone) crosses (52 wide, 187 high), at the intersection of the arms there are boards 63x47 with images of Cal-vary events. Cross on pedestal 78x80. Crosses 15-50 m. apart.	Yes	Good	High degree of expressiveness of the space allowing it to be defined. Dense tree cover limits openness of form.	Structural, architectural, colour uniformity of Stations of the Cross maintained.
8.	Międzygórze „Maria Śnieżna”  Photo H Figure 4	Masyw Śnieżnika (The Śnieżnik Massif)	Igliczna ridge 845 m in E direction. The area is covered by mixed forest. 50.2410229N 16.74833354E	Year 1781	14 stone (sandstone 74x197 cm) Passion Crosses on stone pedestals. At the intersection of the arms a metal plaque (78x45 x5 cm) with a bas-relief. The Stations of the Cross are accompanied by the Stations of the Rosary + the Church of Our Lady Cause of Our Joy.	Yes	Very good	High degree of expressiveness of the space allowing it to be defined. Dense tree cover limits openness of form.	Structural, architectural, colour uniformity of Stations of the Cross maintained.
9.	Marianówka  Photo I Figure 4	Masyw Śnieżnika (The Śnieżnik Massif)	S slopes of Trzy Kopki 750 m. The area is covered by mixed forest. 50.2505563N 16.7450792E	Year 2009	14 wooden carved Stations of the Cross. The stations measure 55x245cm.	Yes	very good	High degree of expressiveness of the space allowing it to be defined. Dense tree cover limits openness of form.	Structural, architectural, colour uniformity of Stations of the Cross maintained.
10.	Travna  Photo J Figure 4	Góry Złote (Rychlebski o-Złote Mountains)	S slopes of Lisci Skala 500 m. The area is covered by mixed forest 50.3767360N 16.9287515E	1894	There are 14 neogothic, brick stations in the form of edicules.	Yes	Very good	High degree of expressiveness of the space allowing it to be defined. Dense tree cover limits openness of form.	Structural, architectural, colour uniformity of Stations of the Cross maintained.



11.	Stribnic e Photo K Figure 4	Masyw Śnieżnika (The Śnieżnik Massif)	S.E slopes of Dzi- czy Grzbiet 750 m. The area is covered by mixed forest. 50.183888N 16.898732E	1887	There were 14 brick stations in the form of chapels.	No	Bad	Low degree of expressiveness of the space allowing it to be defined. Dense tree cover limits openness of form.	Structural, architectural, colour uniformity of Stations of the Cross maintained.
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Figure 4. Sites of Little Calvaries in the Eastern Sudetes: A – Młynowiec, B – Bolesławów „Suszyca”, C – Bolesławów „Ogrójec”, D – Stary Gieraltów – Nowy Gieraltów, E – Radochów „Cierniak”, F – Złoty Stok, G – Stary Waliszów, H – Międzygórze „Maria Śnieżna”, I – Marianówka, J – Travná, K – Stribnice (Source: Authors)



The identification of diagnostic features for the Little Calvaries on the basis of a field survey and a source materials research allowed for a typological historical-architectural-landscape analysis. All sites were built between 1736 and 2009, most of them as thanksgiving votive offerings of local leaders, i.e. wealthy landowners or priests. Four cases out of nine have relevant documents. The calvaries were located outside the boundary of the built-up area, in the mountainous terrain of the following mountain ranges: the Rychlebsko-Złote Mountains band the Śnieżnik Massif (three sites per each), at altitudes ranging from 500 to 845 m above sea level.

What draws attention is the exposure of the sites, which were built mainly on south-western and southern slopes (which accounts for 67%), less frequently on north-eastern slopes (33%). The consideration of SW and S exposure may have been important due to the length of time the slope was illuminated and heated, allowing the snow cover to melt more quickly, especially during the Easter (early spring) period - this applies mainly to the youngest calvaries. On the other hand, the location of the calvaries in Radochów or Międzygórze, the oldest complexes was conditioned by the theological assumptions, i.e. the orientation of the complexes eastwards - towards Jerusalem (Figure 5).

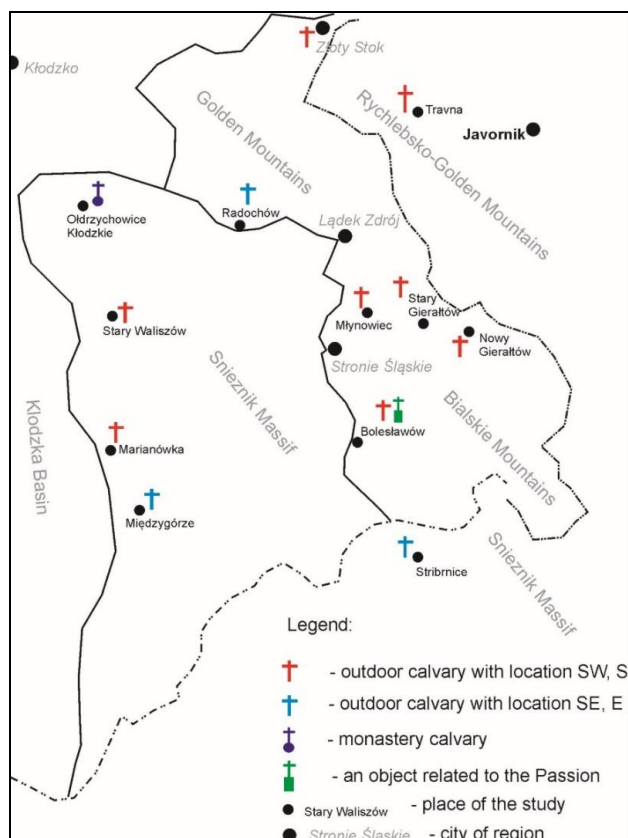


Figure 5. Location of Little Calvaries in the area of the Polish and Czech (cross-border zone) Eastern Sudetes (Source: own study)

Landscape background for the calvaries is spruce forests or mixed forests. Exceptions are the "Ogrójec" (Garden of Olives) calvary in Bolesławów and in Stary and Nowy Gierałtów, where the background is forest-meadow complexes.



Figure 6. Radochów Cierniak - example of closed (elliptical) arrangements of open-air calvaries. Visible brick edicules located around the Chapel of Our Lady Help of the Faithful



Figure 7. The Chapel of the Holy Cross with the surrounding Stations of the Cross on Hill of the Cross (Source: Authors)



Due to the dense ground cover, this woodland limits the openness of the form giving an impression of neglect, but also a unique mysticism. Stone was the most commonly used building material. Sandstone, a raw material commonly found in the Sudetes, was used for the construction of four structures. Wood was used for the construction of three calvaries: in Marianówka, Bolesławów "Suszyca" and Stary and Nowy Gierałtów, while only in one case in Radochów was brick used. The compositional layout of the discussed objects is varied. Most often it takes the form of linear sequences e.g. in: Marianówka, Stary and Nowy Gierałtów, in Międzygórze on Igliczna, on Młynowiec on Travná or on Stribrnice, but there are also forms taking the shape of an ellipse, e.g. in Radochów (Figure 6), Bolesławów "Suszyca", Stary Waliszów or Złoty Stok. Among the architectural forms of the analysed objects we can distinguish **crosses and edicules**<sup>2</sup>, the latter being characteristic for Złoty Stok, Radochów and Marianówka, **churches** in Międzygórze, Stary and Nowy Gierałtów (from which the Stations of the Cross begin and end), **chapels** in Radochów, Stary Waliszów (Figure 7), **grottoes** of Our Lady of Lourdes in Bolesławów "Suszyca" (Figure 8), Radochów and Travná. The architectural form of stone or wooden crosses is further complemented by stone reliefs in Międzygórze or paintings in Stary Waliszów, Bolesławów "Suszyca", Stary and Nowy Gierałtów. The most recent architectural form of the Stations of the Cross, is represented by the wooden "edicules" - chapels with reliefs in Marianówka (Figure 4I). The architectural form is typical of Little Calvaries, which presents the content of the Passion in a simple way. All objects represent purity and legibility of form.

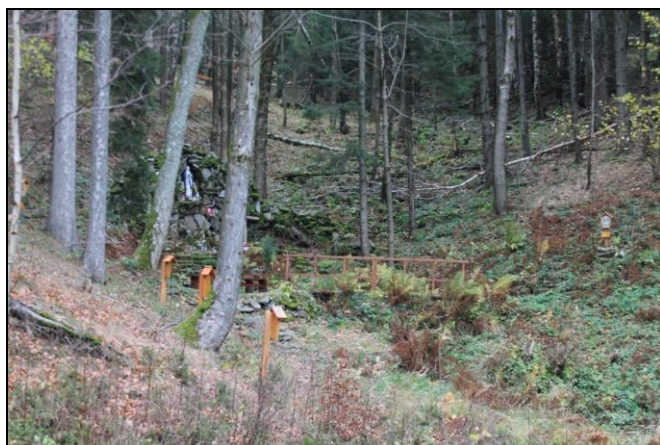


Figure 8. Bolesławów "Suszyca" - Grotto of Our Lady of Lourdes as a new (contemporary) element of the open-air calvary



Figure 9. Stary Gierałtów - landscape of the Stations of the Cross with a single element representing its spatial extent

Another distinctive feature of the material identity of the sacral landscapes of the Little Calvaries of the Sudetes is the religious and historical-social context, which refers to the counter-reformation movement that influenced the religiousness of the area's inhabitants with the help of the Jesuits between the 17th and 19th centuries. Nowadays, the Roman Catholic parishes, or more precisely the inhabitants themselves, gathered around the resident priest, are responsible for the state of preservation and religious functions. The sites are still places for meditating on the Passion of Christ in the vicinity of the natural landscape, emphasising the spiritual aspect. All the sites analysed have a sacral function although the state of preservation varies. The best preserved calvaries are located in Międzygórze, Marianówka, Radochów, Bolesławów "Suszyca" and "Ogrójec" and Złoty Stok. Neglected Stations of the Cross can be seen in Młynowiec and Stribrnice. Unfortunately, not all objects represent the completeness of the original structure.

An example of a damaged calvary is Bolesławów "Ogrójec". There, only three crosses are visible, which lead to the prayer complex in the Garden of Olives. Most of the sites show no disintegrating elements in the space, with the exceptions of the sites in Bolesławów, Radochów and Międzygórze, where other religious contents such as grottoes of the Virgin Mary or sculptures of saints have been added to the calvary complexes. The calvaries retain their integrity of style, form, colour and the materials from which they are made (an exception may be the Stations of the Cross at Młynowiec, where the missing, former stone crosses have been replaced with concrete ones).

In the landscape of the Eastern Sudetes, only one calvary represents spatial extensiveness. It is the Stations of the Cross, which connects the two villages of Stary Gierałtów and Nowy Gierałtów over a distance of approximately 4 km (Figure 9). The other calvaries represent openness within sight. In the case of the damaged calvary in Bolesławów, there are no clear and sharp boundaries for the establishment of the form, apart from the Prayer of the Garden of Olives.

In addition to material distinctions, it is worth noting the subject of non-material distinctions, which also played a significant role in the formation of sacral landscapes. The establishment of complexes of little calvaries was largely due to the various events faced by the inhabitants of neighbouring villages. Most calvaries, therefore, were *ex vota*, being thanksgivings for graces received or healing from illness. An example of such a calvary is the complex in Radochów, Stary Waliszów or Bolesław "Suszyca". Calvaries were founded in places where a shrine (chapel, church) had previously been established, so they are directly connected with the particular pilgrimage site, raising their profile (Radochów, Maria Śnieżna, Złoty Stok, Travná). Another distinctive feature of the choice of place and name of the calvary may be the neighbourhood of a monastery (Marianówka), where a monastery was founded by the Salesian fathers. Non-material

<sup>2</sup> Edicule - a chapel with a pediment supported by columns or a niche providing a backdrop for a sculpture, bas-relief or painted image

distinguishing features can also be found in the form of multisensoriality, which consists of touch and, in the case of five sites, the sound coming from church bells (Międzygórze, Stary Gierałtów, Nowy Gierałtów) or the ridge turret bells of the chapels of Radochów and Stary Waliszów. All the sites are thought-provoking and mysterious, allowing the spiritual experience of the mysteries of Christ's Paschal Mystery.

### Evaluation discussion of Little Calvaries in the context of the protection of calvary landscapes

It is a difficult social process to implement new principles of landscape management. This is especially the case in post-communist countries, where there was a predetermined policy of the central state administration, often not in line with environmental considerations. The interviews conducted in the local government units of the study area clearly show that knowledge about the European Landscape Convention is treated marginally. Cooperation with scientific institutions, representing fields such as history, archaeology, cultural studies, theology or geography, to describe and assess the landscape is not undertaken. This explains the lack of any documentation of monuments, but also of basic knowledge about the history and revitalisation processes of sites. The units cooperate with the Provincial Conservator of Monuments, but only to a certain extent. However, it is possible to notice cases of cooperation of local communities in the revitalisation and maintenance of cultural heritage objects.

Table 2. Criteria for assessing the landscape of the Little Calvaries for the purpose of determining their current functions and potential threats (Source: Own study based on field research using the method of Myga-Piątek (2007) modified for the needs and specificity of the research subject)

Location	Age	Historicity	Aesthetic value	Harmony	Content	Uniqueness	Emotional value	Utility value	Multisensoriality	Sum of points
Młynowiec	1	1	1	2	1	1	1	1	1	10
Bolesławów (Suszyca)	2	1	2	3	1	1	2	3	1	16
Bolesławów „Ogrójec”	2	1	2	3	1	2	2	3	1	17
Stary i Nowy Gierałtów	1	1	1	2	1	1	2	2	1	12
Radochów „Cierniak”	2	1	3	3	2	2	3	3	2	21
Złoty Stok	2	1	2	3	3	2	2	3	1	19
Stary Waliszów	2	1	2	3	1	2	2	3	2	18
Międzygórze „Maria Śnieżna”	2	2	3	3	3	3	3	3	2	24
Marianówka	1	1	1	3	1	1	2	2	1	13
Travna	2	1	2	3	1	1	2	2	1	15
Stribnice	2	1	1	2	1	1	1	1	1	11
Scale of grade	3 points - landscape with cultural elements more than 300 years old 2 points - landscape with cultural elements aged 300-100 years 1 point - landscape with cultural elements less than 100 years old	3 points - landscapes where historical events of national scale and importance have been recorded 2 points - landscapes where historical events of regional scale and importance have been recorded 1 point - landscapes where historical events have not been recorded and are not associated with such events	3 points - highly aesthetically pleasing landscapes 2 points - landscapes with slightly disturbed aesthetics 1 point - average, disharmonious landscapes	3 points - full compositional harmony, giving a sense of order and spatial arrangement and continuity of functions 2 points - slight disturbance to order, arrangement and continuity of functions 1 point - complete sense of spatial chaos and discontinuity of functions	3 points - significant and easily identifiable landscape symbolism with a distinct "genius loci" of nationwide rank 2 points - symbolism of regional scale and prominence 1 point - symbolism of a local scale and importance.	3 points - original and unique landscapes on a nationwide scale 2 points - original and unique landscapes on a regional scale 1 point - landscapes with typical and repetitive features	3 points - the local community shows close emotional ties with the place 2 points - social ties with the place concern only selected social and age groups 1 point - local community does not identify with tradition of place and does not care about condition of space	3 points - landscapes used in accordance with their traditional function, definitely not subject to changes in function and architectural and landscape forms 2 points - landscapes used according to their traditional function, potentially exposed to changes in functions and architectural and landscape forms 1 point - landscapes "to be forgotten" due to lack of protection, functions and architectural-landscape forms disappear	3 points - touch, sound, smell 2 points - touch, sound 1 point - touch	

These are sometimes the initiatives of associations (e.g. the Association of Friends of the Biała Łądecka Valley "Kruszynka") and village administrations (e.g. the administrator of the village of Kamienica, Ms. Irena Foremnik) for mutual cooperation. This cooperation is aimed at protecting the sacral heritage often found in the area. Information boards and printed materials such as brochures and leaflets are produced on the initiative of local communities.

In order to identify the subject matter in more detail, an assessment of the landscape of little calvaries was made based on nine criteria. For the purposes of determining current functions and potential threats, age, historicity, aesthetic value, harmony, content, uniqueness, emotional value, utility value, multisensoriality and the number of objects in each complex were considered (Table 2). Six of the sites represent more than 100 years of history, translating into a richer architectural and landscape form. Three of the analysed buildings date to the 20th century.

**Historicity** - the most valuable calvary landscape in the study area, in which historical events of regional scale and importance have been recorded, is the calvary in Międzygórze. An important event affecting the rank was the annexation of Kłodzko County to Prussia in 1742, which was associated with significant geopolitical and religious changes.

A new Prussian law restricted Catholic worshippers from making pilgrimages to, among other places, Mariazell in Austria. In order to solve the problem, in 1750 the village resident of Wilkanów, Krzysztof Veit, brought a folk copy of the statue of Our Lady of Mariazell, made of linden wood. The statue started a pilgrimage movement to the small chapel on Góra Igliczna in Międzygórze, where in 1781 the foundation stone of the emerging sanctuary of Our Lady of the Cause of Our Joy "Maria Śnieżna" was laid. At present, the sanctuary on Mount Igliczna is an important pilgrimage site for the inhabitants of the region, the country and pilgrims from abroad. The other Calvary complexes represent landscapes in which historical events have not been recorded and are not associated with such events.

However, they were created in the historical environment of the experiences of local people who, feeling the need to thank God, erected Stations of the Cross as votive offerings.

**Emotional value** - with two objects having the status of a shrine, the local community has close emotional ties due to the rank and functions of a unique, sacred place. These objects are the sanctuary of Our Lady Cause of Our Joy "Maria Śnieżna" in Międzygórze, with year-round national and international pilgrimage traffic, and the sanctuary of Our Lady Help of the Faithful in Radochów with predominant local pilgrimage traffic. The emotional value of the last site, which lends real mysticism, is the figure, the only one in the Sudetic range, of the hermit Brother Elisha, standing over the spiritual and physical transmission of the religious character.

With regard to **emotional and social values** concerning selected social and age groups, this criterion is fulfilled by Marianówka and the Salesian monastery located there. These monks influenced the pilgrimage movement and participation in the Stations of the Cross by conducting targeted spiritual retreats. The remaining sites involve parish communities and scored 2 points of emotional value. The only site that the local community currently does not identify with the tradition of the place and does not care about the condition of the space is Młynowiec and Stribrnice, which is due to the depopulation of the place.

**Utility value** - due to the historical-architectural context and emotional value, 90% of the little calvary complexes are used in accordance with their religious function (whether the most recognisable ones are listed in the register - if so, they are legally protected from changes, others may be altered in form by local custodians). An exception is the Little Calvary in Młynowiec and Stribrnice, where there are traces of a lack of interest in ceremonial use.

**Uniqueness** is an important criterion for determining the direction of preservation of the sites in the perspective of the next decades. The calvary complexes of the Eastern Sudetes in the architectural and landscape context are mainly characterised by folk content. Higher-ranking content referring to historical stylistic trends, e.g. baroque, is exhibited by the complexes in Międzygórze and Stary Waliszów, which additionally, due to their high religious rank, constitute a specific "*genius loci*". The uniqueness of the content can still be observed in the Calvary complex in Radochów, through the characteristic architecture of the Stations of the Cross in the form of edicules, chapels or foundation steps leading to the Calvary hill Cierniak, where the names of former (German) benefactors are inscribed.

The uniqueness of the place is largely attributable to harmony, i.e. compositional congruity that allows one to feel order and spatial arrangement. Of the surveyed complexes, all show full landscape-architectural compatibility with the spirit of the place, which is influenced by the morphological naturalness together with the forest-meadow cover, and also through the senses, mainly touch, allow one to feel the spirit of the place.

## CONCLUSIONS

Little calvaries or open-air calvaries are counted among sacred places (*sacrum*), as they are characterised by the existence of a rich symbolism of the material and non-material sphere, creating a unique atmosphere of the place - "*genius loci*" increasing its value in the religious, cultural, but often also artistic context.

These calvaries were founded in the local landscape, trying to approximate to the topographical original of Jerusalem (holy mountain - holy hill). Stations of the Cross - Little Calvaries - were erected to provide pilgrims with indulgences rather than aesthetic experiences, hence the apparent architectural and symbolic modesty. The little calvaries were intended to be places for meditating on the Passion of Christ, but also for enacting Passion stories. Due to their location in the mountain landscape, they could replace pilgrimages to the Holy Land. The sites made use of both natural and anthropogenic elements, creating diverse landscape compositions saturated with symbolism (Figure 8).

The observations allow us to distinguish two main systems - elliptical and linear, from which linear with a small spatial extension (A) and linear with a significant spatial extension (B) were further separated. Linear layout A is characterised by the existence of a church at the beginning of the calvary (the exception is represented by Młynowiec, where there is no building) and a bi-directional path with crosses in the forest environment. This layout should be associated with the period of creation from the 18th to the 20th century (Międzygórze, Bolesławów). On the other hand, linear layout B is characterised by a bi-directional path starting and ending with churches. It represents a new layout created in the 21st century with forests, grasslands and arable fields as its background. This landscape type is represented by the calvary in Stary and Nowy Gierałtów. The elliptical landscape layout in the study area is characterised by a cylindrical arrangement of mainly edicules, with a chapel in the middle. This arrangement, found in Radochów, Stary Waliszów and Złoty Stok, creates a closed form with forests as its background.

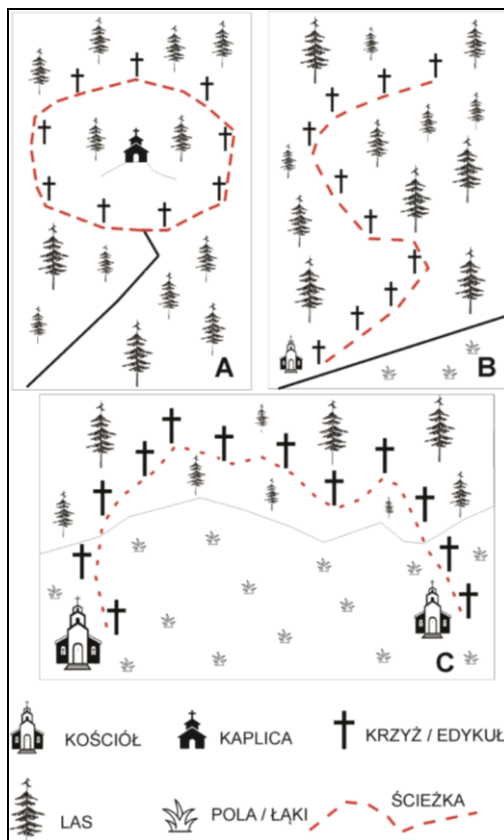


Figure 10. The three prevailing landscape systems of the Little calvaries for the Eastern Sudetes region: A - elliptical, B - linear (former) representing low spatial extension, C - linear (modern) representing high spatial extension. Own study

The analysis of the sacral landscapes of the little calvaries was carried out in the real (material) current, which consisted in locating the objects in mountain and forest landscapes, and in the aesthetic current, where the originality of the composition's assumptions against the background of nature was combined.

Field research made it possible to estimate nine Little Calvaries in the Eastern Sudetes. It is noteworthy that despite the political, national and religious changes that took place after 1945, the Little Calvaries of the Eastern Sudetes are still visible in the field and are a great testimony to the religiosity of the region's inhabitants. An analysis of the symbolic, architectural meanings and site topography of the studied calvaries in a natural and spatial context provides a substructure for the identity of the site with local heritage. The calvaries in question have the potential to further develop the pilgrimage movement, but also to develop cognitive tourism. The value of the above research is the reference to the typology of Chmielewski et al. (2015), as they complement the typology of sacred landscapes taking into account open-air calvaries referred to as Little Calvaries. These calvaries represent a rural landscape type with a subtype of small-scale sacred ensemble historically and culturally conditioned with a region with a specific forest-agricultural landscape background, which is currently the quasinatural mountain landscape of the Eastern Sudetes.

The above conclusions regarding the existence of the unique landscape sacral complexes of the Little calvaries in the Sudetic area, in the context of the role of the local society in the implementation and monitoring of the landscape policy, are no longer so obvious. The state of implementation of the landscape policy, based on the European Landscape Convention, by the administrative authorities of the study area is substantively weak.

Despite the knowledge of the existence of open-air calvaries, which are culturally and historically valuable landscapes, caring for them is mainly in the hands of parishioners, village leaders e.g. village administrators, parish priests or local associations. Their activities, although valuable because they come from a sense of "heart", can, without a substantive basis and tools, pose a threat to the preservation of their authenticity.



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## DETERMINING THE EFFECTIVENESS OF USING CHATGPT-4 IN ORGANISING EXCURSIONS

**Yerlan ISSAKOV** 

Abai Kazakh National Pedagogical University, Institute of Natural Sciences and Geography, Department of Geography and Ecology,  
Almaty, Kazakhstan, e-mail: erlan.issakov@gmail.com

**Kairat OMAROV** 

Abai Kazakh National Pedagogical University, Institute of Natural Sciences and Geography, Department of Geography and Ecology,  
Almaty, Kazakhstan, e-mail: kairat62@bk.ru

**Armanay SAVANCHIYEVA** 

Abai Kazakh National Pedagogical University, Institute of Natural Sciences and Geography, Department of Geography and Ecology,  
Almaty, Kazakhstan, e-mail: armanay75@mail.ru

**Dinara KADYRBEKOVA** 

Kazakh Academy of Sport and Tourism, Department of Tourism and Service, Almaty, Kazakhstan, e-mail: 6537275@mail.ru,

**Ardak ALDASHEVA** 

Almaty Technological University, Faculty of Economics and Business, Department of Tourism and Service,  
Almaty, Kazakhstan, e-mail: aldashieva75@mail.ru

**Akbota BEKEN** 

Abai Kazakh National Pedagogical University, Institute of Natural Sciences and Geography,  
Department of Geography and Ecology, Almaty, Kazakhstan, e-mail: bota.beken@gmail.com

**Zhanerke TOKENOVA** 

Al-Farabi Kazakh National University, Faculty of Geography and Environmental Sciences, Almaty, Kazakhstan, e-mail: zhan2993@mail.ru

**Lóránt Dénes DÁVID\*** 

John von Neumann University, Faculty of Economics and Business, Kecskemét, Hungary; Hungarian University of Agriculture and Life Sciences, Institute of Rural Development and Sustainable Economy, Gödöllő, Hungary, e-mail: david.lorant.denes@gtk.uni-neumann.hu

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**Abstract:** As artificial intelligence (AI) technology becomes more deeply embedded in people's daily lives and work, the importance of ChatGPT (Generative Pretrained Transformer) is growing and its application in the tourism sector is expanding. ChatGPT can be useful in organising new excursions because of its capabilities such as data analysis, interpretation, scenario creation and model evaluation. Therefore, the purpose of this study was to determine the effectiveness of using ChatGPT-4 in organising new excursions. The study was conducted at the Abai Kazakh National Pedagogical University and 82 students participated in the study. The study consisted of two stages, at the first stage students answered a questionnaire on the discipline of "Literary excursion", which was studied for 15 weeks, and at the second stage was conducted a study based on comparative analysis, with the assignment of 6 specially prepared questions to determine the effectiveness of using ChatGPT-4. As a result of the study, the need to study the excursion subject for students of educational programmes "Kazakh language and literature" was 72%. ChatGPT-4 became an indispensable tool in drawing up excursion itineraries for students, making their technological map and selecting an excursion object. In addition, with the help of ChatGPT-4 students built routes of new excursions and correctly identified tourist objects and traffic routes, type. Also very qualitatively wrote the text of the excursion in literary language and brought it to the level of an interesting script. Thus, using ChatGPT-4 when organising new excursions will help you to get information, save time, make specific decisions and improve quality. The results of this study may be useful in the future to explore ChatGPT-4 in the potential integration of other technologies such as augmented reality or virtual reality.

**Keywords:** ChatGPT, artificial intelligence, organising excursions, defining efficiency

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### INTRODUCTION

In the modern digital age, it is advantageous to use AI technology in organising tourist excursions (Koo et al., 2021). The AI of ChatGPT helps travellers to choose travel destinations, places, travel itineraries and make specific decisions (Sudirjo et al., 2023; Dadkhah et al., 2023). ChatGPT also has the ability to improve information retrieval results, make better use of the database and transfer data (George et al., 2023; Hassani and Silva, 2023). Therefore, the use of

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\* Corresponding author

ChatGPT in organising sightseeing and thematic city excursions will help tourists to better understand the history, culture and traditions of the region, national peculiarities and expand their knowledge (Kazmina et al., 2020). It is also an indispensable tool for determining the route of excursions and choosing the means of travel (mode of transport) according to the peculiarities of the location of local tourist sites (Gubarenko et al., 2020).

In general, an excursion is an organised trip or visit by a group of people led by an experienced guide to museums, sites and nature to learn more about local history, culture or nature (Olin-Scheller et al., 2021). Depending on the purpose, an excursion can be entertaining, local history or educational (Issakov et al., 2023a). Excursions are also divided into sightseeing and thematic excursions. A sightseeing excursion usually includes the city's main attractions, historical sites, architectural monuments, etc., which gives a general idea of the city and its culture. A thematic excursion, on the other hand, will focus on a particular theme or aspect of the city, such as art, architecture, cooking, history, etc. (Denysenko et al., 2020). In addition, excursions are a tourism product that is part of tourism services. Since the development of excursion products is a complex, multi-stage, complex and very important process that requires systematic analysis, the preparation of a new excursion is carried out by a creative team of tour operators, tour guides and professional methodologists (Aleksushin et al., 2020).

Nevertheless, in secondary education organisations (schools), students are accompanied on excursions in most cases by the class teacher (supervisor) where they study. This is due to the fact that organised excursions help to solve the problems of frontal learning and allow students to plan their time (Arnold et al., 2018). However, is the class teacher (supervisor) competent in organising the excursion?; are they willing to draw the excursion route and walk along it?; and in observing safety during the excursion? is unknown. Therefore, the use of artificial intelligence and natural language processing technologies such as ChatGPT in organising excursions in secondary educational institutions (schools) can play a crucial role in organising excursions (Biswas, 2023). This is because ChatGPT uses a variety of approaches to facilitate learning and research, including model parameterisation, data analysis and interpretation, scenario building and model evaluation. (Rospigliosi, 2023). Thus, it is very important to study the effectiveness of using ChatGPT in organising tourist excursions.

The purpose of this study was to determine the effectiveness of using ChatGPT-4 in organising new excursions. After all, no specific studies on this topic have been conducted yet. Due to industry specifics, Zhu et al. (2023); Lund and Wang (2023); Ülkü (2023); Spennemann (2023); Fusté-Forné and Orea-Giner (2023); Limna and Kraiwanit (2023) and Rudolph et al. (2023) manuscripts are valuable. However, there are no Kazakhstani scientists who have scientifically studied the possibility of using ChatGPT in tourism. Thus, this study was conducted on the basis of the Kazakh National Pedagogical University named after Abai for the students of the 3rd year of educational programmes "Kazakh Language and Literature" of the Institute of Philology, in the hope that it will contribute to Kazakh literature. This is due to the fact that these students studied the discipline "Literary excursion" for 15 weeks, the basics of organising and conducting literary and cultural excursions. Thus, in this two-stage study, the students' knowledge and competences in organising excursions were determined, and the effectiveness of using ChatGPT-4 in the process of organising new thematic excursions was determined. Organising new excursions using ChatGPT-4 will help you to get information, save time, make clear decisions, improve the quality of excursions and increase the amount of income.

## **LITERATURE REVIEW**

### **Artificial Intelligence (AI) in Tourism**

AI is the ability to recognise, interpret, draw conclusions about data to achieve predefined organisational and societal goals (Mikalef and Gupta, 2021). Nowadays, AI technologies have begun to permeate many aspects of people's daily lives. This is due to the fact that industrial revolutions are the result of humanity's desire for progress, development and broadening of the (Kömürcü et al., 2021). Technological progress makes people's daily life more comfortable, in addition, technological progress makes enterprises change in various fields such as work, safety, labour relations, economy, social relations and psychology (Tiftik, 2021; Cheng et al., 2023; El Archi and Benbba, 2023a). Tourism research shows that AI technologies reduce productivity and increase job insecurity and the desire to leave work (Carvalho and Ivanov, 2023). There is also a correlation between employees with AI expertise and their propensity to leave the company (Li et al., 2019). According to Sheikhi (2022) study, the process of developing AI creates new professions and fields of expertise and increases job opportunities. But in order to increase the awareness of AI, a favourable working environment needs to be created (Ausat et al., 2023). In addition, there are speculations that with the spread of AI, many employees in the tourism industry will lose their jobs. Therefore, managers of tourism companies should support employees in acquiring the necessary skills related to AI technologies (Tuo et al., 2021; El Archi et al., 2023b).

The use of AI in the tourism sector will automate tasks and improve the quality of customer service (Acemoglu and Restrepo, 2020). Increases dedication by allowing employees to focus on the creative, strategic and meaningful aspects of their work. It also influences employee roles, automates ticket booking and enables virtual tours and excursions using augmented reality and VR technologies (Koegst, 2022). In the future, AI-enhanced tour designers, travel consultants, destination managers, travel journalists, culinary innovators and tourism educators may emerge with the help of AI. In particular, it is clear that already as ChatGPT is increasingly immersing itself in various aspects of the AI travel business, professionals with the necessary knowledge and skills will have a significant advantage in capitalising on these exciting prospects.

### **Use of ChatGPT in the tourism sector**

ChatGPT is a generative AI chatbot developed by OpenAI that is dialogue-enabled and supports natural language queries (Fui-Hoon Nah et al., 2023). The system can answer questions, create texts in different languages, including

those related to different subject areas. An important feature is the ability to generate programmes in different programming languages on request (Watters and Lemanski, 2023). The main goal of ChatGPT is to simplify the user experience through a dialogue interface. ChatGPT analyses and understands the data entered by the user and then produces a response that is generated by a multifaceted process within the model (Kraugusteeliana et al., 2023). The accuracy and relevance of the responses generated by ChatGPT are not guaranteed as they can only match the information available during the training phase of the model (Fauzi et al., 2023). ChatGPT, however, is able to improve search results by leveraging the existing database and providing accurate data. It also offers travellers recommendations on travel destinations, accommodation, restaurants and itineraries. (Erul and Isin, 2023; Koc et al., 2023). The use of ChatGPT can improve the quality of travel services and the overall experience in the travel industry. ChatGPT can be used as a mechanism to manage bookings, handle traveller enquiries and improve customer service.

Currently, due to the specific nature of the industry, the experience of using ChatGPT in the travel industry is expanding. In this context, Çolak (2023) examined the impact of AI on employment patterns in the tourism industry and noted the potential negative impact of AI on employees on issues such as layoffs, job mismatch, skills shortages, retraining problems, adaptation, creativity, decision making, workload, ethics, fairness, job performance, job satisfaction, feelings of monotony, and career. Meanwhile, Abdullah (2023) notes that ChatGPT-4 for hospitality industry can facilitate concierge services, hotel booking for travellers, feedback, room service, operational efficiency, hotel marketing and tourism guide. Also Göktaş (2023) found that the use of ChatGPT will be useful for success in distance learning exams. Ivanov and Soliman (2023) examined the impact of ChatGPT on future tourism education and research and suggested that universities should review their teaching and assessment strategies and implement a generative language model in teaching. Gursoy et al. (2023) ChatGPT and hospitality, focusing on current trends and future research directions in the tourism industry, discussed the possibilities of using ChatGPT in decision-making processes at different stages of travel. Furthermore, Mich and Garigliano (2023) warn that when using ChatGPT for e-tourism, in addition to its excellent characteristics, there are risks associated with its inherent limitations. Kohnke et al. (2023) studied ChatGPT for language learning, providing teachers and students with the digital competencies needed to ethically and effectively use ChatGPT to support language learning. Skavronskaya et al. (2023) contribute to the practice of AI and robotics in tourism teaching by critically discussing ChatGPT from a cognitive science perspective and providing recommendations to reduce AI plagiarism in tourism teaching.

## RESEARCH METHODS

This study aimed to determine the effectiveness of using ChatGPT, a generative AI developed by OpenAI and capable of operating in a dialogue mode that supports natural language queries, in the process of organizing new excursions. After all, ChatGPT can answer questions, provide texts in different languages, including those related to different subject areas (Harahap et al., 2023; Setiawan et al., 2023). ChatGPT can be used by the tourist for local lore purposes or for getting to know the environment, gaining knowledge and information (Demir and Demir, 2023; Issakov et al., 2023b). Therefore, in this study, quantitative and qualitative methods were used equally, a mixed method was used to determine the effectiveness of using ChatGPT-4 in organising excursions. The process of primary data collection began with the study of articles published in journals included in Scopus and WOS databases, a total of 56 sources of literature were studied. Also, to facilitate data analysis, methods of active listening and complex accounting of all significant data were used. The main study was conducted from 04.09.2023 to 29.12.2023 on the basis of Kazakh National Pedagogical University named after Abai for students of the 3rd year of educational programmes "Kazakh language and literature" of the Institute of Philology. This is due to the fact that the students studied the discipline "Literary excursion" as part of the minor for 15 weeks (1 semester) and mastered the basics of organising and conducting literary, historical, cultural excursions. A total of 91 (4 groups) students chose the excursion studies subject as a minor, however, 82 of these students participated in a research project to determine the effectiveness of using ChatGPT-4 in organising new excursions. The 9 students who did not participate in the study had known reasons. The study consisted of two stages, in the first stage (04.09.2023 - 08.12.2023) the basics of organising and conducting excursions for students were studied in class, the survey determined the significance of literary excursions and the competence of students. The content of the survey fully disclosed the significance and problems of teaching the discipline "Literary excursion". The responses of the interviewed students (respondents - R) were coded. And in the second phase (11.12.2023 - 29.12.2023), to determine the effectiveness of using ChatGPT-4 in organising a new literary excursion, ChatGPT-4 was asked the following questions:

Question 1. What is an excursion?

Question 2. Is it necessary to teach tour guiding to students of "Kazakh Language and Literature" educational programmes?

Question 3. What is the difference between a city overview and themed excursions?

Question 4. State the importance of organising literary excursions?

Question 5. What are the safety rules for organising and conducting an excursion?

Question 6. What skills can students develop through excursions?

The methods of this study to determine the effectiveness of using ChatGPT-4 in the process of organising new excursions are presented in Figure 1.



Figure 1. Research Flowchart (Source: compiled by the authors)

## RESULTS AND DISCUSSION

### Survey

The results of the first stage of the study showed that 70.7% of the 82 respondents who participated in the study had not participated in sightseeing or thematic excursions before studying the discipline of "Literary excursion", and 78% of the respondents had not organised excursions for special groups (Table 1).

In addition, to the third question of the questionnaire, do you think it is necessary to teach the subject of excursions to students of educational programmes "Kazakh language and literature"? "72% of respondents answered "yes, of course, it is necessary", 26.8% - "maybe it is necessary" and 1.2% - "it is not necessary".

Table 1. Demographic information

Background variable	Student	%
<b>By gender N=82</b>		
Male	6	7.3
Female	76	92.7
<b>Groups</b>		
302	22	26.8
305	20	24.4
308	20	24.4
312	20	24.4
<b>Have you ever taken a paid excursion?</b>		
Yes	24	29.3
No	58	70.7
<b>Have you organised a excursion?</b>		
Yes	18	22
No	64	78

What did the discipline "Literary excursion" give you as a future teacher? What have you learnt from studying this discipline? respondents answered the following questions: R2: From this course, I learnt how to build close relationships with my students, R7: Gives more opportunities. After all, we can use our knowledge to develop children's outlook outside of school hours by visiting museums and various beautiful places, R11: I designed my own excursion itinerary and learnt new stages of the excursion myself, R18: I believe that the discipline "Literary excursion" is mandatory for the future teacher, as every teacher should be able to act as a tour guide and make an excursion itinerary, conducting lessons with students, R25: We, as future educators, learnt how to conduct our own excursions involving students to museums and any tourist sites, R27: I learnt how to give special group excursions to the most important, city sights, what places to take, how to lead, how to speak, R32: By studying this discipline, I have developed several skills. They are: 1) I realised that the art of artistic expression is necessary in all spheres. If you can present any thing beautifully, it is bound to interest everyone. Therefore, I am convinced that vocabulary is always a must to develop and replenish. 2) Collectiveness and organisational skills. Yes, the discipline of "Literary excursion" has shown that both these qualities are present in me, explaining that these qualities are very helpful for me to become a qualified teacher. 3) Leadership and love for my work have instilled in me the most important qualities. I am grateful that I have learnt these skills in this short time! R36: During the excursion, I learnt how to talk my way around, what places to show, the route to take, R37: The discipline of excursion introduced me to a lot of information that I didn't know before. "What is an excursion? " I learnt about its types, driving rules and signs, timing, route and text development. We also looked at each type of excursion separately in the masterclasses. The discipline of "Literary excursion" has given me very important and necessary knowledge. I am sure that in the future I will be able to take schoolchildren on excursions that will be interesting and useful for them. In addition, I know that I can prepare and conduct excursions myself! By differentiating between different types of excursions, I can say that I will find the excursion I need, whether it is in my country or in other countries, R43: I expanded my vocabulary by writing the text of the excursion. Thanks to the excursion lesson, I taught respondents how to conduct excursions correctly. Discipline "Literary excursion" helped us to increase our spiritual development. Especially during the excursion, I got to know museums and learnt a lot of unfamiliar information, R45: At first I thought that this discipline was what our profession needed. However, later, when I became a teacher myself, I found it a great opportunity to organise excursions on a particular topic to broaden the outlook of the children, R49: Through the discipline "Literary excursion", I was convinced that there are many beautiful beautiful places in our country. The tour is necessary for us as professionals to complement ourselves, R52: As a future teacher, I can take my students on excursions to places related to my discipline. By studying this discipline, I learnt how to write texts, drawing routes, ways of conducting excursions, meanings, types of excursions, R54: The discipline of "Literary excursion" gives me a new purpose, a new direction, R55: Having studied this discipline, I understood that there are many types of excursions, different activities implemented in their organisation, safety measures, their differences from each other. And I am sure that this knowledge will help us in our further pedagogical life, R61: Excursions is a discipline that has enriched my knowledge of cultural and historical heritage. I have learnt how to give exciting excursions, share knowledge and inspire people to discover new aspects of the world around me, R66: I can say that I have developed my worldview to the necessary level by studying the discipline of excursion studies. It opened my inspiration to see around me the picturesque places in my native homeland, R68: In this discipline, I learnt how to organise excursions, draw routes, act as a guide, create tents, create an excursion passport and text, R70: I realised that there are many opportunities for excursions in literature, R73: Learned how to plan, draw an itinerary for an excursion, R75: Having studied this discipline, I am used to speaking in public,

selecting information correctly, and acting as a guide when necessary, R77: It can be said that the discipline of "Literary excursion" has become a methodology of life for me. That is, I realised that if earlier I saw myself as a teacher teaching only "Kazakh language and literature", now I can become a excursion guide - a guide for students, R78: I learnt how to write a research paper, I learnt how to do it., R81: Taught how to build relationships with students, take responsibility.

To the fifth question of the questionnaire "Name the importance of organising literary excursions?" respondents answered as follows: R1: Their importance is immense, their knowledge deepened by familiarity with their literature, the personalities in it, or the milieu in which they lived., R4: Excursions will introduce the works and representatives of literature, R8: During a literary excursion, we do a general overview of the lives of literary figures, that is, poets and writers, by visiting a museum. This is remembered by literary scholars not only as theoretical knowledge, but also as practice, R12: Of course, from books, we will probably get to know the life of the literati and their works. However, if we give an excursion to the legacy of these poets, the students' knowledge will obviously increase, R15: In my opinion, literary excursions are, as the name implies, a type of excursions that presuppose further improvement in a person of such qualities as culture, ethics and aesthetics, as well as peace of mind and spiritual richness, spiritual fulfilment.

After all, it is literary excursions, relying on the art of the word, that allow one to be interested in the culture of the people participating in the excursions, in the heritage of our country with deep literature and history, R17: I think that through the literary excursions the excursionists will be able to get acquainted with the biographies of famous writers, poets, learn new information about them that they did not know. I am sure that it is important for the future teacher of Kazakh language and literature to organise literary excursions. This is because with the help of these excursions we can form the student's knowledge / personality and arouse interest in literature, R22: Literary excursions are divided into the following groups: 1) literary-biographical; 2) historical-literary; 3) artistic-literary.

With the help of such excursions it is possible to enrich the knowledge of excursionists, R26: The guide's speech on literary excursions should be literary, thematically cultural. Literary excursions should be grouped as follows: literary-biographical - places related to the life and work of the writer, R30: Through literary excursion we get to know our literature in the first place, R33: Organising literary excursions plays an important role in broadening horizons and enriching literary experiences, R40: Literary excursions promote a deep understanding of works and stimulate interest in reading, as well as create a unique experience of literary heritage, R44: Of great importance in awakening the inner feelings of mankind, R48: Customs are important so that traditions and ancient heritage are not forgotten, R50: It is important for students to know where the Museum of Poets and Writers is located, the history of the museum and where it is located, depending on literary places, R57: Above all, it culturally educates a person, glorifies and promotes the culture of a language and a nation, R59: We can introduce tourists to the most important figures of our country, R62: Important for children's literary development, R74: The excursion is based on a spectrum such as its information section, its relationship to the environment, its scientific nature, the connection of people to each other, and its ideational nature, R80: Of course, the organisation of the overall excursion, the level of coverage and the sources of information later on in these excursions are first and foremost important. In fact, when organising literary excursions, literary places, sources of information including literary excursions should be fully covered.

The sixth question of the questionnaire "In what direction did you lay the route of excursion and developed the text of excursion in the seminars on the discipline Literary excursion?" - 48,8% of respondents answered the question "sightseeing excursion", and 18,3% - "thematic excursion" (Figure 2a). Seventh, "Do you know the safety rules of organising and conducting an excursion?" - 58.5% of respondents answered "know well" (Figure 2b).

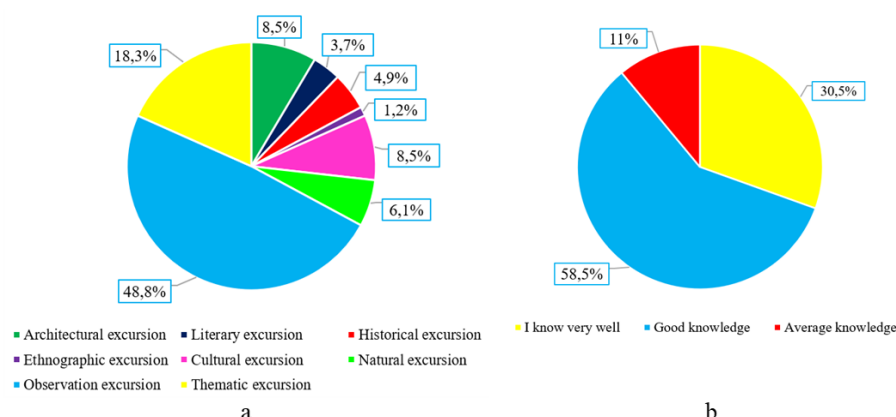


Figure 2. Response rates to the sixth and seventh questions of the questionnaire, %

Eighth, "What, in your opinion, is the best of 3D virtual tours in Kazakhstan of cultural-historical and literary direction?" respondents gave the following answers: R3: I consider the 3D virtual tour of the State Historical and Cultural Reserve-Museum "Azret-Sultan" to be the best. Everything is clearly labelled and of high quality. R28: The virtual tour of the Central Museum of Almaty is very good, all sections are included. R47: I liked the virtual tour of Astana. This is because with the help of this tour we can look not only into today's capital, but also into its history. R65: I think Almaty Tourism Bureau is the strongest 3D tour. R78: Nur Alem Intermediate Light Museum. It showcases one



of the main services of Expo 2017 and the largest balloon structure in 3D. In addition, the ponoramic demonstration presents the object using various tools and is done to a very high standard.

### Experience with ChatGPT-4

Thus, in the second phase of the study, it was found that the use of ChatGPT-4 would be effective in organising new excursions. ChatGPT-4 has become an indispensable tool in designing excursion itineraries for students, mapping them out and selecting the excursion site. In addition, ChatGPT-4 helped students to make decisions regarding the selection of tourist destinations, places and excursion itineraries. The use of ChatGPT-4 in organising excursions improved the quality of tourism services and the overall experience in the tourism industry. Meanwhile, using ChatGPT-4, students systematically built their routes according to the topics they had chosen and correctly identified the type or means of transport by correctly selecting tourist sites along the route. Also very qualitatively wrote the text of the excursion in literary language, brought the text of the excursion to the level of an interesting script.

At the second stage, respondents searched for an answer to the question "What is an excursion?". ChatGPT-4 resulted in the answer in Table 2a, and some author definitions were included in Table 2b for comparison.

Table 2. Excursion definition (Note: responses provided by ChatGPT 4 have been restructured by the authors)

ChatGPT-4	Definitions
<p>An "Excursion" generally refers to a short journey or trip, especially one engaged in as a leisure activity. Excursions are often taken for purposes of tourism or recreation, sometimes as part of a longer holiday or out of educational interest. They can vary in length, ranging from a few hours to a full day or more, and can involve guided tours, educational trips, nature walks, or visits to particular attractions or points of interest.</p> <p>In other contexts, "excursion" can have different meanings. For example, in the field of physics, an excursion can refer to a temporary departure of a physical property from its normal value. Similarly, in engineering, it can refer to the movement of a mechanical part from its central position.</p>	Excursion - an excursion is a trip by a group of people, usually made for leisure, education, or physical purposes. It is often an adjunct to a longest journey or visit to a place, sometimes for other (typically work-related) purposes (Wikipedia, 2023)
	Excursion (from Latin exisio – walk, trip). A form of educational process organization that allows students to familiarize themselves with the country of the language being studied and the conditions of language functioning in a specific speech environment (Asimov and Shukin, 2009).
	Excursion - a purposeful, vivid process of learning about the world depending on pre-selected topics and routes under the guidance of a qualified specialist (Galiakbarov et al., 2021)
a	b

Respondents fully understood the meaning of the term excursion by comparing the information provided by ChatGPT-4 above and several definitions. Therefore, the respondents using ChatGPT-4 asked the question: Is it necessary to teach tour guiding to students of "Kazakh Language and Literature" educational programmes?. This was to determine whether the knowledge gained on the excursions matched/not matched the answer given in ChatGPT-4. As a result, the ChatGPT-4 gave respondents both positive and negative responses as shown in Table 3.

Table 3. Is it necessary to teach tour guiding to students of "Kazakh Language and Literature" educational programmes (Note: responses provided by ChatGPT 4 have been restructured by the authors)

ChatGPT 4	
The necessity to teach tour guiding within "Kazakh Language and Literature" educational programs depends on various factors, including the goals of the educational program, the job market demands, and the interests of the students.	
<p><b>Here is a breakdown of why it might be considered:</b></p> <ol style="list-style-type: none"> <li><i>Enhancement of Employment Opportunities:</i> If students are looking to broaden their employment prospects beyond teaching and academia, tour guiding could be a valuable skill. Kazakhstan has a rich cultural heritage and natural beauty that attracts tourists. Being proficient in guiding tours could open up positions in the tourism sector. This is particularly relevant if the students are well-versed in Kazakh culture, history, and literature, which could enrich the tour experiences they offer.</li> <li><i>Practical Use of Language Skills:</i> Learning tour guiding can provide students with a practical context to apply their language skills. This could not only improve their fluency but also give them the confidence to use their language skills in real-world situations.</li> <li><i>Preservation and Promotion of Culture:</i> Students who study Kazakh Language and Literature are likely to have deep knowledge about their country's cultural heritage. Training in tour guiding could enable them to promote and preserve Kazakh culture by sharing it with others, including foreigners.</li> <li><i>Interdisciplinary Skills:</i> Tour guiding incorporates skills from various disciplines including history, sociology, geography, and communications. Teaching it alongside Kazakh Language and Literature could provide a more rounded education.</li> </ol>	<p><b>However, there are also reasons why it might not be necessary:</b></p> <ol style="list-style-type: none"> <li><i>Specialization:</i> Not all students may be interested in pursuing a career in tourism or related fields. If the educational program is designed to produce specialists in literature and linguistic research, then tour guiding may not align with their academic and professional aims.</li> <li><i>Curriculum Overload:</i> There may already be a significant amount of required content to cover within the program. Adding additional subjects like tour guiding might take valuable time away from the core subjects needed to master the language and literature components.</li> <li><i>Optional, Not Mandatory:</i> It could be made an optional course rather than a mandatory part of the curriculum. This way, students who are interested can choose to learn tour guiding, while those who are not can focus on other areas.</li> </ol>
<p>Ultimately, the decision to include tour guiding in the curriculum should be made based on an assessment of the program's objectives, the relevance to the students' future careers, and the resources available to the educational institution. It might also be beneficial to solicit feedback directly from students to see if there is a demand for such training.</p>	

In this regard, based on the questionnaire responses in the first stage of the study and the data provided by ChatGPT-4, we hope that students studying "Kazakh Language and Literature" will benefit from being taught the subject of

"Literary excursion". Excursions help students to better understand and experience the history, culture and literature of Kazakhstan, and enhance their understanding and knowledge of the language in the context of specific circumstances. They also supplement theoretical and practical knowledge by visiting local monuments, museums, literary landmarks and other historical and cultural sites (Baranov and Bisko, 2016).

Table 4. What is the difference between city overview and thematic excursions  
(Note: ChatGPT-4 responses were restructured by the authors)

ChatGPT 4	
A city overview and themed excursions represent two different approaches to exploring or presenting a location, typically in the context of tourism or educational trips:	
<b>City Overview:</b> <ul style="list-style-type: none"> <li>- A city overview is a broad, general introduction to a city;</li> <li>- It's usually meant to give visitors a quick summary of the city's main areas, landmarks, history, and overall culture;</li> <li>- It can be a simple walking or bus tour that aims to cover a wide range of attractions over a short period, usually without going into substantial detail on any particular subject;</li> <li>- The overview tour aims to familiarize tourists with the city layout, identifying key neighborhoods, major sights, and possibly providing practical information on getting around;</li> <li>- These tours often highlight the most popular or famous attractions that are well-known and expected by first-time visitors.</li> </ul>	<b>Themed Excursions:</b> <ul style="list-style-type: none"> <li>- Themed excursions focus on specific aspects or themes related to the city or area being explored;</li> <li>- Themes can be diverse: history, art, gastronomy, architecture, literature, or other cultural aspects specific to the location;</li> <li>- They delve deeper into the chosen subject, offering detailed information and potentially visiting less well-known spots that are significant within the chosen theme;</li> <li>- For example, a literary themed excursion might focus on locations related to local authors or mentioned in their works, while a historical themed excursion might visit sites of important historical events or periods;</li> <li>- These types of excursions are often chosen by visitors with a particular interest in the theme or by those who have already seen the main sights and are looking for a more in-depth experience.</li> </ul>
To summarize, a city overview gives a general snapshot intended for newcomers to get their bearings and decide where they might want to explore in more depth later on, while themed excursions are targeted, depth-oriented trips designed to provide a richer understanding of a specific facet of the city's culture or history.	

However, given that there are two types of excursions, for the third question of the survey, "What is the difference between a city overview and thematic excursions?" we received from ChatGPT 4 the answer below (Table 4). According to the response, the review of urban and themed excursions showed that they have their own features and advantages, and there is an opportunity to choose according to the possibilities.

Table 5. Importance of organising literary excursions (Note: ChatGPT-4 responses were restructured by the authors)

ChatGPT 4		
Organizing literary excursions can be an enriching experience for participants and provide numerous educational and cultural benefits. Here are some reasons why literary excursions are essential:		
1	Cultural Appreciation	By visiting places that appear in literature or are associated with authors, participants gain a deeper appreciation of cultural and literary heritage. It can create a tangible connection between a work of literature and the real world.
2	Engagement with Literature	Seeing the locations that inspired stories or poems can bring literature to life and make it more engaging. It helps participants understand the setting of a story and the context in which the author was writing.
3	Educational Enrichment	For students, literary excursions can complement classroom learning, providing a practical dimension to their theoretical studies. This hands-on experience can enhance comprehension and retention of literary knowledge.
4	Promotion of Reading and Literary Discussion	Being part of a literary excursion can rekindle interest in reading and can stimulate discussion among participants about the literature associated with the excursion sites.
5	Inspiration	For aspiring writers and creatives, these excursions can be incredibly inspirational. By walking in the footsteps of famous authors and seeing where they may have written their notable works, participants can find their own creative spark.
6	Historical Insight	Often, literature is intertwined with history. A literary excursion may provide insight into not only an author's life and work but also the historical context in which they wrote. This can lead to a deeper understanding of both the literature and the history.
7	Literary Tourism Advantages	Literary excursions can boost local economies through tourism. Fans of certain authors or literary works may travel far to visit a site related to their favorite books, which supports local businesses and can encourage the preservation of important literary landmarks.
8	Preservation of Literary Sites	Bringing attention to places of literary significance can contribute to their preservation and maintenance, as increased interest often leads to measures to protect these sites for future generations.
9	Broader Perspective	For participants, especially students, literary excursions can broaden their views beyond their immediate surroundings. Encountering new environments, potentially different cultures, languages, or historical periods, can foster a more inclusive and extensive worldview.
10	Community and Fellowship	Literary excursions can build a sense of community among participants who share a common interest. This can lead to networks of literature enthusiasts, book clubs, and further collaborative ventures.
In summary, literary excursions offer immersive and educational experiences that can deepen one's understanding and appreciation of literature, foster a sense of community, contribute to local tourism, and encourage preservation of historical and cultural heritage.		

In this regard, based on the data provided by the respondents at the first stage of the research, we can name several important aspects of the organisation of literary excursions: First, educational value: literary excursions enrich participants' knowledge about the history of literature, writers, literary places and events related to literature (Pearce, 2016). This will help them to better understand and appreciate literary works. Secondly, supporting tourism: literary excursions can attract tourists and literature lovers (Lorimer and Parr, 2014).

This, in turn, favours the development of the tourism industry. Third, discovering cultural heritage: Literary excursions help preserve and promote the region's cultural heritage (Issakov et al., 2023c). Fourth, strengthening the community: organising literary excursions can bring together people who are passionate about literature and strengthen ties in the literary community (Abdreeva, 2016). Fifth, focusing on literary achievements: literary excursions help focus on local or neglected literary achievements, sparking interest in these aspects of culture (Dobrina, 2015). However, we asked the question "State the importance of organising literary excursions?". We wanted to know what answer ChatGPT-4 gives to this question (Table 5). Thus, it will certainly be useful for the excursion organiser to make a decision by comparing the results of the survey in the first stage and the ChatGPT-4 responses in the second stage.

The fifth question of the questionnaire "What are the safety rules for organising and conducting an excursion?" was answered below by ChatGPT 4 (Table 6).

Table 6. Safety rules when organising and conducting a excursion  
(Note: the authors have changed the structure of the answers given by ChatGPT-4)

ChatGPT 4		
Organizing and conducting an excursion, especially for groups such as school children or tourists, requires careful planning and adherence to safety measures to ensure that the experience is both educational and secure for everyone involved. Here are some general safety rules and guidelines for organizing and executing an excursion:		
1	Risk Assessment	Carry out a thorough risk assessment of the excursion to identify and minimize potential hazards. Consider factors such as the age and ability of participants, the terrain, weather conditions, and transportation.
2	Qualified Leadership	Ensure that the persons leading the excursion are qualified and experienced. They should be trained in first aid, emergency procedures, and have knowledge of the area being visited.
3	Safety Briefing	Before setting off, provide all participants with a safety briefing. Inform them about the itinerary, safety measures, behavior expectations, and what to do in an emergency.
4	Emergency Preparedness	Have a detailed emergency plan and make sure that all leaders and participants know the procedure. Bring a first-aid kit, emergency contact numbers, and any necessary medications.
5	Participant Information	Collect information about each participant, including medical conditions, allergies, and emergency contact details. Ensure consent forms are signed where necessary.
6	Communication Devices	Ensure that leaders have means of communication, such as mobile phones or radios, particularly in areas where signals may be unreliable.
7	Dress and Equipment	Advise participants on suitable clothing and equipment for the excursion, which may include items such as sturdy footwear, weather-appropriate clothing, and water bottles.
8	Supervision Levels	Maintain appropriate adult-to-child ratios for supervision and ensure that participants are aware of who is in charge. Regular headcounts should be performed, especially after transitioning from one location to another.
9	Transportation Safety	If transportation is involved, use reputable companies and ensure that vehicles are safe and appropriate for the number of people and the terrain. Make seatbelt usage mandatory where applicable.
10	Insurance	Confirm that there is adequate insurance coverage for the organizers and participants in case of injuries or accidents.
11	Health and Hygiene	Ensure participants have access to water, food, and facilities promoting good hygiene, like hand-washing stations, particularly important in outdoor or rural areas.
12	Stay Together	Participants should be instructed to stay with the group at all times. There should be clear procedures for those who get separated from the group.
13	Respect Local Rules and Regulations	Encourage respect for the environment, local customs, and rules. This includes rules about littering, noise levels, and interactions with wildlife.
14	Regular Breaks	Include regular rest breaks to ensure that participants remain hydrated, fed, and rested.
15	Feedback Mechanism	After the excursion, have a mechanism for feedback to discuss what went well or what could be improved, including any safety aspects.
Each type of excursion might have its own specific safety considerations, so it's essential to customize these guidelines to suit the particular activity, location, and group demographic. Schools, for instance, would have stricter protocols compared to a casual group of adult hikers. Always comply with local laws and industry best practices when planning an excursion.		

Thus, having analysed the responses given by ChatGPT-4, it was found that the safety rules for organising and conducting an excursion include reliable training of tour guides and organisers, risk assessment before starting the excursion, ensuring the safety of excursion participants, providing information about the rules of conduct during the excursion, etc. In addition, the excursion organiser should be familiar with first aid training and general safety rules (Dolzhenko, 2015). The safety rules for organising and conducting excursions include the following measures:

- preliminary preparation: assessment of the field excursion site for potential hazards and risks, development of an itinerary and contingency plan (Issakov et al., 2022);
- qualified staff: experienced guides and organisers who are trained in safety and know how to act in case of problems (Ianeva and Gaydarov, 2022);
- training of excursion participants: informing participants about safety rules as well as obligatory briefing before the excursion starts (Sondel, 2021);

- equipment and protective gear: provide participants with the necessary equipment and protective gear such as helmets, life jackets, etc (Amangeldi et al., 2023);
- planning and monitoring: liaising with the group, tracking its movement, keeping track of participants and regularly checking on their well-being (Cavlek, 2006);
- responding to emergencies: knowledge of first aid, evacuation and emergency procedures;
- compliance with regulations and laws: adhere to local laws and safety requirements during excursions.

These rules are intended to ensure the safety of excursion participants and reduce the risk of potential incidents.

The sixth question of the survey "What skills can students develop through excursions?" ChatGPT-4 gave the answer below (Table 7). Thus, as ChatGPT-4 shows, excursion activities contribute to the all-round development of the individual through various activities. Students, acting as passive participants during excursions, acquire new knowledge and enrich existing knowledge. It should be noted that, depending on the specifics of the type of excursion, all information provided to the students is practice-oriented.

Table 7. What skills can students develop through excursions  
(Note: the authors have changed the structure of the answers given by ChatGPT-4)

ChatGPT 4			
Excursions offer students a wide range of opportunities for growth and skill development beyond the traditional classroom setting. Here are some key skills that students can foster through participation in excursions:			
1	Social Skills	Communication	Interacting with peers, guides, and possibly locals helps develop verbal and non-verbal communication.
		Teamwork	Participating in group activities can enhance cooperation and the ability to work effectively in a team.
		Leadership	Taking charge of certain tasks or guiding peers can nurture leadership qualities.
		Networking	Building relationships with individuals outside their immediate social circle.
2	Cognitive Skills	Critical Thinking	Encountering real-world problems and applying classroom knowledge to solve them.
		Problem Solving	Navigating unexpected challenges or logistical issues that may arise during an excursion.
		Observation	Enhancing their attention to detail through active observation and analysis of their surroundings.
3	Personal Development	Confidence	Stepping out of comfort zones can significantly boost self-esteem and confidence.
		Resilience	Coping with small setbacks or changes in plans can help students learn to adapt and recover.
		Curiosity	Experiencing new environments and situations can foster a love of learning and an inquisitive mind.
4	Physical Skills	Coordination and Fitness	Many excursions involve physical activities that can enhance coordination and overall fitness levels.
		Survival Skills	Outdoor excursions often teach basic survival skills like navigation, shelter building, or first aid.
5	Organizational Skills	Planning	Involvement in the planning process helps students understand the logistics that go into organizing trips.
		Time Management	Following schedules and understanding the importance of punctuality.
6	Academic Skills	Research	Learning to gather information about the places they are visiting or topics related to the excursion.
		Application of Knowledge	Excursions often apply theoretical knowledge in a practical context, which can deepen understanding.
7	Environmental Awareness	Conservation	Understanding the importance of protecting natural and historical sites can be a direct outcome of educational excursions.
		Sustainability	Learning about sustainable practices and their importance in real-life scenarios.
8	Cultural Competency	Cultural Sensitivity	Interacting with diverse cultures can teach students respect and the value of different perspectives.
		Adaptability	Adjusting to new cultural norms and etiquettes can improve students' ability to adapt in diverse environments.
9	Reflective Skills	Self-reflection	Being in a new environment can provide students with the chance to reflect on personal goals and interests.
		Critical Reflection	Evaluating experiences can improve their ability to reflect critically on outcomes and learning processes.
10	Technology Skills	Digital Literacy	Utilizing technology for research prior to the excursion or for digital mapping and navigation tools during the excursion.
Excursions are beneficial not only academically but also for holistic development, helping students connect the dots between their education and the outside world. This multifaceted learning approach can particularly help students realize their strengths and interests, possibly influencing future educational and career choices.			

## CONCLUSIONS

Therefore, the use of ChatGPT-4 in the organisation of tourist excursions was very effective. In fact, ChatGPT-4

helped to get information, save time, make concrete decisions, and improve the quality of excursions in the process of organising new excursions. In this study, 82 respondents learnt how to organise excursions by studying the subject of literary excursion, drawing routes, performing activities as a excursion guide, deadline breaking, writing excursion passport and text. In addition, in the second phase of the study, ChatGPT-4 helped students to make decisions about choosing tourist destinations, places and excursion routes and to organise new excursions. Looking at the new excursions created by students using ChatGPT-4, students systematically drew their itineraries according to their chosen topics and correctly identified the type or means of transport by correctly selecting tourist sites along the route. They also wrote the text of the excursion in a very high quality literary language and, using various methods, brought the text of the excursion to the level of an interesting script. However, as the scope of ChatGPT-4 was limited by the available database and information, there were issues that could not provide information consistently completely. Therefore, we must recognise that ChatGPT cannot fully replace human staff in the tourism industry. As future research, it is crucial to explore ChatGPT to see if the potential integration of other technologies, such as augmented reality or virtual reality, can improve the interactive experience for travellers. Also in the future, AI may be used to create tour designers, travel consultants, destination managers, travel journalists, AI-enhanced culinary innovators and tourism educators.

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## REDEFINING CONSUMER ENGAGEMENT: THE IMPACT OF AI AND MACHINE LEARNING ON MARKETING STRATEGIES IN TOURISM AND HOSPITALITY

**Maria Nascimento CUNHA\*** 

ISEC Lisboa - Higher Institute of Education and Sciences of Lisbon, Marketing Department;  
CIAC - Centro de Investigação em Artes e Comunicação, Lisboa, Portugal, e-mail : maria.cunha@iseclisboa.pt

**Manuel PEREIRA**

Polytechnic Institute of Viana do Castelo, Viana do Castelo, Portugal, e-mail: msousa.manuel@gmail.com

**António CARDOSO**

University Fernando Pessoa, Business Sciences, Porto, Portugal, e-mail: ajcaro@ufp.edu.pt

**Jorge FIGUEIREDO**

Lusiada University, Economics and Business Sciences, Vila Nova de Famalicão, Portugal, e-mail: jorgefig85@gmail.com

**Isabel OLIVEIRA**

Lusiada University, Economics and Business Sciences, Vila Nova de Famalicão, Portugal, e-mail: isabel.m.m.oliveira@gmail.com

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**Abstract:** This article aims to systematically investigate and elucidate the transformative effects of Artificial Intelligence (AI) and Machine Learning (ML) on marketing strategies and consumer engagement within the tourism and hospitality industries. The research methodology employed in this article encompasses a quantitative approach, underpinned by the use of cluster analysis to categorize and interpret complex multivariate data. This methodological framework is chosen to provide a rigorous, data-driven examination of the impacts of Artificial Intelligence (AI) and Machine Learning (ML) on marketing strategies and consumer behavior in the tourism and hospitality industry. The results of this investigation reveal significant insights into the application of Artificial Intelligence (AI) and Machine Learning (ML) in enhancing marketing strategies within the tourism and hospitality sectors. Through the application of the k-means clustering algorithm to the collected dataset, distinct patterns of consumer behavior and preferences have emerged, underscoring the potential of AI and ML to revolutionize marketing approaches and consumer engagement. The findings from this research underscore the pivotal role of Artificial Intelligence (AI) and Machine Learning (ML) in transforming marketing strategies and enhancing consumer engagement within the tourism and hospitality industries. The utilization of cluster analysis, specifically the k-means algorithm, has facilitated a deeper understanding of consumer behavior patterns, leading to several key conclusions.

**Keywords:** artificial intelligence, machine learning, web marketing, tourism, hospitality

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### INTRODUCTION

In the rapidly evolving digital era, the intersection of Artificial Intelligence (AI) and Machine Learning (ML) with marketing strategies emerges as a transformative force, particularly within the tourism and hospitality sectors. This article embarks on a meticulous exploration of the profound impacts that AI and ML technologies wield on marketing paradigms and consumer engagement (Dumitriu and Popescu, 2020; Grandinetti, 2020; Lies, 2019). Leveraging quantitative methodologies, it delves into the nuanced intricacies of cluster analysis, a technique pivotal for discerning the patterns that intricately connect consumers and technologies in the digital marketplace (Theodoridis and Gkikas, 2019; Shahid and Li, 2019). The advent of AI and ML in marketing is not merely an advancement; it signifies a paradigm shift, offering unprecedented insights into consumer behavior and preferences. The research meticulously applies the k-means clustering algorithm, introduced by MacQueen in 1967, to dissect vast datasets into coherent clusters (Faruk et al., 2021). This methodological approach illuminates the subtle nuances of consumer interactions with digital marketing, revealing patterns those traditional analytics might overlook. Through the lens of cluster analysis, the study unveils the multifaceted ways in which AI and ML technologies can enhance personalized marketing strategies, thereby reshaping the landscape of consumer engagement in the tourism and hospitality industry. Grounded in the foundational works of esteemed researchers and the latest advancements in data science, this article navigates the complex relationship between technology, marketing strategies, and consumer behavior.

It investigates how AI and ML not only refine marketing approaches but also elevate the consumer experience, offering tailored interactions that resonate on a personal level. Amidst this exploration, ethical considerations emerge as a paramount concern, guiding the application of these technologies to foster trust and transparency in consumer

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\* Corresponding author

relationships (Jain and Aggarwal, 2020). As we stand on the cusp of a new era in digital marketing, this article serves as both a reflection on the journey thus far and a beacon for the path ahead. It invites readers to engage with the transformative potential of AI and ML in marketing, inspiring a forward-looking perspective on how technology can continue to innovate the tourism and hospitality sectors, ultimately leading to a more connected, personalized, and ethical digital marketplace (Devang et al., 2019; Davenport et al., 2020; Jarek and Mazurek, 2019; Thiraviyam, 2018).

## MATERIALS AND METHODS

Taking into account the intention to undertake an approach to the phenomenon, with the final objective of understanding its different characteristics, it was considered that the most appropriate methodological approach to use in this investigation would be quantitative (Cunha and Santos, 2019). Cluster analysis, a powerful tool in exploratory multivariate analysis, is designed to categorize subjects or variables into distinct, homogeneous groups based on shared characteristics. This technique ensures that each member within a cluster shares similarities with others in the same group, while maintaining distinct differences from members in other clusters. The key to effective clustering, as Marôco (2018) suggests, is the ability to measure these similarities with precision and minimal subjectivity. As Saura (2021) highlights, clustering goes beyond mere grouping, it involves discerning common behaviors, preferences, or habits that uniquely define a consumer group among a broader user base. This method is not just about grouping but about understanding the underlying patterns that bind certain subjects or variables together. Yang et. al (2012), along with Yuan and Yang (2019), further refine this concept, describing clustering as a process of identifying pockets within a dataset. These pockets or clusters are characterized by high intra-cluster similarity — meaning members of the same cluster are closely aligned — and significant inter-cluster dissimilarity, ensuring clear differentiation between each cluster. This dual focus on internal cohesion and external distinction makes cluster analysis a robust and insightful tool for unraveling complex multivariate relationships in various fields, from market segmentation to social science research (Koo et al., 2021).

**The k-means** algorithm, introduced by MacQueen in 1967, is renowned for its broad applicability across numerous data analysis domains. As Zou et al. (2020) notes, this algorithm offers a robust theoretical foundation for the prompt detection and analysis of vast datasets, making it a versatile tool in the field of data science. At its core, the k-means algorithm functions by partitioning a dataset,  $D$ , into a predefined number of clusters,  $k$ , based on an objective function,  $F$ . The goal is to categorize the data into  $k$  distinct groups in such a way that the outcome of the objective function is optimized. This process begins with a set of initial points and employs an iterative control strategy. Through this strategy, the algorithm continually refines the groupings, adjusting the data points within each cluster to minimize the within-cluster variance and maximize the between-cluster variance. This iterative refinement continues until the objective function reaches an optimal or sufficiently satisfactory state. This method's effectiveness lies in its simplicity and efficiency, especially notable in handling large datasets where timely and accurate clustering is crucial (Ma and Sun, 2020; Miklosik and Evans, 2020; Ngai and Wu, 2022). The k-means algorithm's ability to provide clear, actionable insights from complex data makes it a cornerstone technique in various applications, from market segmentation and pattern recognition to image processing and beyond. In the k-means clustering algorithm (Marôco, 2018), the objective function is given by:

$$W_{ij} = \sum_{i=1}^n \sum_{j=1}^k \exp(-2\sigma^2 d_{ij}^2)$$

The formula is a representation of the objective function used in the k-means clustering algorithm. Here's a breakdown of each symbol and what it represents in the context of k-means clustering:

$\sum$ : This symbol represents a summation. It indicates that you will sum the following terms over the specified range.

$j=1$  to  $kk$ : This indicates that the summation will be done over all clusters, from the first cluster (1) to the  $kk$ -th cluster, where  $kk$  is the total number of clusters specified for the algorithm.

$i=1$  to  $nn$ : This shows that within each cluster, you will also sum over all points (or observations) in the dataset, from the first observation (1) to the  $nn$ -th observation, where  $nn$  is the total number of points or observations in the dataset.

$w_{ij}$ : This is a weight or indicator function that equals 1 if the  $i$ -th observation belongs to the  $j$ -th cluster and 0 otherwise. It's used to determine whether a particular data point is included in the calculation for a specific cluster.

$d(x_i, z_j)$ : This represents the distance between a data point  $x_i$  and the centroid  $z_j$  of cluster  $j$ . The distance metric used (most commonly the Euclidean distance) calculates how far each point is from the centroid of its cluster.

$x_i$ : This symbol denotes the  $i$ -th data point or observation in the dataset.

$z_j$ : This represents the centroid of the  $j$ -th cluster. The centroid is the mean position of all the points in the cluster and serves as the "center" of the cluster. In summary, the objective function for the k-means clustering algorithm is the sum of the distances between each point in the dataset and the centroid of the cluster to which it belongs, weighted by  $w_{ij}$ . The goal of k-means clustering is to minimize this objective function by adjusting the positions of the centroids ( $z_j$ ) and the assignments of the data points to different clusters (reflected by  $w_{ij}$ ), thereby grouping the data points into  $kk$  clusters that minimize within-cluster variances (Mohassel et al., 2019; Rust, 2020).

Being  $x_i$  the  $i$ -th object,  $z_j$  is the center of the  $j$  cluster. The clustering result can be represented by

$$w_{ij} = \begin{cases} \exp(-2\sigma^2 \|x_i - z_j\|^2), & \text{if } \|x_i - z_j\| \leq \epsilon \\ 0, & \text{otherwise} \end{cases}$$

whether each object belongs to a cluster, it must belong to one. In this case,  $d$  represents the Euclidean distance between two points, generically:

$$\text{cost}(\theta) = -m \sum_{i=1}^n [y(i) \log(h(\theta(x(i)))) + (1 - y(i)) \log(1 - h(\theta(x(i))))]$$

Where  $x = (x_1, x_2, \dots, x_n)$  and  $y' = (y_1', y_2', \dots, y_n')$

To summarize, the k-means algorithm follows these steps (Marôco 2018):

I. Initial partitioning of the subjects into  $k$  clusters defined at the outset by the analyst.

II. Calculation of the centroids for each of the  $k$  clusters and calculation of the Euclidean distance between the centroids and each subject in the database.

III. Group the subjects in the clusters whose centroids are closest and return to the previous step until there is no significant variation in the minimum distance from each subject in the database to each of the centroids in the  $k$  clusters, or until the maximum number of iterations or the convergence criterion, defined by the analyst, is reached.

The  $k$ -means algorithm is a widely-used method for partitioning a dataset into a specified number of clusters, denoted as ' $k$ ', a value that is determined by the user. This algorithm groups data points based on a defined measure of similarity, effectively organizing them into coherent clusters (Dang and Nguyen, 2023; Shaik, 2023).

Central to the  $k$ -means methodology is its iterative reallocation approach, which tends to converge towards a local optimum. The process begins with the selection of  $k$  initial centroids for the clusters. This crucial step of centroid initialization can be executed in various ways, with one common method being the random selection of  $k$  objects from the dataset to serve as the initial centroids, as noted by Mohassel et al., (2019).

Once these initial centroids are established, each data point in the dataset is assigned to the cluster whose centroid is nearest to it. Subsequently, these centroids are recalculated based on the current composition of their respective clusters. This iterative cycle — associating data points with the nearest centroid and then recalculating the centroids — is repeated until the centroids stabilize and no longer undergo significant changes, as described by Gama et al. (2012).

The strength of the  $k$ -means algorithm lies in its straightforwardness and efficiency, particularly in scenarios involving large datasets. Its ability to create distinct, meaningful clusters based on data similarity makes it an invaluable tool in a variety of data analysis and pattern recognition applications. The  $k$ -means method is an unsupervised, non-deterministic and iterative method with the following properties (De Bruyn et al., 2020; Telikani et al., 2021):

- There are always  $k$  clusters.
- There is always at least one item in each cluster.
- The clusters are non-hierarchical and do not overlap.

### Entropy

Entropy is a factor for evaluating the cluster's results, considering a reference cluster (Baimuratov, 2021). It is the well-known information measure given by Mohassel et al., (2019).

$$H(X|Y) := -\sum_{x \in X, y \in Y} p(x, y) \log p(x|y)$$

Where  $X$  is a discrete random variable. The maximum entropy is applied for clustering optimization (Zhao et al., 2022). However, only applicable to selection from a cluster with a fixed number of clusters. Therefore, following the maximum entropy principle, in every case we should select clustering with the number of clusters  $k = n$ , but such clustering is useless. So, given a set  $X$ , entropy  $H(X)$  is maximal when for all  $x_i$  holds

$$p(x_i) = 1/|X|$$

Let  $C$  a clustering and  $C_i$  a cluster, the clustering entropy can be defined as follows by Maroco, 2018 and Mohassel et al. (2019). Note that entropy is not normalized and can take on values greater than 1. However, smaller values indicate better clustering.

$$H(X) := -\sum_i |X| |C_i| \log_2 |X| |C_i|$$

### Silhouette

The Silhouette method was first proposed by Rousseeuw (1987) and is a measure of the similarity of an object to its own clusters (cohesion) compared to other clusters (separation). The silhouette varies between -1 and 1, where a high value indicates that the object is well connected to its own cluster and poorly connected to neighbouring clusters. When the silhouette value is close to 1, it indicates that there is a close relationship between the object and the cluster. If a cluster of data in a model is generated with a relatively high silhouette value, the model is considered adequate and acceptable (Yuan, and Yang, 2019). The Silhouette value,  $s(i)$ , is given by (De Bruyn et al., 2020):

$$f(x) := \max \{f'(x), f''(x)\} f'(x) - f''(x)$$

The formula represents the calculation of the Silhouette coefficient for a single data point in the context of clustering analysis. The Silhouette coefficient is a measure used to assess the quality of a clustering, indicating how similar a data point is to its own cluster compared to other clusters. The coefficient for each data point ranges from -1 to 1, where a high value indicates that the data point is well matched to its own cluster and poorly matched to neighboring clusters. Here's a breakdown of each component in the formula:

$s(i)$ : The Silhouette coefficient for the  $i$ -th data point.

$b(i)$ : The average distance from the  $i$ -th data point to all other points in the nearest cluster that  $i$  is not a part of. This measures how dissimilar  $i$  is to its nearest neighboring cluster and is referred to as the "dissimilarity" to the nearest cluster.

$a(i)$ : The average distance from the  $i$ -th data point to all other points in the same cluster. This measures how well  $i$  is matched to its own cluster and is known as the "cohesion" within its cluster.

$\max\{a(i), b(i)\}$ : This represents the maximum value between  $a(i)$  and  $b(i)$ . Taking the maximum ensures that the Silhouette coefficient will range from -1 to 1.

The formula,  $s(i) = \frac{b(i) - a(i)}{\max\{a(i), b(i)\}}$ , calculates the difference between the dissimilarity to the nearest cluster and the cohesion within its own cluster, normalized by the larger of those two values. If  $s(i)$  is close to 1, it means  $i$  is well matched to its own cluster and poorly matched to neighboring clusters. If  $s(i)$  is close to -1, it means  $i$  is poorly matched to its own cluster. A value of 0 indicates that the data point lies on the border between two clusters.



The Silhouette coefficient provides a succinct and interpretable measure of the effectiveness of a clustering configuration, allowing for the evaluation of the separateness and cohesion of the clusters formed.

The following steps apply to your method:

a) Calculation of the average distance  $a(i)$  of sample  $i$  from other samples in the same group. The smaller  $a(i)$  is, the more sample  $i$  should be grouped in the cluster. And  $a(i)$  is considered the intra-cluster dissimilarity of sample  $i$ . The average of  $a(i)$  of all the samples in cluster  $c$  is called the dissimilarity of cluster  $c$ .

b) Calculation of the average distance  $b(i)$  of all samples from sample  $i$  to the other cluster, cluster  $c(i)$ , referred to as the dissimilarity between sample  $i$  and cluster  $c(i)$ . Defined as the inter-cluster dissimilarity of sample  $i$ :  $b(i) = \min(b_{i1}, \dots, b_{ik})$ ; the greater  $b(i)$ , the less likely sample  $i$  is to belong to other clusters.

c) The contour coefficients for sample  $i$  are defined according to the intra-cluster dissimilarity  $b(i)$ ,  $s(i)$  is the contour coefficient of the clustering result, which is a reasonable and effective measure of clustering.

## DATA ANALYSIS

The database for this study is derived from a survey conducted with 1215 participants, specifically focusing on individuals who confirmed they had engaged in tourism and hospitality online shopping. This selection criterion was established by including only respondents who answered "Yes" to the question, "Have you ever shopped tourism and hospitality services online?"

The primary objective of the research is to explore the correlation between the average weekly internet usage of these individuals and their satisfaction levels regarding the impact of web marketing.

To gauge internet usage, participants were asked, "On average, how many hours per week do you use the Internet?". Respondents provided their average weekly internet usage in hours, with answers recorded as text-based responses (strings) in the corresponding variable of the dataset.

Additionally, the survey probed into the participants' satisfaction with web marketing, focusing on seven distinct aspects to provide a comprehensive understanding. These aspects were:

- I. The potential for personalized interaction.
- II. The ease of initiating contact with companies.
- III. The frequency and manner of being contacted by companies.
- IV. The ability to compare prices effectively.
- V. Access to the latest information and updates.
- VI. The range and quality of offerings.
- VII. The presence and impact of pop-ups and banner ads.

This study adopts a comprehensive approach to assess consumer satisfaction with tourism and hospitality web marketing, aiming to encompass a wide spectrum of consumer experiences and insights. This is crucial for a nuanced analysis of the interplay between internet usage and the effectiveness of web marketing strategies.

Participants were asked to rate their satisfaction across seven distinct aspects of web marketing. For each aspect, they provided a rating Likert scale of 1 to 5, where 1 represents the lowest level of satisfaction and 5 the highest. This scoring system allowed for a quantitative assessment of consumer satisfaction, transforming subjective experiences into measurable data. The responses yielded seven ordinal variables, each corresponding to one of the web marketing aspects evaluated.

Additionally, the survey collected data on the qualitative aspect of weekly internet usage in hours. This variable provides context to the ordinal satisfaction ratings, offering insights into how internet engagement correlates with perceptions of web marketing (Samala et al., 2022; Volkmar et al., 2022).

In an effort to synthesize the data, the responses across the seven web marketing aspects were averaged for each individual. This process of column aggregation resulted in a singular variable for each respondent, representing their average satisfaction level across all surveyed aspects of web marketing. This aggregated variable offers a consolidated view of consumer satisfaction, simplifying the analysis while retaining the depth of the original multi-dimensional data.

In other words, the new variable called "Effects\_Web\_Marketing" is obtained as follows (Yuan and Yang, 2019):

$$dx d(\int_0^x f(u) du) = f(x)$$

Where  $p$  is the score function recorded for each of the variables relating to the aspects mentioned above (i, ii, iii, iv, v, vi and vii), and in relation to the effects of web marketing. Thus, "Effects\_Web\_Marketing" results in a continuous quantitative variable and its records are made considering two decimal places for the respective rounding.

Table 1. Average Daily Internet Usage (Hours) (Source: Own processing)

On average, how many hours daily do you use the internet?	Minimum	Maximum	Mean
One hour a day	1	1	1
Less than 2 hours a day	2	2	2
Less than 4 hours a day	28	168	98
More than 4 hours a day	8	20	14
More than 10 hours a day	70	70	70
Always online	168	168	168

To include the variable "On average, how many hours a week do you use the internet?", it was transformed into a quantitative variable. For each of its possible values, a range of time values in hours was defined. As such, the minimum

and maximum number of hours per week that everyone uses the internet were defined. Based on these values, an average value was estimated, M, which results from the arithmetic mean of the minimum and maximum values. The values refer to a week which corresponds to 168 hours (24 hours a day, 7 days a week). The corresponding values are in line with those recorded in the Table 1. The revised Table 1 categorizes respondents based on their average daily internet usage, presenting the minimum, maximum, and mean values in hours for each category. Here's an analysis of each category:

One hour a day: The minimum, maximum, and mean values for this category are all 1. This suggests that there is a group of individuals who use the internet for exactly one hour per day on average.

Less than 2 hours a day: Similar to the previous category, the minimum, maximum, and mean values are all 2. This indicates that there is another group of individuals who use the internet for exactly two hours per day on average.

Less than 4 hours a day: In this category, the minimum value is 28, the maximum value is 168, and the mean value is 98. This suggests a broader range of internet usage, with a mean of 98 hours per day. Some individuals in this category use the internet as little as 28 hours per day, while others use it as much as 168 hours per day.

More than 4 hours a day: For this category, the minimum value is 8, the maximum value is 20, and the mean value is 14. This indicates that there is a group of individuals who use the internet for an average of 14 hours per day, with some using it as little as 8 hours per day and others as much as 20 hours per day.

More than 10 hours a day: The minimum and maximum values in this category are both 70, and the mean value is also 70. This suggests that there is a specific group of individuals who consistently use the internet for 70 hours per day on average. Always online: The minimum, maximum, and mean values for this category are all 168. This indicates that there is a group of individuals who are online constantly, using the internet for all 168 hours in a day.

Table 2. Hierarchical Clusters (Source: Own processing)

Cluster 1:
One hour a day
Less than 2 hours a day
Cluster 2:
Less than 4 hours a day
More than 4 hours a day
More than 10 hours a day
Always online

It's important to note that the data appears to be grouped into categories rather than representing a continuous distribution. The categories provide a snapshot of different internet usage patterns among the surveyed individuals. The mean values for each category give you an idea of the typical internet usage within each group.

Based on this data, categorical groups related to daily internet usage in hours emerged. However, since the data is categorical and not continuous, traditional clustering algorithms like k-means may not be suitable. One way to analyze this data is to use a technique like hierarchical clustering or other methods designed for categorical data.

Table 3. Average weekly Internet Usage (Hours) (Source: Own processing)

On average, how many hours a week do you use the internet?	Minimum	Maximum	Mean
More than 20 hours a week	20	168	94
More than 30 hours	30	168	99
Every day	168	168	168

Table 2 focuses on the average weekly internet usage of respondents who are heavy internet users. It breaks down the usage into three distinct categories, providing the minimum, maximum, and mean values in hours for each. Let's analyze each category:

More than 20 hours a week: This category includes users who spend a significant amount of time online, with usage ranging from a minimum of 20 hours to a maximum of 168 hours per week. The average usage in this group is 94 hours per week. This wide range suggests a diverse group, including both moderately heavy users and those who may be online nearly all the time.

More than 30 hours: Users in this category spend even more time online, with usage ranging from 30 to 168 hours per week. The average for this group is higher, at 99 hours per week. This category likely includes individuals who use the internet extensively for both personal and professional reasons, such as remote workers, online gamers, or heavy social media users.

Every day: This category represents the most extreme level of internet usage. It is defined by continuous, round-the-clock online presence, amounting to 168 hours per week. This could include individuals in professions that require constant online connectivity or those with a lifestyle that keeps them perpetually connected to the internet.

Overall, Table 2 highlights the spectrum of heavy internet usage among the survey respondents. The significant range in the "More than 20 hours a week" and "More than 30 hours" categories indicates varied internet usage habits within these groups. In contrast, the "Every day" category distinctly identifies a segment of users for whom the internet is an integral, continuous part of their daily life. This data is valuable for understanding the internet usage patterns of heavy users, particularly in contexts like web marketing, where such information can inform targeted strategies. To apply the k-means clustering algorithm, the variables "Effects\_Web\_Marketing" and "M", both quantitative and continuous, were used. The

aim is to find the ideal number of clusters based on the average number of hours per week that people use the internet. Thus, the parameter k (number of clusters) was varied, with values between 2 and 11 being tried and tested (corresponding to the number of different values assumed by the variable "On average, how many hours a week do you use the internet?"). For centroid initialization, the random initialization technique was selected, and the maximum number of iterations was set at 99. The evaluation of each resulting clustering, depending on the number of clusters, was assessed considering the Entropy measure and its quality, on all the clusters obtained. Researchers have clustered the data into three clusters based on the average weekly internet usage (in hours). For better understanding Figure 1 shows the Code

Python and Table 4 shows the clusters:

**Cluster 0:** "More than 20 hours a week" with a mean usage of 94 hours.

**Cluster 1:** "Every day" with a mean usage of 168 hours.

**Cluster 2:** "More than 30 hours" with a mean usage of 99 hours.

These clusters group respondents with similar patterns of internet usage. Cluster 1 represents users who are online every day, Cluster 0 includes users with moderate weekly usage, and Cluster 2 comprises users with heavy but not continuous internet usage.

Figure 1. Python Code (Source: Own processing)

```
import numpy as np
from sklearn.cluster import KMeans
import pandas as pd

# Create a DataFrame with the data
data = { "Category": ["More than 20 hours a week", "More than 30 hours", "Every day"],
         "Minimum": [20, 30, 168],
         "Maximum": [168, 168, 168],
         "Mean": [94, 99, 168] }

df = pd.DataFrame(data)

# Use the 'Mean' column for clustering X = df[["Mean"]]

# Perform k-means clustering with k=3 kmeans = KMeans(n_clusters=3, random_state=0).fit(X)

# Add cluster labels to the DataFrame df["Cluster"] = kmeans.labels_ df
```

Table 4. Clusters (Source: Own processing)

Category	Minimum	Maximum	Mean	Cluster
0 More than 20 hours a week	20	168	94	0
1 More than 30 hours	30	168	99	2
2 Every day	168	168	18	

The researchers have given names to the clusters: "Entropy," "Quality," and "Silhouette". This makes sense in the context described for the clustering analysis. These names represent specific metrics or measures that are used to evaluate the quality and characteristics of the clusters obtained from different numbers of clusters (k). Here's a summary of each metric's role:

**Entropy:** This metric measures the accumulated entropy of all identified clusters, weighted by the relative cluster size. It's not normalized, meaning it can have values in any range. Lower entropy values typically indicate more homogeneous and well-defined clusters.

**Quality:** The quality metric is the sum of the weighted qualities of the individual clusters. Each cluster's quality is calculated as 1 minus the normalized entropy. The normalized entropy scales the entropy value to be between 0 and 1, which makes it easier to compare across different datasets and clusterings. Higher quality values suggest more distinct and well-separated clusters.

**Silhouette:** Silhouette measures the quality of each individual data point's assignment to a cluster. It is computed for each row using a formula that considers the mean intra-cluster distance (a) and the mean inter-cluster distance (b). The Silhouette Coefficient varies between -1 and 1, with higher values indicating that data points are closer to their own cluster than to neighboring clusters. A mean Silhouette Coefficient is often calculated to assess the overall quality of the clustering, where a higher mean indicates better cluster separation.

In the description, it is noted that higher quality values and lower entropy values are desirable, indicating better clustering solutions. This combination of metrics allows the assess both the overall quality of the clustering (Quality and Silhouette) and the degree of disorder or randomness in the clusters (Entropy). By naming the clusters as "Entropy," "Quality," and "Silhouette," the researchers want to make clear that they are evaluating the clustering results based on these specific criteria, and it helps convey the purpose of each cluster to those reviewing your analysis.

## RESULTS AND DISCUSSION

The analysis provides a comprehensive overview of the data, the clustering process, and the interpretation of the resulting clusters. It effectively communicates the key information and insights derived from the dataset. In terms of results and discussions, Table 1 categorizes respondents based on their average daily internet usage, providing minimum, maximum, and mean values for each category. Analysis of the categories reveals distinct patterns of internet usage among respondents, ranging from minimal one-hour usage to continuous online presence. The data is primarily categorical, and the mean values within each category offer insights into typical internet usage patterns.

On the other hand, Table 2 focuses on the average weekly internet usage of respondents who are heavy internet users and categorizes them into three distinct groups: "More than 20 hours a week," "More than 30 hours," and "Every day." The analysis of these categories highlights the diversity of internet usage habits among heavy users, with varying degrees of weekly usage. The "Every day" category represents individuals who are continuously online, while other categories indicate varying levels of heavy internet usage. Talking about Clustering Analysis for Average Weekly Internet Usage (Table 3), researchers applied the k-means clustering algorithm to the "Average Weekly Internet Usage" data to identify clusters based on respondents' internet usage patterns. Three clusters were formed based on average weekly usage, labeled as "Cluster 0," "Cluster 1," and "Cluster 2." Cluster 0 represents users with moderate weekly internet usage, Cluster 1 includes users who are online every day, and Cluster 2 comprises users with heavy but not continuous internet usage.

The clustering process provides a structured way to group respondents with similar internet usage habits. The provided Python code demonstrates how k-means clustering was applied to the data using the 'Mean' column as the feature for clustering. The code showcases the process of fitting the k-means model to the data, adding cluster labels to the DataFrame, and visualizing the results. This code snippet offers a practical example of how clustering can be implemented using Python and relevant libraries. The researchers have also assigned names to the clusters, namely "Entropy," "Quality," and "Silhouette," based on the specific metrics used to evaluate the quality and characteristics of the clusters. "Entropy" measures the accumulated entropy of clusters, "Quality" represents the sum of weighted qualities of individual clusters, and "Silhouette" assesses the quality of data point assignments. These names provide clarity and context to the evaluation criteria used for clustering results, facilitating better understanding and interpretation.

Overall, the analysis effectively communicates the process and findings of clustering based on internet usage data. It highlights the diversity in internet usage patterns among respondents and the structured approach to grouping individuals with similar habits. The assignment of cluster names adds further context to the evaluation of clustering quality.

## CONCLUSION

The meticulous exploration of the intersection between Artificial Intelligence (AI) and Machine Learning (ML) with marketing strategies in the tourism and hospitality sectors has illuminated the profound capacity of these technologies to redefine the landscape of consumer engagement and marketing paradigms. By harnessing quantitative methodologies and the nuanced approach of cluster analysis, this investigation has unraveled the intricate patterns connecting consumers and digital marketing strategies, offering a new vista on personalized marketing.

The application of the k-means clustering algorithm has methodically segmented vast datasets into coherent clusters, revealing distinct consumer behaviors and preferences. This segmentation underscores the transformative potential of AI and ML in crafting marketing strategies that resonate deeply with individual consumer needs, thus marking a paradigm shift from traditional marketing analytics to a more nuanced, data-driven approach.

Our findings highlight the dual impact of AI and ML technologies: refining marketing strategies while simultaneously enhancing the consumer experience. The ability of these technologies to offer personalized, engaging interactions stands as a testament to their value in a competitive digital marketplace. Moreover, the ethical considerations highlighted throughout this study serve as a guiding principle for the responsible deployment of AI and ML in marketing, emphasizing the importance of transparency and trust in consumer relationships.

In conclusion, this article not only reflects on the journey of digital marketing transformation thus far but also serves as a beacon for future innovations in the tourism and hospitality sectors. It invites stakeholders to embrace the transformative potential of AI and ML, advocating for a forward-looking perspective that champions a more connected, personalized, and ethically responsible marketing landscape. Through the lens of cluster analysis, we have glimpsed the future of marketing—a future where technology and human insight converge to create unparalleled consumer experiences.

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## THE EFFECTS OF AIR POLLUTION ON TOURISM IN THAILAND

**Sakkarin NONTAPOT**<sup>ID</sup>

Faculty of Interdisciplinary Studies, Khon Kaen University, Khon Kaen, Thailand, e-mail: sakkno@kku.ac.th

**Chaturaporn SIHABUTR**<sup>ID</sup>

Faculty of Interdisciplinary Studies, Khon Kaen University, Khon Kaen, Thailand, e-mail: schatu@kku.ac.th

**Hooi Hooi LEAN**<sup>\*ID</sup>

School of Social Sciences, Universiti Sains Malaysia, Penang, Malaysia, e-mail: learnmy@gmail.com; hooilean@usm.my

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**Abstract:** Air pollution not only affects people's health but also tourism especially in Thailand because it is the most important industry in Thailand. Therefore, this research aims to examine the effects of air pollution on the number of tourists using particulate matter (PM10) data as the proxy for air pollution and the number of tourists staying at accommodation establishments in the province as the agent of the number of tourists (Tourist). Furthermore, the effect of the price of tourism factor represented by the consumer price index (CPI); and the weather factor with indicators such as rainfall (RAIN) and highest temperature (TMAX), on the number of tourists were also considered. The research data were panel form, and the cross-section data were collected from seven significant tourist provinces representing each region with the time series during March 2018 to December 2021. These data were tested for cross-section dependence and the panel unit root test. After that, the long- and short-term relationships were detected by using the panel autoregressive distribution lag (Panel ARDL) model with the pool mean group (PMG). The findings revealed that the increase of PM10, CPI, TMAX and RAIN reduced the number of tourists.

**Keywords:** Air pollution, tourism, panel autoregressive distribution lag, Thailand, JEL: Z3; Q5

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### INTRODUCTION

Thailand is a popular destinations visited by international tourists from all over the world. Before the Coronavirus disease (COVID-19) pandemic in 2019, up to 40 million tourists visited the country. However, many regions in Thailand have also suffered from air pollution, particularly from particulate matter (PM) caused by many factors, including the burning of agricultural waste, transportation, and the industrial sector (Kanjanasiranont et al., 2022). Furthermore, the pollution that moves from its origin to other regions due to air currents has become harmful to health (Mebrahtu et al., 2023) and is likely to have a negative effect on Thailand's tourism in the long term.

In 2019, almost 40 million international tourists visited Thailand because of various natural, historical, artistic, and cultural sites, as well as aspects of modernity that fulfill tourist demand. Chiang Mai (Northern region), Nakhon Ratchasima (Northeastern region), Chon Buri (Eastern region), Surat Thani (Southern region), Kanchanaburi (Western region), Phra Nakhon Sri Ayutthaya (Central Region), and Bangkok (capital city) were the main destinations in each region that tourists visited. there was around 17 million international tourism who visit in these provinces or 43 percent of total international tourism in 2019 (Ministry of Tourism and Sports, 2023). However, the quality of life of Thai people and international tourists staying in Thailand has been affected by air pollution in many areas. This has been an ongoing issue that is worsening due to the burning of agricultural waste after harvest as it offers a quick and convenient preparation of farming plots. There is also much pollution caused by the industrial and transportation sectors (Teerasuphaset, 2024). In particular, PM2.5-10 (PM10) microns, which are visible in large amounts, and PM particles of less than 2.5 microns (PM2.5) which are macroscopic, are extremely dangerous and harmful to living things (Wang, 2021). To make matters worse, the problem has spread to broader areas via air currents resulting in negative impacts (Manisalidis et al., 2020).

Regarding the health effects, there is a study reveals the negative effect of PM on the cardiovascular mechanism in humans, such as causing acute myocardial infarction, coagulation, and platelet problems (Anderson et al., 2012). Increasing PM in the short term has increased the number of patients with ischemic heart disease and heart failure. In addition, long-term impacts were noted as evidenced by the positive relationship between exposure to PM and death from lung cancer and cardiopulmonary disease (Anderson et al., 2012). In addition to pollution, the number of international tourists was impacted by other related factors, especially economic factors, such as the real exchange rate, transportation costs, relative price, gross domestic product (GDP) in the country (Pradithong et al., 2022), and capital investment (Nonthapot, 2017). Some factors reflect the demand side and include the real exchange rate, transportation costs, and relative price, which affects the cost of vacations. At the same time, the falling GDP of the country reflects the influence of falling tourist income.

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\* Corresponding author

Thailand's tourism sector grew from 2000 until the start of COVID-19. The lockdown to control the pandemic significantly reduced the number of tourists. Nevertheless, after the country was reopened in 2022, Thailand's tourism sector started recovering. However, the PM issue still affects the number of tourists. Additionally, the study of such issues in Thailand is not inclusive, so this research was extended to other regions in the country to support policymakers in regard to the control of PM10 sources to reduce PM10 emissions and to promote tourism. This research aims to study the effects of PM10 on tourism in Thailand by considering the Tourism price based on the Customer Price Index (CPI) and the weather factor by including the highest temperature and rainfall by using panel data from March 2018 to December 2021 in the following popular tourist destinations: Chiang Mai (North), Nakhon Ratchasima (Northeast), Chon Buri (East), Surat Thani (South), Kanchanaburi (West), Phra Nakhon Sri Ayutthaya (Central), and Bangkok (Capital).

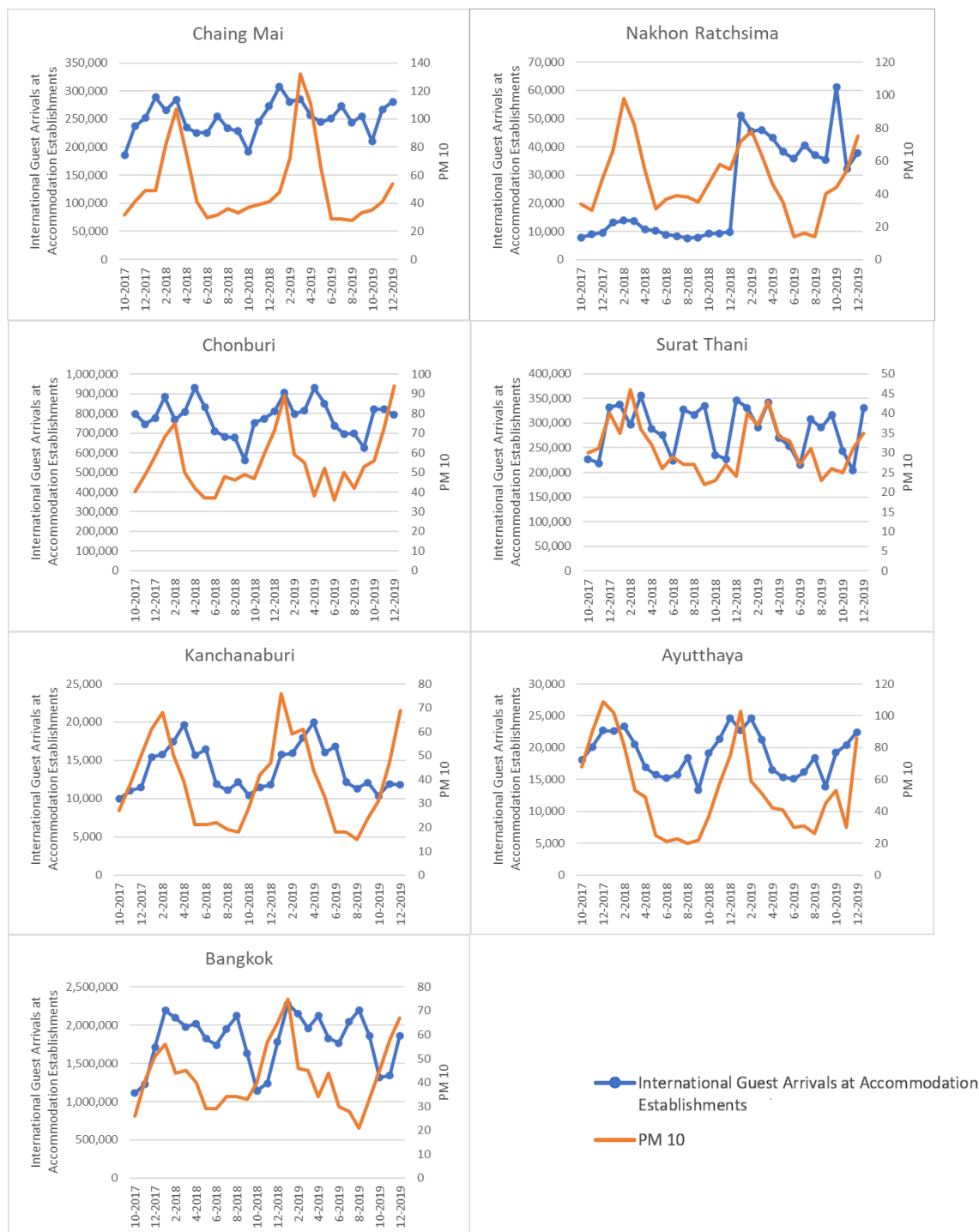


Figure 1. Relationship between the amount of PM10 in the significant provinces in each region and the number of international tourists residing at the accommodation establishments in each province (Source: The figures are created by the authors; Data Source: Ministry of Tourism and Sports (2023) and Pollution Control Department)

## LITERATURE REVIEW

Nowadays, tourism industry is one of the most important sectors of Thailand. However, many provinces in Thailand as

the tourism destination face the environmental problem that will affect on the attraction components especially air pollution which not only harmful the health but also may obscure the tourism destination scenery. Eusebio et al. (2021) concluded the impact of air quality on tourism demand that it was reflected by two aspects. The first aspect is related to tourism behavior, tourism intention, decisions on selecting a tourist destination, quality of life, tourist satisfaction, and the image of the tourist destination. The second aspect is related to global tourism demand, which is negatively affected by air pollution.

In the linkage of air pollution and tourism behaviour, Wang et al. (2023) found the positive effect of Air Pollution Index disclosure on real tourism income per capita and tourist reception per capita which imply the important of air pollution information on the tourist demand. Conform with the Nguyen (2019) study which revealed the negative impacts of air pollution on the total number of tourist arrivals, especially the impact of nitrous oxide emissions from using fossil fuels for transportation and the Su and Lee (2022) study who found the influence of air quality on the number of tourist arrivals exhibits heterogeneity by the evidence that middle-income countries, low-income countries, high concentrations of PM<sub>2.5</sub>, and countries with less numbers of tourists have negative effects on tourist arrivals in neighboring countries but the contrary groups have positive effects on tourist arrivals. Moreover, the study also found the countries with higher research and development intensity have better air quality and thus attract more tourists. In Thailand, the study in Chiang Mai province of Praditthong et al. (2022) revealed that PM 2.5 was related to the number of tourists arriving in Chiang Mai in the form of a nonlinear effect. The increasing of PM<sub>2.5</sub> decreased the number of tourists in Chiang Mai if the volume of PM 2.5 was over 36.835 micrometers or the quarterly average of Chiang Mai. Nonetheless, the number of tourists and the amount of PM 2.5 were found to be positively related if the volume of PM 2.5 was under 36.835 micrometers. According to these results, this may imply the negative effect of Air pollution on the tourism demand.

More than the air pollution, there are many environment factors such as the Rainfall and Temperature which may be effect on tourism demand. In the case of Rainfall, the number of visitors to Jeju Island was positive effected by the rainfall in Korean tourist (Bae and Nam, 2020). In contrast, there was negative effect of the rainfall on the number of tourist arrivals in the Small Island Developing States (Fauzel, 2019). These studies imply that there is the difference impact of the rainfall on tourism demand in each country. For a while, in the case of temperature, there was a several type of the effect of temperature on the tourism demand. Bae and Nam (2020) study found that the average temperature had a positive impact on tourism demand among Southeast Asian tourists to Jeju Island. In Kazakhstan, Ibragimov et al (2022) found the optimal temperature of international tourists visiting Kazakhstan is obtained at 7°C, moreover, international tourists prefer to travel to Kazakhstan at a moderate temperature, that is neither too hot nor too cold. For a while, there was negative effect of temperature on the number of international tourisms in Indonesia (Susanto et al., 2020).

Besides the environment factors, the tourism demand may be considered by macro factors, such as CPI which usually use as the relative price in the tourism which usually be negative effect on the tourism demand. As the study of Nguyen (2022) in Vietnam which adapted the CPI as the relative price and found the negative effect of the factor on the tourism demand into Vietnam. Conform with the study result of Praditthong et al. (2022) who found the negative effect of the relative price which be adapted by CPI on the tourism demand in Chain Mai. According to the above, although the studies on such issues was beginning to gain widespread attention in the impact of environmental factors on tourism especially in Chiang Mai, the impact has not yet been extended to other major tourist provinces in Thailand.

## METHODOLOGY

This research examines the effects of air pollution on the number of tourists in Thailand by considering the PM<sub>10</sub> in each province and the number of international tourists staying in the accommodation establishments in each province by using panel data which comprised cross-section data from the most popular destinations for tourism in each region such as Chiang Mai (North), Nakhon Ratchasima (Northeast), Chon Buri (East), Surat Thani (South), Kanchanaburi (West), Phra Nakhon Sri Ayutthaya (Central), and Bangkok (Capital), and time series data from March 2018 to December 2021. All factors relating to the data are shown in Table 1.

Table 1. Source of the data

Factor	Data	Abbreviate	Source
Number of Tourists	International guest arrivals at accommodation establishments in each province.	Tourist	Ministry of Tourism and Sports (2023)
Particulate Matter (PM <sub>10</sub> )	Average volume of particulate matter less than 10 microns (PM 10) in one month for each province.	PM <sub>10</sub>	Pollution Control Department (2023)
Rainfall	The average monthly rainfall	RAIN	Data Innovation and Governance Institute (2023)
The highest Temperature	The highest temperature in the month. (°C)	TMAX	Hydro – Informatics Institute (2023)
Consumer Price Index	Customer Price Index (base year = 2019) for each province	CPI	Bureau of Trade and Economic Indices (2023)
Covid-19	Dummy variable which indicates the effect of the Covid-19 pandemic (Co is one during 2020M1 to 2021M9 and is zero at other times)	Co	Assigned by author

The cross-sectional dependence of these data was examined by employing Pesaran (2021)'s method to determine the interrelationships within the cross-section term. The cross-sectional dependence test (CD test) in this study was considered with the following equation:

$$CD = \sqrt{\frac{2T}{N(N-1)}} (\sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{i,j}) \quad \text{Eq. (1)}$$

If the data show cross-sectional dependence, the 1<sup>st</sup> generation of panel unit root may be unsuitable to detect the unit root in these data. Thus, they were tested by the 2<sup>nd</sup> generation of panel unit root with the cross-sectionally augmented panel unit root test (CIPS test) of Pesaran (2007), which is more suitable. The CIPS test was considered as follows:

$$CIPS(N, T) = N^{-1} \sum_{i=1}^N (N, T) \quad \text{Eq. (2)}$$

After the cross-sectional dependence and unit root properties were detected, the long and short run effect of these independent variables on Tourist was analyzed with the Pool Mean Group - autoregressive distributed lag (PMG – ARDL). This research utilized the model consisting of the intercept as follows: PMG - ARDL model

$$Tourist_{it} = \alpha_i + \xi_i Co_i + \sum_{j=1}^p \alpha_{1,i,j} Tourist_{i,t-j} + \sum_{j=0}^{q_1} \alpha_{2,i,j} PM10_{i,t-j} + \sum_{j=0}^{q_2} \alpha_{3,i,j} CPI_{i,t-j} + \sum_{j=0}^{q_3} \alpha_{4,i,j} TMAX_{i,t-j} + \sum_{j=0}^{q_4} \alpha_{5,i,j} RAIN_{i,t-j} + \varepsilon_{i,t} \quad \text{Eq. (3)}$$

where  $\alpha_i$ , and  $\varepsilon_{i,t}$  are the intercept, and error term, respectively. The model can re-parameter to the VECM form as the following:

$$\Delta Tourist_{it} = \alpha_i + \xi_i Co_i + \psi_i ECM_{i,t-1} + \sum_{j=1}^p \alpha_{1,i,j} \Delta Tourist_{i,t-j} + \sum_{j=0}^{q_1} \alpha_{2,i,j} \Delta PM10_{i,t-j} + \sum_{j=0}^{q_2} \alpha_{3,i,j} \Delta CPI_{i,t-j} + \sum_{j=0}^{q_3} \alpha_{4,i,j} \Delta TMAX_{i,t-j} + \sum_{j=0}^{q_4} \alpha_{5,i,j} \Delta RAIN_{i,t-j} + \varepsilon_{i,t} \quad \text{Eq. (4)}$$

where  $\psi_i$  is the speed of a long-term equilibrium adjustment, and the value should be negative with a statistical significance to confirm the long-term relationship from the independent variable to the tourist.

In sum, the methodology of this study can be summarized in Figure 2.

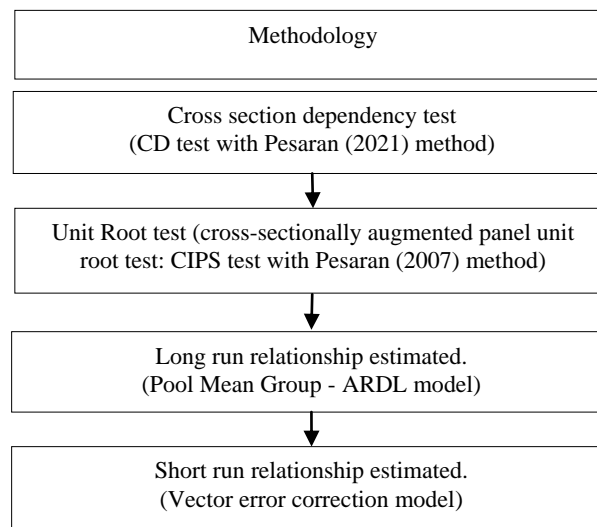


Figure 2. Step of data analysis

## RESULTS AND DISCUSSION

As shown in Table 2, all variables showed cross-section dependence. Because the 1st generation of the unit root test in the panel, data is not sufficient. Hence, the panel unit root of the 2nd generation must be detected to show the cross-section dependence in the data on the cross section test. The results confirmed that the residuals of all variables are cross-section dependent. Next, we employed the CIPS test for the panel unit root test. The results shown in Table 3 reveal the stationary properties of all variables that are stationary at the level.

Table 2. Cross section dependence test (Source: Author's own calculation)

CD Test	Statistic
Tourist	29.76***
PM10	20.78***
CPI	26.46***
TMAX	21.10***
RAIN	18.18***

Table 3. CIPS test (Pesaran, 2007) (Source: Author's own calculation)

Variable	Level		
	None	Intercept	Intercept and Trend
Tourist	-4.78***	-4.88***	-4.83***
PM10	-3.87***	-3.95***	-4.43***
CPI	-2.46***	-2.44**	-2.69
TMAX	-4.29***	-5.62***	-5.67***
RAIN	-5.53***	-5.34***	-5.37***

The results of the estimation with the panel ARDL indicated a negative relationship between PM10 and the number of international tourists staying in the tourist provinces (Table 4), which was consistent with the results of Praditthong et al.

(2022). It could be said that the increase in PM10 may impact the health of the tourists (Anderson et al., 2012). In addition, a negative effect in long run relationship was also found for CPI, TMAX and RAIN on the Tourist.

The effect of CPI on the Tourism may indicate the influence of price on the number of tourists in each region. This relationship from CPI to TR conformed with the findings of Nguyen (2022) and Praditthong et al. (2022) who detect this direction of the relationship in Vietnam and Chiang Mai. According to the property of CPI which represents the price in the overall, the increasing of CPI may rise the cost to traveling of the tourism which reduce the purchase power of tourism.

For a while, the negative directional effect of TMAX and RAIN on tourism consisted with the study of Susanto et al. (2020) and Fauzel (2019). The direction may be explained by the nature of Thailand which always in the high temperature except the winter and spring which may be lower in some period. The high temperature and Rainfall is the trouble in many tourism activities, for a while, the decreasing of the temperature may be suitable for these activities conform with the Rainfall effect. Table 5 presents the estimation of the short-term relationship from the VECM model that was developed from the panel ARDL. The long-term relationship between the variables was confirmed with the result of ECT (-1), which was a negative value with statistical significance.

Table 4. Panel ARDL model: Long-term relationship

Variable	Panel ARDL (Long Term) PMG
PM10	-281.16
	(-3.64)***
CPI	-4109.68
	(-5.55)***
TMAX	-4172.12
	(-3.40)***
RAIN	-207.60
	(-10.01)***

Table 5. Panel ARDL model: Short-term relationship

Variable	Lag					
	(0)	(-1)	(-2)	(-3)	(-4)	(-5)
ETC(-1)	-0.16					
	(-3.57)***					
CO	-6364.85					
	(-1.65)					
C	15279.02					
	(3.48)***					
D(Tourist)		0.04	0.25	0.06	-0.03	-0.19
		(0.141)	(1.26)	(0.25)	(-0.15)	(-1.16)
D(PM10)	-887.94	2036.38	2421.73	340.70	110.14	-622.38
	(-1.52)	(1.69)*	(1.26)	(0.23)	(0.66)	(-0.97)
D(CPI)	1496.45	-1928.42	-2648.68	2712.56	-9001.2	1109.61
	(0.856)	(-1.29)	(-1.72)*	(0.25)	(-0.72)	(2.02)**
D(TMAX)	-7682.64	-1128.32	1593.58	7479.58	-4120.92	-7538.35
	(-1.01)	(-0.87)	(0.22)	(0.63)	(-0.56)	(-0.95)
D(RAIN)	94.42	79.91	-16.62	129.22	90.58	-361.43
	(2.26)**	(1.37)	(-0.32)	(1.61)	(0.68)	(-1.44)

Note: ( ) is t statistics - the asterisks \*\*\*, \*\*, \* denote significance at the 1%, 5% and 10% levels of significance, respectively

## CONCLUSION AND RECOMMENDATIONS

The research examined the effects of air pollution on the number of tourists in Thailand. The findings affirmed that the increase in PM10 and the price factor, by considering the CPI, reduced the number of international tourists. In addition, the increases in the highest temperature and rainfall decreased the number of tourists. The research is consistent with fundamental economic concepts regarding the factors determining demand and international trade. In addition, the relationship between PM10 and the number of tourists could be explained by the environmental issues and the increase of PM10, which reduced the attraction of the sites. From the the results of the study, the government must prioritize the management of the exchange rate, while state officers, entrepreneurs, the public, and concerned people in each province should focus on product price control because the CPI influences the number of tourists.

Furthermore, all sectors, particularly the agricultural sector and others responsible for causing pollution, must be aware and target reductions in air pollution by minimizing the burning of garbage, industrial production processes, and the burning of agricultural waste for farming preparation since these actions affect the number of tourist arrivals. As a result, the income of the local people may decrease. Therefore, measures and guidelines from the government are necessary to bring about a reduction in crop burning and to determine risky areas for tourists.

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## STUDYING THE DEVELOPMENT POTENTIAL OF TOURISM INDUSTRIES IN THE SOUTH ALTAI BY HYDROLOGICAL, CLIMATIC, GEOMORPHOLOGICAL WAY AND VISUALIZATION USING GIS

**Nazgul Zh. ZHENSIKBAYEVA** \*

Sarsen Amanzholov East Kazakhstan State University, Department of Ecology and Geography,  
Ust-Kamenogorsk, Kazakhstan, e-mail: naz\_zanibek@mail.ru

**Gulshara ABIYEVA**

Karaganda University named after academician E.A.Buketov, Ust-Kamenogorsk, Kazakhstan, e-mail: gulcharka@mail.ru

**Botagoz T. SABYRBAYEVA**

Sarsen Amanzholov East Kazakhstan State University, Department of Ecology and Geography,  
Ust-Kamenogorsk, Kazakhstan, e-mail: sbotagoz@mail.ru

**Gulzhan A. AVGUSTHANOVA**

Sarsen Amanzholov East Kazakhstan State University, Department of Ecology and Geography,  
Ust-Kamenogorsk, Kazakhstan, e-mail: guljan\_gul@mail.ru

**Nazym K. KABDRAKHMANOVA**

Sarsen Amanzholov East Kazakhstan State University, Department of Ecology and Geography,  
Ust-Kamenogorsk, Kazakhstan, e-mail: knazym1990@bk.ru

**Nazerke AMANGELDY**

Sarsen Amanzholov East Kazakhstan State University, Department of Ecology and Geography,  
Ust-Kamenogorsk, Kazakhstan, e-mail: nazerke.amangeldy@inbox.ru

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**Abstract:** The article conducts a study of the current state of development of the natural and recreational potential of the Southern Altai. The problems that currently hinder the development of tourism sectors in this territory are considered and ways to solve them are proposed. With the accelerated growth of global tourism and recreation, demand for certain regions of Kazakhstan is increasing. The assessment of the natural and recreational potential of Southern Altai was carried out taking into account the bioclimatic state of natural and recreational areas. When assessing the natural and recreational resources of the study area, our study assessed the shape of the relief, bioclimate, hydrology and flora. The results of the study allow us to propose specialized and multi-thematic routes connecting the main natural and cultural attractions of the main recreation areas for international and domestic tourists, as well as for educational and educational field programs and research trips. The study of the territorial and recreational potential of a mountainous region has its own characteristics, since, compared with plain territories, its knowledge is insufficient.

**Keywords:** recreation, GIS, tourism, landscape, bioclimate, relief, winter sports, recreational potential, activities

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### INTRODUCTION

Altai is the most high-mountainous region of southern Siberia, stretching about 2000 km from west to east. It is distributed from northwest to southeast from the West Siberian Lowland to the Gobi Plain. Most of Altai's territory is located in Russia. The Kazakhstan part includes only the southwestern part of the Altai mountain system (Dzhanaleeva, 2016). The mountainous Altai region is located between 48° and 53° north latitude, and its Kazakh part is known as the Kazakh Altai. Kazakhstan Altai occupies approximately a tenth of the entire territory of the republic. It is part of a larger mountain system known as the Altai-Sayan Mountains, which stretches from the Zaisan Lowland to Lake Baikal. In the south, it is limited by the Kara Irtysh River and Lake Zaisan, and in the west by the Kalba ridge from Saryarka to the Shar River valley (Tokmagambetov, 1974) (Figure 1). The Southern Altai covered by our study extends between the Bukhtarma River in the north and the Zaisan River in the south, including the black Irtysh. The development of the tourism sector in this region of Southern Altai emphasizes the importance of our research aimed at developing the wise use of natural resources in the context of recreation. The purpose of our research work is to assess and map the level of favorableness of

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\* Corresponding author

natural resources in natural and recreational zones of the Southern Altai Territory. In recent years, interest in mountain recreation has grown, and the influence of human activity on natural recreational complexes has increased, which emphasizes the need to organize recreational activities taking into account the environmental aspect and scientific understanding.

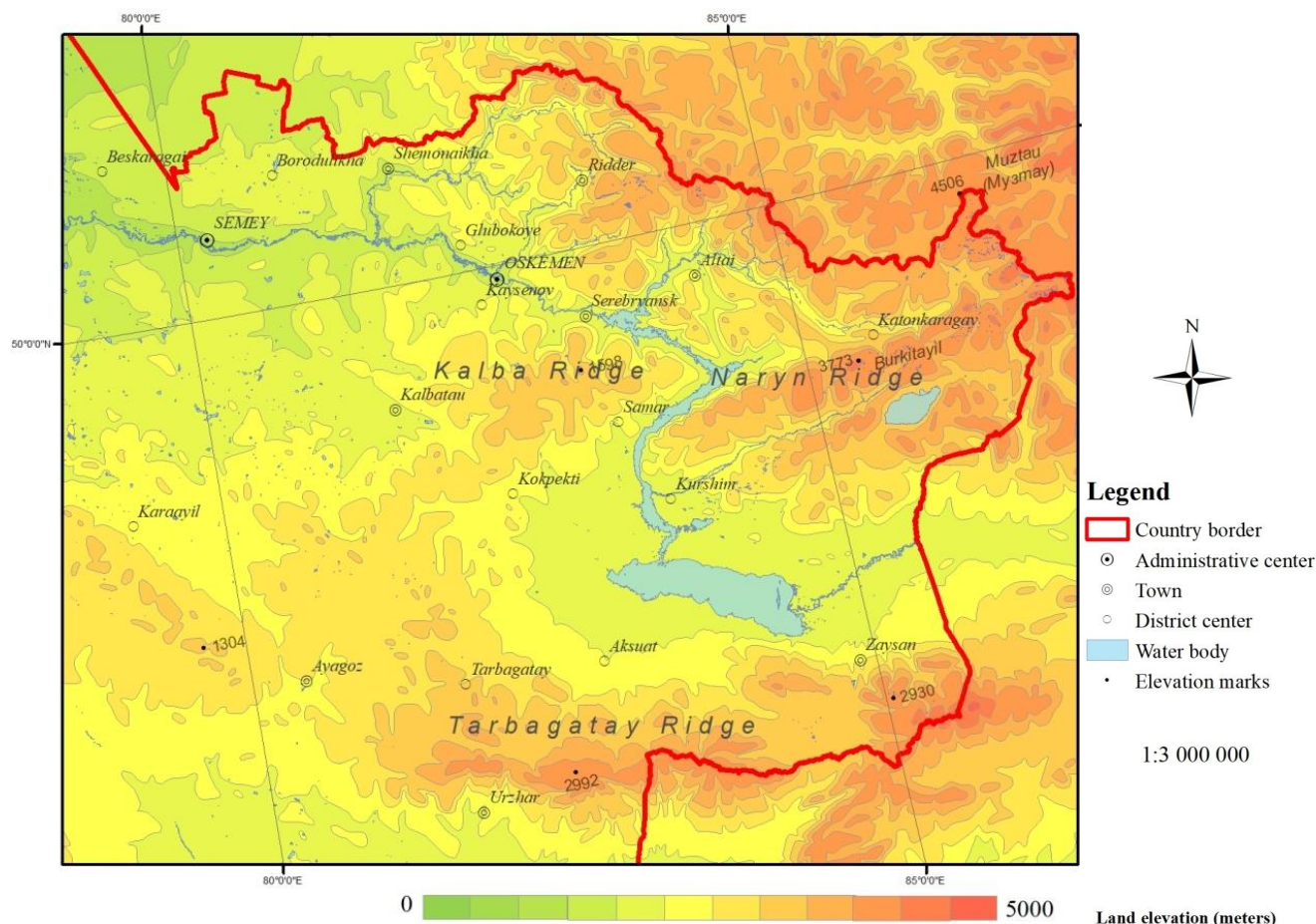


Figure 1. Hypsometric map of East Kazakhstan Region (National Atlas of the Republic of Kazakhstan, 2010)

The boundaries of Southern Altai and Rudny Altai are determined by climatic zonality, lying between the arid steppe zone and the semi-desert zone, coinciding with the “great belt of the European-Asian continent”. The climatic features of Southern Altai are determined both by altitudinal zones and by the influence of humid north-west winds from the Atlantic Ocean, which bring precipitation. The air temperature in a mountain zone depends on the altitude above sea level and the terrain, such as mountain slopes and peaks, according to Voeikov's principle (Oldfield, 2016).

Southern Altai is characterized by a winter temperature inversion associated with buzzing waves and orographic features. Katon-Karagay (1068 m) is located on a mountain slope, ideal for air currents, and the settlement of Orlovka (1081 m) is concentrated on all sides in a deep lowland, surrounded by mountains. Although both of these stations are at the same altitude, the settlement of Orlovka is 10°C colder in January, and 1°C colder in July, than in Katon-Karagai. The rivers of Southern Altai are distinguished by an abundance of water with high humidity. All rivers have a mountainous, flood character, and a rocky bottom. Depending on its regime, we classify it as the “Altai” type. Eastern Kazakhstan has a high resource potential for tourism. This part of the country also has high mountain landscapes and water bodies for active tourism. Water bodies are used for a wide variety of outdoor recreational activities, including kayaking, water biking, water motorsports, sailing, windsurfing, scuba diving and iceboating (Lewandowicz et al., 2022). Water tourism is less popular in East Kazakhstan too (Folgado-Fernández et al., 2018).

## MATERIALS AND RESEARCH METHOD

Considering the above and the growing number of publications in the field of tourism geography, we realized the fact that research on tourism in mountainous regions is still small and insufficient for the development of tourism in these regions (Deac et al., 2019; Herman et al., 2019; Ilieș et al., 2018, 2020). The assessment of the natural and recreational potential of Southern Altai was carried out taking into account the bioclimatic state of natural and recreational areas. When assessing the natural and recreational resources of the study area, our study assessed the shape of the relief, bioclimate, hydrology and flora (Kuskov, 2005). Each resource was grouped by degree of favorability in accordance with the obtained indicators (Kolotova, 1999). According to the indicator of recreational assessment of the terrain, indicated in the textbook by “Recreational use of territories and forest protection”, we classify them as “ideally suitable” for organizing any kind of recreation in the area of the region in our study (Table 1) (Nefedova, 1980).

Table 1. Scale of recreational assessment of the area (Nefedova, 1980)

No	Terrain class	Relief characteristics
1	Very favorable	Mountain, foothill: mountain-ridge and erosion
2	Favorable	Rough, intersecting stepped, eroded
3	Satisfactorily	Wavy, slightly intersecting
4	Not favorable	Plain-undulating
5	Extremely unfavorable	Plain and mountain (highest mountain peaks)

For the purpose of a complete analysis of the geomorphological state of the relief in the study area, the absolute height of the relief and indicators of its section were obtained (Semenikhina, 2002) (Table 2).

The last indicator is described in detail in morphometry - horizontal and vertical cutting of the relief, verticality of the slopes (Kolotova, 1999). When assessing the bioclimate of Southern Altai, the methodology of Rusanov (1973), Yegorina (2016a), Sukhova (2015) is used. In the monograph by Sukhova, research was carried out for the regions of Kazakhstan and Russia (Sukhova, 2015). In the works of Yegorina A.V., indicators of weather stations located in the territory of Southern Altai were obtained (Yegorina, 2016a). A complex indicator is used that determines the influence of the Southern Altai climate on the human body - a class of weather moments as the main indicators. The methodology of Rusanov (1973) was applied, and data from the weather stations Markakol, Katon-Karagay, Orlovka, Zaisan, Boran, Kurchum were obtained. In the integral assessment of the bioclimate of Southern Altai, the weather class was combined into 4 groups: favorable, relatively favorable, unfavorable, extremely unfavorable. Favorable weather conditions become ideal for efficient work and relaxation in clear skies (Dmitriyev et al., 2021).

Table 2. Grouping of natural systems by geomorphological indicators (Bredikhin, 2004)

Absolute relief height (m)		Angles of inclination of the earth's surface (in degrees)		Vertical cutting of relief (m)		Horizontal cutting of the relief (km)	Recreational suitability assessment
Rest *	Tourism**	Rest *	Tourism**	Rest *	Tourism**		
>1500	0-500	12-30; >30	0-3; 3-6	>800	<300	>2.5	Extremely unfavorable (1 point)
1000-1500	500-1000	6-12	6-12	600-800	300-600	2.5-1.2	Relatively favorable (2 points)
500-1000	1000-1500	3-6	12-30	300-600	600-800	1.2-0.8	Favorable (3-4 points)
0-500	>1500	0-3	30-45	<300	>800	<0.8300	Very favorable (5 points)

Note \* - medical and recreational holidays; \*\* - sports tourism

According to Panizza and Piacente (1993, 2003) and Quaranta (1993), geomorphological sites (or geomorphological assets) are defined as geomorphological landforms and processes that have acquired a scenic/aesthetic, scientific, cultural/historical and/or a social/economic value due to human perception of geological, geomorphological, historical and social factors. This process is called optimization (Pralong and Reynard, 2005). From a tourist and recreational point of view, these four different values may be considered as exclusive components of the tourist value of a geomorphological site. All tourist goods, services and infrastructure created from geomorphological landforms and processes result from the use of this value and its four components, which is understood in terms of degree and modality of exploitation.

ArcGIS 10.1 (ESRI Inc.) was used to perform the comprehensive assessment work in this article. With its help, the necessary manipulations with digital cartographic data were carried out, as well as satellite images were created to develop a geographic information system (GIS) and conduct deep spatial analysis based on the data of this system (Zhensikbayeva et al., 2023). As initial GIS data, vector layers of a digital map at a scale of 1:1,500,000 (waterworks, border) of the DCW world map were used (Digital Chart of the World), as well as a digital elevation model with a step of 500 m of the SRTM project (Shuttle Radar Topography mission). In ArcGIS, the boundaries of natural and recreational areas have been digitized and a geobase of the research zone has appeared. Based on a quantitative relief model, a set of quantitative thematic maps of significant morphometric indicators was created (Waiyausuri et al., 2023).

## RESEARCH RESULTS

According to the methodological complex of the research work, we examined the systems of recreation development in the study area using 3 different (climatic, hydrological and geomorphological) methods and mapped them through geographic information systems. The climatic conditions of the East Kazakhstan region are varied due to its geographical location. According to scientists' research, the region is located at the junction of 3 climate types: Mongolian, Central Asian and West Siberian, as well as lowland steppes and Altai and Saur Tarbagatai mountain regions (Yegorina, 2015).

The Southern Altai territory has enormous opportunities for recreation. During the coldest months of the winter season, the minimum average temperature in January is -27°C in the village of Orlovka and -26°C in Markakol, which makes these places unsuitable for stay. However, at altitudes from 1000 m to 3000 m, where the wind often blows on the mountain slopes, the average January temperature is -13°C and -15°C. These areas are areas for winter sports, tourism and mountaineering. Winter tourism is associated with seasonal sports, recreation, and activities that depend substantially on the sufficient snow cover (Keukenov et al., 2023). Many researchers have studied this type of tourism (Abegg, 2007; Breiling, 1999; Song, 2022; Tang, 2022). To assess the influence of the climate of Southern Altai on the human body, a complex indicator was used, based on the methodology of V.I. Rusanov, where the classification of weather conditions plays a key role.

In the integral assessment of the bioclimate of Southern Altai, the weather class was combined into 4 groups: favorable, relatively favorable, unfavorable, extremely unfavorable (Sukhova et al., 2014; Chlachula, 2019a).



According to this grouping, we classify the Katonkaragay district as a relatively favorable one, and the Kurchum natural and recreational territory as a favorable group. One of the natural recreational areas where the bioclimatic conditions for recreational activities in the summer and semi-desert months are favorable are Markakol and Kurchum (Figure 4).

In the natural and recreational areas of Kurchum and Markakol, there is usually no very hot weather in summer (classes I and II). The atmosphere here is pleasant (class III) and cool (class IV), and it always feels cold at night (class V). The summer season lasts approximately 80-85 days, the average temperature from June to August is 14°C, and the number of frost-free days varies from 60 to 70. The first half of the autumn season is usually warm with light winds, while the second half is cold and rainy. The annual precipitation is 450-500 mm. The climatic features of Southern Altai are varied. The main criterion for a favorable climate is the regulation of heat exchange between humans and the environment, which depends on various factors such as temperature, air humidity, wind speed and intensity of solar radiation. The classification of the favorableness of swimming in the summer was determined by V.I. Rusanov, and the grouping of weather conditions according to the level of weathering and heat regulation systems is carried out based on the functional level of weathering. An assessment of the bioclimatic conditions of Southern Altai was carried out taking into account landscape features and factors of their formation.

The grouping of favorable, relatively favorable, unfavorable, and very unfavorable weather conditions is classified as weathering class, and heat control systems are classified into soft, medium, hard, and very hard functional levels. Indicators of favorable bioclimatic conditions (maximum permissible concentration MPC) favorable weather is characterized by the ratio of the number of days in the warm and cold seasons or the number of favorable weather conditions in the volume of the year. An assessment was made using the landscape methodology for grouping the bioclimate of the Southern Altai Territory, which lies in the transboundary zone.

Based on the zoning of favorable indicators of bioclimatic conditions, the landscape features of the study area and the factors of their formation were taken into account. In this regard, an integral bioclimatic assessment was carried out taking into account the bioclimatic indicators of the mountain landscapes of Southern Altai (Figure 2).

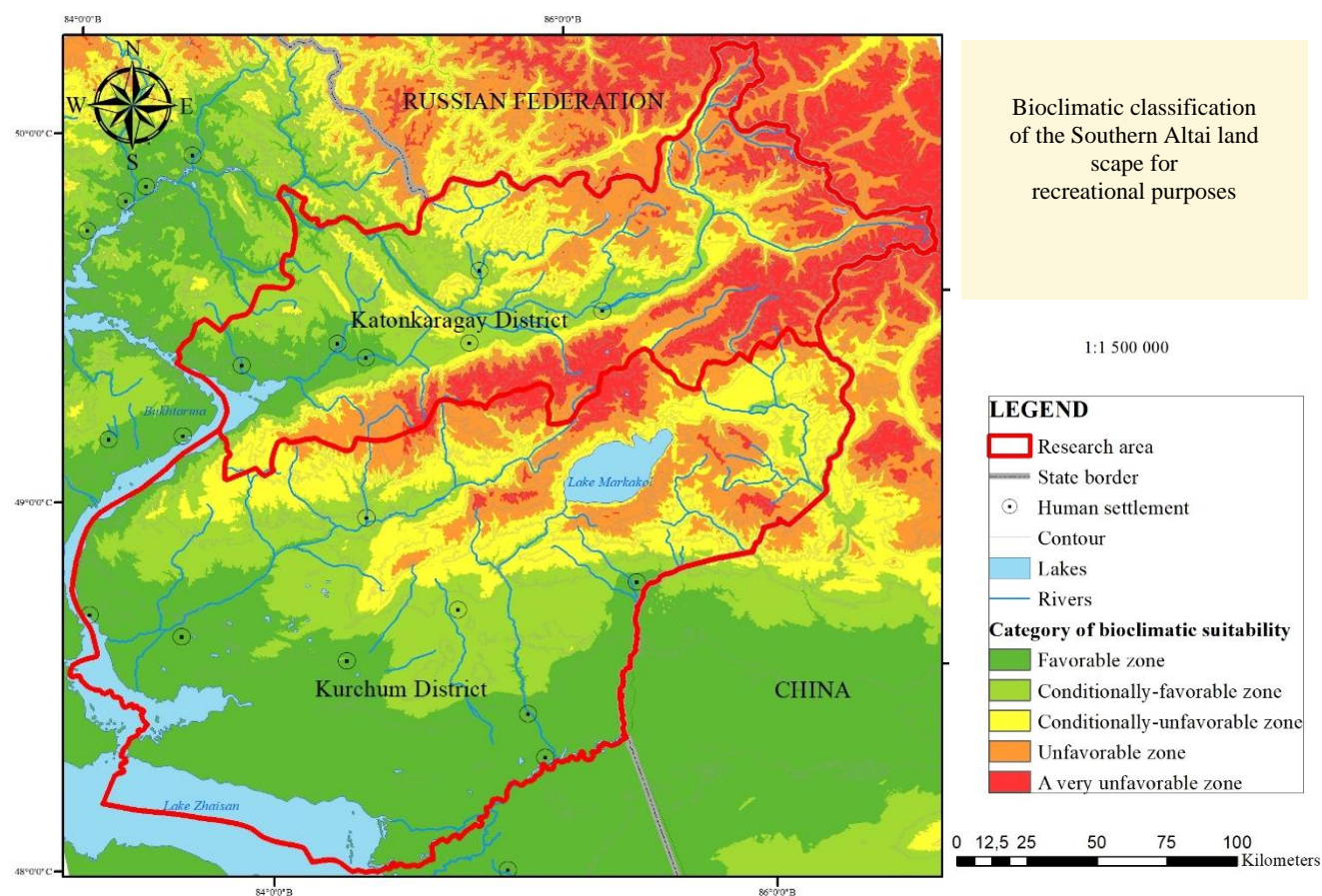


Figure 2. Bioclimatic classification of the Southern Altai landscape for recreational purposes (Zhensikbayeva et al., 2018)

Within the framework of integral bioclimatic indicators, we categorize Southern Altai into the following recreational and climatic zones (Zhensikbayeva et al., 2018):

1. High comfort zone. It is characterized by comfortable and moderately severe winters and warm, humid summers. This group includes flat areas of low mountains, steppe and forest-steppe landscapes. Atmospheric pressure - 1000-960 hPa. The relative temperature in January is 12°C. In winter there is a lot of snow. During the winter months, the average frosty weather is about 35%, warm weather is 35-40% and frosty weather is 10-20%. In summer, favorable weather is 35-40%, 10-15% is warm weather, 3-5% is warm dry weather, 5-7% is hot humid weather. The heat deficit in July is 139.6-209.4 W/m<sup>2</sup>. The bioclimatic suitability index is 0.65-0.70 in winter, 0.70-0.80 in summer.



2. The middle transition is a favorable zone. It has moderately cold winters and cool summers. We include the valleys of the Kurchum River, lake basins of low mountains and the middle mountain zone with an altitude of 500-1000 m above sea level. Atmospheric pressure 907-960 hPa. The relative temperature in January is -15°C. Foehn wind gusts are frequent in this area. In winter, moderate-severe weather is 30-50%, 30-40% is warm weather and 10-15% is moderate temperature. During the winter months, days with lower temperatures do not exceed 25%. Very severe weather is not noticeable. Approximately 5-7% hot weather is repeated in June and September, approximately 20% favorable weather. In summer the weather is sometimes hot and dry. The frequency of warm weather is 15-20% (Kabdrakhmanova et al., 2019).

The frequency of such weather conditions in field pits is 10-20%. In March, the frequency of open days in the basins is 30-40%. As the temperature drops, the number of cloudy days increases by 15-20%. The indicator of favorable bioclimatic condition is 0.25-0.27. Main geographical location: lowland mountains of the Narym plateau (south of the Akozensky slope of the lowland mountains), Kurchum hilly-elevated territorial and recreational systems.

Intermountain basins in steppe landscapes transition from favorable weather to sharply cold temperatures in June and September. Moderate cold weather prevails in the landscape of intermountain basins in the summer. Average favorable weather is 20-25%, moderate cold is about 30%, severe cold is 20-30%. The frequency of warm weather is 5-10%. The sum of temperatures above 10°C is 1100-1500°C, the duration of the number of frost-free days is 80-90 days. In July, the heat deficit ranges from -209.4 to -383.9 W/m<sup>2</sup>, which is typical for a moderately cold climate. The indicator of favorable bioclimatic conditions is 0.30-0.40 in winter and about 0.50 in summer. The number of days with favorable and relatively favorable weather for recreation is 280-300. Bad weather - winter frosts, rainy summer - 60-70 days.

3. Cold Transition is a favorable zone that includes mountainous areas located at an altitude of about 1500 m. It is characterized by harsh winters and cool summers. Medium mountain basins are common in this zone, found in desert and arid steppe landscapes. Atmospheric pressure in this zone ranges from 967 to 800 hPa. The climate of these basins is characterized by two main features: firstly, dryness contributes to the formation of semi-desert landscapes, and secondly, the severity of the winter season. In January the average temperature is around -30°C (-35°C), and the sum of temperatures below 10°C ranges from 3000 to 3800°C. In the semi-desert landscapes of Southern Altai in November and March, the number of days with air temperature favorable for humans is 20-25, relatively favorable - 60-65 and unfavorable - 60-70 days. The indicator of favorable bioclimatic conditions ranges from 0.05 to 0.04, and the number of days without frost ranges from 60 to 65 days. The indicator of favorable bioclimatic conditions in the summer season ranges from 0.30 to 0.40. The Narym Plateau is dominated by low mountains (Akozensky sloping low mountains), the slopes of the high-mountain lake basin Markakol.

4. The zone of cold discomfort includes the basins of South-Eastern Altai, where they are characterized by excessively harsh winters and cool summers. The average temperature in the winter months here is around -17°C (-19°C) and the average July temperature is between 10 and 13°C. In this zone, favorable and relatively favorable weather for tourism activities lasts about 200-250 days a year. Annual precipitation varies from 900-1000 mm to 300-400 mm. In the territorial and recreational systems of this zone there are the Katon-Karagai high-mountain Orkashty uplifts, the Markakol high-mountain lake basins and the Kara-Kabak strongly dissected slopes of the middle mountains.

5. There is discomfort. We include mountain zones that cover an altitude of 1500-2500 m (Orlovka, Markakol, etc.). This zone is characterized by harsh winters and cool summers. The average temperature in July is 6-8°C. During the day the air temperature rises by 15-17°C, at night it drops by 2-3°C. Meteorological factors that impede the development of recreational activities in the highlands in winter include heavy snowfall, blizzards, fog, uneven snow cover avalanche danger, etc.

6. Zone of severe discomfort. We include mountainous areas that cover an altitude of more than 2500 m (above the snow line). This zone is characterized by very harsh winters and very cold summers (Yegorina, 2016).

The mountainous terrain of the territory, microclimate, springs, rocks, rock paintings, fossilized remains of ancient animals, Saki mounds, and karst caves allow the development of a variety of recreational activities. It is possible to develop types of active tourism: sports (skiing) (Ilies et al., 2018), educational and scientific (geological, zoological, botanical, historical), safari travel (hunting and fishing), environmental and other types of tourism (Chlachula et al., 2021).

The swampy banks of rivers and lakes in Southern Altai and the abundance of waterfowl and wild animals make it possible to organize sport fishing and hunting. The duration of the swimming season in reservoirs and rivers of the Irtysh basin, depending on the altitude of the area above sea level, climatic conditions, hydrological regime and depth, is no more than 2-2.5 months. Considering that the swimming season, according to the generally accepted opinion of physiologists, begins only when the water temperature reaches +17°C, due to the low temperature in the middle reaches of large rivers in the region, a favorable period for swimming occurs only in their lower reaches and only in July-August (Yegorina, 2002).

Table 3. Degree of acceptability of assessment of water resources of Southern Altai (Kolotova, 1999)

Indicators	Degree of favorability		
	Favorable 1	Average favorability 2	Unfavorable 3
Water temperature	18-24 <sup>0</sup> C	16-17 <sup>0</sup> C; 25-26 <sup>0</sup> C	16 <sup>0</sup> C below; 26 <sup>0</sup> C higher
Sanitary and hygienic condition	clean, no sources of pollution	The water purification process itself helps get rid of sources of pollution.	High MPC content (maximum permissible concentration), contaminated water

When assessing the recreational potential of the territory, an assessment of hydrological natural resources was given. The hydro resources of Southern Altai are favorable for the development of an active form of tourism. When assessing

water bodies, the following indicators are taken as a basis: width, depth, temperature regime of the shallow zone, immersion seasons - for the rivers of Southern Altai, the favorable period is June, July, August.

Based on the methodology for assessing water bodies the degree of acceptability of assessing the water resources of Southern Altai was determined (Table 3) (Kolotova, 1999).

As reflected in the table, the sanitary and hygienic condition of water plays a key role in the development of tourism in the region. Also an important factor to evaluate is the coastline and the presence of shallow water, since not all visitors can swim. We have determined the assessment of large lakes located on the territory of Southern Altai (Table 4).

Table 4. Assessment of water resources of Southern Altai (Yegorina, 2011)

River names	Hydrological description		Recreational services					
	catchment area per km <sup>2</sup>	average annual water consumption based on m <sup>3</sup> /sec	therapeutic bathing	sunbathing and air bathing	fishing on the river bank	unorganized rest	water tourism	Hunting birds that live in water
Buqtyrma	15600	25.7	+	+	+	+	+	at the mouth
Ak Berel	1050	26.6	+	+	+	+	+	downstream
Naryn	2040	9.31	+	+	+	+	+	downstream
Kalzhyr	3200	21.9	+	+	+	+	+	at the mouth
Kurshim	5890	60.8	+	+	+	+	+	at the mouth
Karakaba	3040	-	+	+	+	+	+	in the middle reaches

Lake Markakol, the general water resources of Southern Altai do not provide favorable conditions for the creation of beaches. Due to the fact that the swimming season, according to the generally accepted opinion of physiologists, begins only at a water temperature of +17°C, due to low water temperatures in large lakes in the region, the favorable period for swimming is reduced only to their lower reaches and only in July-August (Sukhova et al., 2016; Chlachula, 2007). The results of the study show that the depth of the lake waters of the Southern Altai is more than 3 meters and the presence of weak waves up to 3 hammers create favorable conditions for the development of sailing (yachting) (Yegorina, 2011).

The rivers of Southern Altai, such as Bukhtarma, Kalzhyr, Kurchum, Kara Irtysh, are widely used for the development of extreme rafting (rafting), beach recreation, sun and water treatments, swimming and boating. Hydrological and recreational characteristics of large rivers in Southern Altai are presented in Table 4 (Kaisina, 2015). The region also has several groups of waterfalls on rivers such as Kokkol, Yazevoe, Arasan, which are popular tourist attractions.

## CONCLUSION

In conclusion, it is noted that by grouping the relief, bioclimate, water resources and vegetation cover, the specialization of various regions was determined and 8 main types of recreational activities were identified: environmental, cultural-historical, medical and recreational, skiing, ethnographic, sports, alpine and educational. This will diversify the region's tourism offer and ensure the sustainability of its potential (Chlachula, 2011; 2019b). Within the study region, 8 different types of recreational activities (RAC) were identified and determined by the optimization method: environmental, cultural-historical, medical and recreational, skiing, ethnographic, sports, alpine and educational (Caisová et al., 2010).

Each of these types of recreational activities requires certain characteristics of natural complexes. Therefore, several indicators presented in Table 5 need to be taken into account to determine suitable areas (Oyungerel, 2004).

Table 5. Assessment of recreational activity cycle indicators (Chernykh, 1988)

Types of recreational tourism	Leading types of recreational activities	Evaluation indicators
Mountain tourism (climbing, sports)	Mountaineering and mountaineering, Rock climbing	compliance with sports standards: absolute heights, relief cutting depth, slope steepness, snow depth, glacier distribution
Cultural-historical	walking tours, bus tours, museum visits, educational events	concentration and diversity of archaeological sites, the presence of museums, ethnographic groups
Alpine	downhill skiing, winter slides, ski instruction	snow thickness and duration, slope stability, climate comfort
Medical and recreational	Hiking, walk (terenkur), swimming	climate comfort, availability of health resort services, variety of water bodies
Sports	Hiking, sports training, active games, hunting	River system frequency, annual flow, horizontal section
Cognitive	Expeditions, horse riding, road trip	presence and condition of roads, density of the river network, presence of water bodies, vertical and horizontal cutting
Ecological	scientific competitions, participation in environmental events, participation in local festivals, information and educational events, excursions in environmental areas	Preservation of natural heritage sites, the presence of endemic plant species, rare plant communities, protected areas
Ethnographic	learning handicrafts, participating in public holidays, visiting holy places, creative activities	with religious and ethnic diversity, the presence of museums, the development of crafts
For all types of tourism		presence of natural monuments, large water bodies, level of forest cover, waterlogging

We consider it appropriate to separately consider this aspect for each of the natural and recreational areas of Southern Altai. This made it possible to identify the features of recreational development in each area (Figure 3).

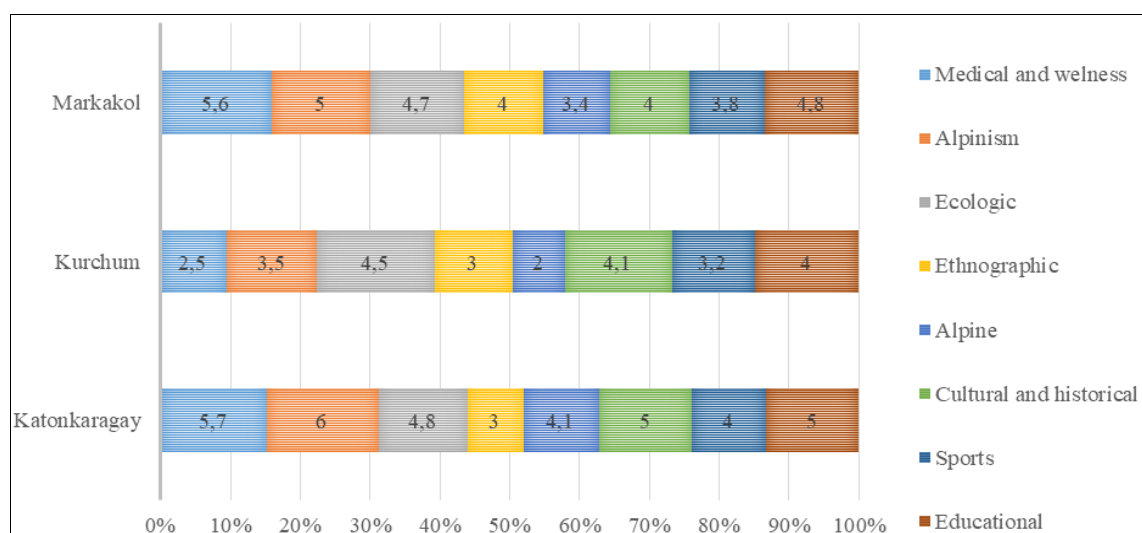


Figure 3. Cycles of recreational activity in natural and recreational areas of Southern Altai (Vinokurov, 2006)

Basically, the entire South Altai region can offer any type of tourism activity. According to the criteria of the International Tourism Business, there are key regions in the region that have the potential for the development of international tourism. Natural and recreational area Markakol: This area, covering the area around Lake Markakol, is characterized by an impressive landscape, and immaculate nature and attracts significant attention to tourism development. Here the number of sunny hours per year can reach 2,500, and in summer the air temperature is lower than in other parts of Kazakhstan. This climate creates favorable conditions for a varied summer holiday. Summer in the Bukhtarma region is characterized by a warm climate, clear skies, and only a weak wind from the northeast creates small waves on the water surface. The water remains warm throughout the long swimming season (Lukyanets, 2008).

The natural and recreational area of Katon-Karagay: The beautiful green landscapes of Katon-Karagay can satisfy the most sophisticated tastes of tourists, including residents. Mount Belukha gives this area a special grandeur and helps raise it to an international level. In the Katon-Karagay area, all types of recreation are available - from relaxing to active, including visiting mineral springs, active recreation in the mountains or winter activities. The average daily air temperature in the northern foothills is on average 5-8 degrees lower than in the south, which makes them cooler even in summer. During winter, the area is cold with high humidity, and north and west winds bring precipitation. In the northern foothills, the snow lasts longer and its layer is thicker than in the southern foothills. When developing tourism infrastructure, it is necessary to take into account these differences in temperature and wind conditions, and recreation centers, including winter ones, are best located in the southern part of the plain (Yegorina et al., 2016b; Zhensikbayeva et al., 2017).

The results of the study make it possible to propose specialized and multi-thematic routes connecting the main natural and cultural attractions of the main recreation areas for international and domestic tourists, as well as for educational and educational field programs and research trips for specialists (geographers, geologists, gemologists, biologists, archaeologists). The timing of visits is predetermined by seasonality with the possibility of year-round observation of nature. The end of spring - the beginning of autumn is the best time for travel and recreation. The nearest airport (Ust-Kamenogorsk) is located at a reasonable distance from the regional centers of the region (212 km to Kurchum; 330 km to Katon-Karagay) with air connections to Zaisan (1-hour flight). Local villages in the travel area, offering regular or occasional accommodation as well as visitor centers, are within easy reach (20–50 km). The quality of accommodation and individual travel services may vary significantly between individual tour operators (Zhensikbayeva et al., 2018).

Well-managed natural geo/ecotourism and proper management of tourism space can ultimately play an important role in sustainable socio-economic planning balanced by the regional administration of this peripheral and largely undeveloped mountainous region. At the same time, precautions should be taken to prevent or at least reduce the undesirable consequences of the expansion of commercial tourism, which may cause degrading cultural changes among the pastoral communities of Altai, despite the economic benefits. Thus, when creating the main stationary regional recreational facilities, it is necessary to take into account a priori the social impact of the tourism industry (Zhensikbayeva et al., 2018).

Comprehensive analysis of complex geological and geomorphological data, complemented by biotic and cultural data, personal experience and knowledge gained from reconnaissance expeditions and study tours, confirms the great potential of the area for sustainable rural tourism, as well as national and international travel.

Having analyzed the nature of the main tourist and recreational zones identified as a result of the biogeographical model, we propose a wide range of visitor activities. These include residential holidays with the usual adventure sports excursions including mountaineering, rafting, kayaking and paragliding. Natural and large artificial lakes (Lake Zaysan and Bukhtarma Reservoir, respectively) offer beautiful beaches and picturesque bays along several hundred kilometers of coastline, suitable for swimming, yachting and fishing (Figure 4). In winter, the snow-covered mountain terrain offers prime conditions for cross-country skiing and wildlife viewing. These trips can be combined with specialized local history and ethnological trips of travelers to traditional Kazakh rural settlements.

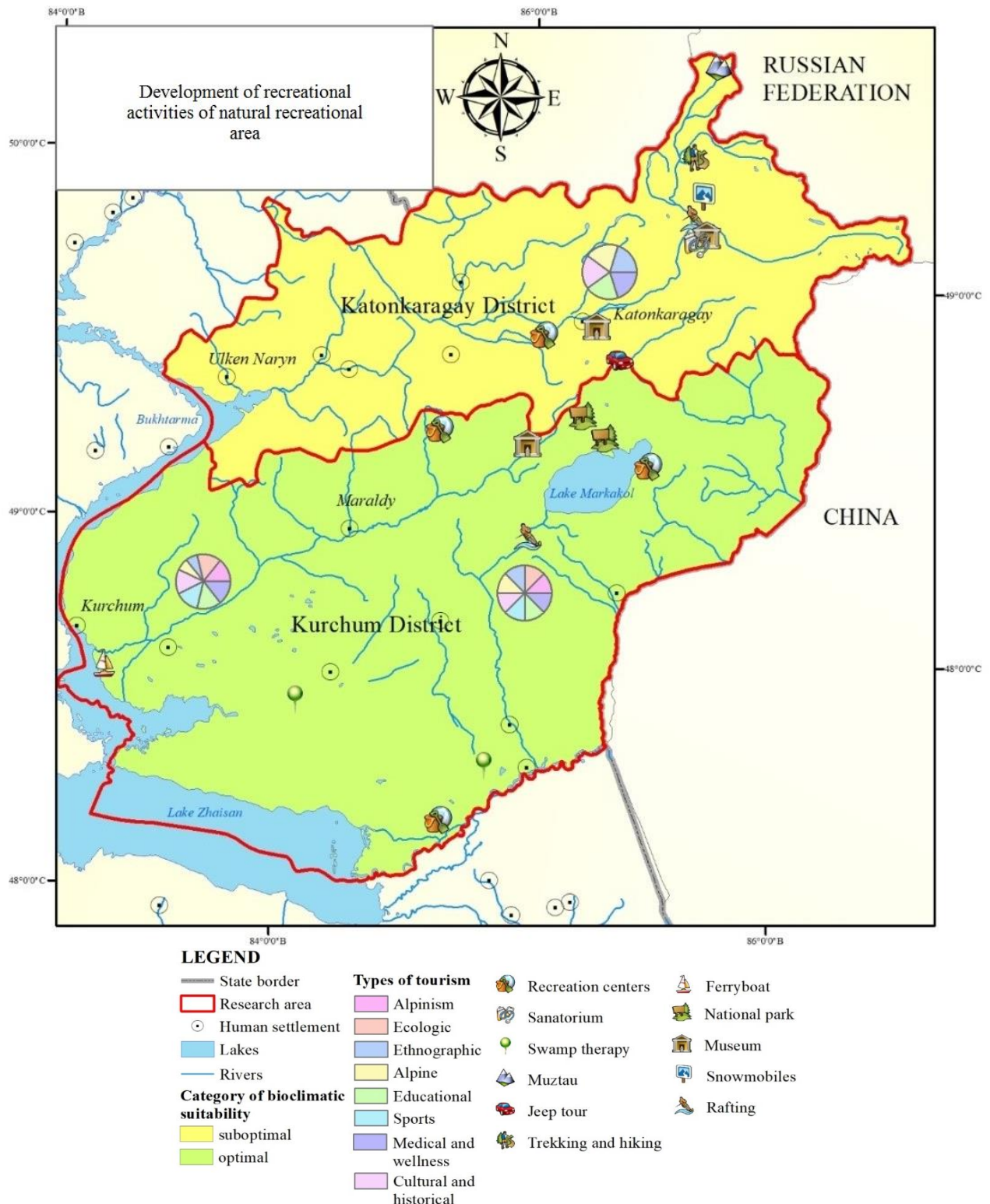


Figure 4. Development of recreational activities of natural recreational area (Zhensikbayeva et al., 2018)

In conclusion, we would like to show the current directions of recreational use in the Southern Altai NRA (Table 6) and the proposed optimization methods. During the 29th session of the UNESCO International Coordinating Council “Man and Biosphere program” (MAB) in Paris, the MAB Council approved the proposal to assign international status to the nature reserves of Kazakhstan. The UNESCO program includes, respectively, the Katon-Karagay National Park (Kazakhstan) and the Katunsky Nature Reserve (Altai Republic) in the international prestigious network of Kazakh-Russian border biosphere reserves called “Great Altai”. International experts noted the close cooperation of scientists from Kazakhstan and Russia in the preparation of the “Great Altai” nomination, which became the first transboundary reserve in Asia. If such a transboundary protected area is created, this will allow optimizing defense and organizing effective monitoring of rare animals and natural processes (Vinokurov, 2006).



Table 6. Modern recreational features of the Southern Altai RRS

Recreational area	Functional region	Modern recreational use	Recreational use optimization paths
Katon-Karagai	Recreational and environmental activities	Mountaineering: Southern Altai ridges, Belukha peak, Berkutaul skiing; medical and recreational holidays at the Rakhmanovsky spring in the Katon-Karagai natural national park, fishing, excursion around Kanas through the Great Altai nature reserve (route 9 with a length of 503 km)	Development of culture and historical tourism on the territory of the checkpoint: creation of a cluster of the state historical and cultural reserve “Berel” and creation of eco-routes in the Kanas reserve.
Kurshim	Economic and recreational	Ecological routes of specially protected natural areas, beach, educational, active and recreational, cultural, historical, ethnographic tourism.	Creation of the necessary infrastructure for sports tourism. Development of eco-tourism in the region
Markakol	Recreational and economic	Medical and health tourism: Mynshunkur medicinal swamp, alpine skiing, transit, mountaineering, hunting and fishing tourism, ecological routes in the Markakolsky reserve and specially protected natural areas	Regulating the tourist flow, calculating the permissible recreational load, conducting environmental assessments of the relief and related measures

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## ASSESSMENT OF THE OPPORTUNITIES OF MINERAL WATER RESOURCES FOR REGIONAL DEVELOPMENT – A CASE STUDY OF SOUTH-WESTERN PLANNING REGION, BULGARIA

**Stefan GENCHEV** 

National Institute of Geophysics, Geodesy and Geography, Department of Geography,  
Bulgarian Academy of Sciences (NIGGG-BAS), Sofia, Bulgaria, e-mail: st.genchev85@abv.bg

**Kristina GARTSIYANOVA** 

National Institute of Geophysics, Geodesy and Geography, Hydrology and Water Management Research Center,  
Bulgarian Academy of Sciences (NIGGG-BAS), Sofia, Bulgaria, e-mail: krisimar1979@gmail.com

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**Abstract:** The mineral water resources are the basis for the development for regions of balneology and SPA activities. The main goal of the present study is to analyze and evaluate the potential of mineral water resources and the state of balneo and SPA tourism in the South-Western Planning Region of the country. Methods of scientific analysis and synthesis of the collected information database, and geographic information systems (GIS) were applied. The obtained results demonstrate that territory of the studied area has a serious potential of mineral water resources, which in case of sustainable and effective use, would contribute significantly to the development of tourism in the region.

**Keywords:** balneo and SPA tourism, mineral waters, South-West planning region, Bulgaria

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### INTRODUCTION

#### Use of Mineral Water Resources and Its Social, Economic and Cultural Impact Over Society

Water, energy and food are interconnected and interdependent. They constitute a single and balanced system, characterized by specific complexity and feedback. In the modern world, economic benefits drive the design and implementation of policies for managing and using resources in the water-energy-food nexus. Different water resources, including mineral springs, provide many different benefits to society. With a therapeutic and prophylactic effect are the mineral waters extracted from water layers or aquifer systems, protected from anthropogenic influence, which have preserved their natural chemical composition, mineralization or content of certain biologically active components (Daukaev, 2020).

The deposits of mineral water resources are the basis for the development of balneology and SPA tourism. Mineral waters with their specific physico-chemical characteristics (temperature, pH, total mineralization, hardness, color, smell, taste, etc.) are used for the treatment and prevention of a number of diseases, for drinking and providing recreation and rest for the population. The balneo and SPA tourism can contribute to the stable and dynamic economy of the country in addition to the restoration of human health. This type of tourism has high economic and social benefits (Zeynalova, 2022). As a result of the changed structure of morbidity and frequency of some socially significant diseases (due to overexertion and nervous fatigue) in recent decades, the need for spa treatment and balneo prevention worldwide is growing (Kotsakov, 2021). Balneotherapy and SPA procedures ensure the development of regions in countries which has such types of water resource, stimulate the improvement and construction of infrastructure, provide jobs, create areas to serve the tourist flow, expand public catering activities, etc. The development of tourist areas, as a rule, is directly related to the natural resource potential, cultural identity, social interaction, security and prosperity of settlements (Cole et al., 2020). Depending on the specific additional facts and socio-economic status of the regions, there are often conditions for combining and developing several types of tourist activities. Bulgaria is one of the oldest European countries. It is a heir of ancient civilizations. The country has diverse natural, cultural, architectural, archaeological, religious, ethnological, culinary, etc. potential for tourism development.

Striving for and achieving future sustainable development of the regions and the country is directly related to the implementation of sustainable development strategies on local and national level. By updating the National Strategy for Sustainable Development of Tourism in the Republic of Bulgaria 2014-2030, the Ministry of Tourism accepts the European and national commitments regarding sustainable development and presents a plan for their achievement in the field of tourism (National strategy for sustainable development of tourism in the Republic of Bulgaria, 2014-2030; Varadzhakova, 2017; Varadzhakova, 2020). For sustainable and efficient management of water resources inclusive minerals, it is necessary to identify their quantitative and qualitative characteristics, the needs of the population and the conditions for the complex use of water (Ahmadov, 2020). The South-West planning region has favorable opportunities

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\* Corresponding author

for effective development, and is one of the six planning regions in Bulgaria, regulated according to the introduced general classification of territorial units for statistical purposes of the European Union, called "NUTS".

In the conditions of marked synergy between the main structural units of the water-energy-food Nexus, the South-West planning region has a great potential for the development of balneo and SPA tourism. The presence of a large number of natural mineral springs with different water properties, favorable geographical location, attractive climate, cultural and historical sights, natural phenomena and authentic local folklore, create opportunities this type of tourism to be combined with other types, for example: cultural, rural, wine, culinary, educational tourism, etc.

A brief review over the available scientific research on the issue of the regional status and use of mineral waters as an element in the water-energy-food nexus shows that they are too limited. This, in turn, justifies the conduct of the present study. The article presents the curative and preventive properties of mineral waters and some of their basic physical and chemical characteristics. The classification and status of the mineral deposits, as well as the balneo and SPA destinations formed in the SW region, are presented. The main goal of the present study is to analyze and evaluate the potential of mineral water resources and the state of balneo and spa tourism in the SW region of the country. The subject of the study are the mineral and drinking waters that are used in the procedures offered by balneo and spa complexes on the territory of the South-West planning region. The object of the present study are the spa and balneo destinations formed in the SW region. To achieve the set goal, the following tasks were completed during the research:

- creation of an information base on the distribution of mineral waters in the studied area and its visualization;
- description of the balneo and spa centers and their tabular and graphic presentation;
- characterizing the potential of mineral waters for prevention and treatment of specific groups of diseases;
- revealing the possibilities of combining balneo and spa tourism with another type, e.g. cultural, festival, wine, culinary and educational.

## **2. Natural, Economic and Social Characteristics of the South West Planning Area**

The South-West planning region covers territories from South-West and North Bulgaria, including the districts of Blagoevgrad, Kyustendil, Pernik, Sofia and Sofia City. Its area is 20,306 km<sup>2</sup>, and the population as of 31.12.2022 is 2,016,554 people (National Statistical Institute of the Republic of Bulgaria, Population - Demography, Migration and Projections, 2022). It is the most densely populated region in the country, with the population concentrated in the big cities. The geographical position of the region is favorable, international roads No. 4, 8 and 10 pass through it. The area is an external border for three countries - the Republic of Serbia, the Republic of North Macedonia and the Republic of Greece. The northern border runs along the ridge of the Western Stara Planina. The eastern border of the region reaches the Greek border and follows the Rhodope Dabrush hill. The southern border is the shortest and determines the development of the border territories, and the western border, which is mostly mountainous, is the least developed.

Several border crossings were built in the SW region, the most important being Kalotina (with the Republic of Serbia) and Gueshevo (with the Republic of North Macedonia). The relief of the Southwest region is diverse and consists of picturesque valleys, mountains, gorges and river valleys. In terms of climate, the region is characterized by significant differences - mountainous (Rila, Pirin, Vitosha and Osogovo), moderate-continental (the northern and high valley fields), and in the Sandansko-Petrichko field a continental-Mediterranean climate is observed (Donchev and Karakashev, 2004). The region has more than 1/5 of the country's river and groundwater. They are used in a complex manner (water supply, irrigation, electricity generation). The mineral waters in Sofia, Bankya, Sandanski, Kyustendil, Sapareva Banya, etc. are a great asset, which is a prerequisite for the development of spa and balneo tourism. SW region has a clear territorial specialization in the development of tourist activities, e.g. mountain tourism (Borovets, Vitosha, Bansko), spa (Bankya, Sandanski, Kyustendil), educational and cultural. It has all the favorable conditions for the development of rural tourism (Leshten, Kovachevitsa). In general, the southwestern region is characterized by significant territorial differences - the northern part with Sofia as its center is distinguished by a large concentration of population, production facilities and service activities, while the southern part is developed on the basis of the concentration of a number of economic branches and the passage of important road arteries.

## **MATERIALS, METHODS AND LEGISLATION**

### **1. Historical Overview on Mineral Waters and Balneology in Bulgaria**

Mineral waters have been used in Bulgarian lands since ancient times. The Thracian tribes, and later the Roman government, actively used this natural resource. Numerous testimonies have reached us in the form of archaeological finds and remains of buildings, proving that there is a millennial interest in mineral waters in Bulgaria. Cities such as Serdika, Sandanski, Kyustendil, Varshets, Hisarya, etc. arose around the mineral springs. These natural resources are the reason for the creation of religious, administrative and balneological centers, established over time as permanent settlements. After the Liberation from Ottoman slavery at the end of the 19th century and the beginning of the 20th century, balneology in Bulgaria marked significant progress. Numerous modern public baths have been built throughout the country. Many current European and world practices are applied. In the 1950s, medical facilities were established, profiled by groups of diseases that are affected by mineral waters. After the collapse of the socialist bloc and the transition to a market economy, balneology and spa tourism in the country are entering a new stage of development. Many new hotels and spas have been built, offering modern services and treatments.

### **2. Study Area**

According to official data of the Bulgarian Ministry of Tourism, two main balneo and spa destinations have been

formed in the South-West planning region: Sofia balneo and spa destination also known as "Thermes of Emperor Constantine the Great" (Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024). It includes the cities of Sofia, Bankya, Momin Prohod, Kostenets, Sapareva Banya, Dolna Banya, the village of Pancharevo, the village of Belchinski Bani, the Pchelinski Bani resort near the village of Pchelina (Figure 1).

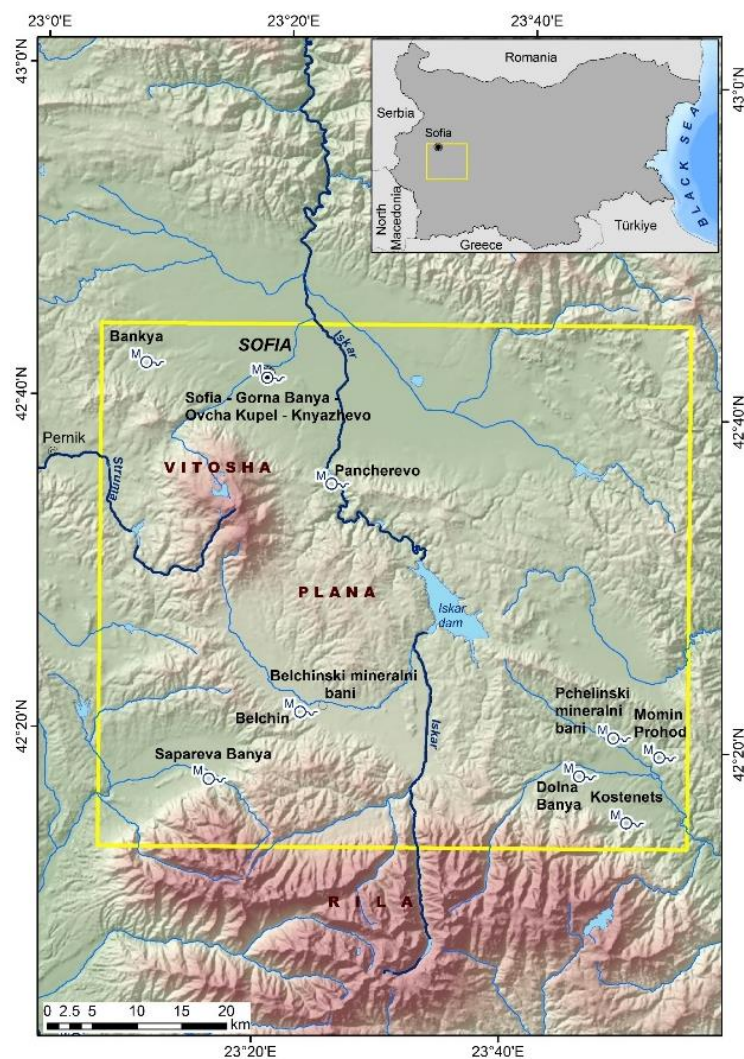


Figure 1. Sofia balneo and spa destinations - "Thermes of Emperor Constantine the Great"  
(Source: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024)

Southwestern balneo and spa destination also called "Health along the valleys of the Struma and Mesta rivers", which includes the cities of Kyustendil, Blagoevgrad, Sandanski, Dobrinishte and the villages of Marikostinovo, Banya (Guliina Banya), Ognyanovo and Rupite (Figure 2). In regard to the purpose of the present study, a brief description of the mineral springs of the two balneo and spa destinations in the SW planning region of Bulgaria is presented below (Datasource: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024). On the territory of the city of Sofia there are many mineral springs, some of which have been used since ancient times. Such one is the spring at the city's centre, the first catchment of which dates back to Roman times. The water is hyperthermal with a temperature at the source of 45°C, pH 9.3 and a total mineralization of 0.28 g/l. Another deposit is the one located in the tectonic faults between the Vitosha and Lyulin mountains in Knyazhevo quarter. The water of the mineral springs is hyperthermal 31°C, pH 9.5 and total mineralization is 0.12 g/l. The mineral waters in the Gorna Banya district are poured from a total of 4 springs (two of the boreholes are plugged). They are defined as hyperthermal with water temperature 42°C, pH 9.7 and total mineralization 0.15 g/l.

According to historical data, until the middle of the 19th century, a small warm mineral spring existed on the territory of the capital district of Ovcha Kupel. After a strong earthquake in 1858, in the same area, a large flow of water gushed out from a crack in the ground. The first boreholes were made at the beginning of the 20th century, and subsequently, in the 1950s and 1960s, new surveys were made and two new boreholes were captured. The springs are hypothermal - 32°C, pH 7 and total mineralization is 1.19 g/l. Approximately 12 km southeast of Sofia, in the valley of the Iskar River between the Vitosha and Lozenska mountains, lies the village of Pancharevo. The area has been known for its mineral springs since ancient times. Before the dam was opened, everything necessary to preserve the mineral springs was done. A vertical shaft (catchment) was built in the lake, reaching its bottom. With the help of a pump, the mineral waters are taken from the catchment outside the dam, where they are used by consumers. The visible part of the catchment is an original architectural facility, resembling a mushroom, connected by a bridge to the shore of the reservoir. The deposit of mineral waters is



composed of two groups of springs. The waters from the upper spring flow from cracked Middle Triassic dolomites along a fault in an east-west direction. This source was captured in 1937 by means of a horizontal gallery under the road to Sofia. The second group appears 20m lower and falls within the inundated volume of the dam as described above in the text. By its nature, the mineral water from the springs is hyperthermal (48°C), pH 7.1 and with a total mineralization of 0.47 g/l. The region has beautiful nature and precious mineral waters. These facts, in combination with a large artificial reservoir, offer excellent conditions for recreation and sports in close proximity to the capital city.

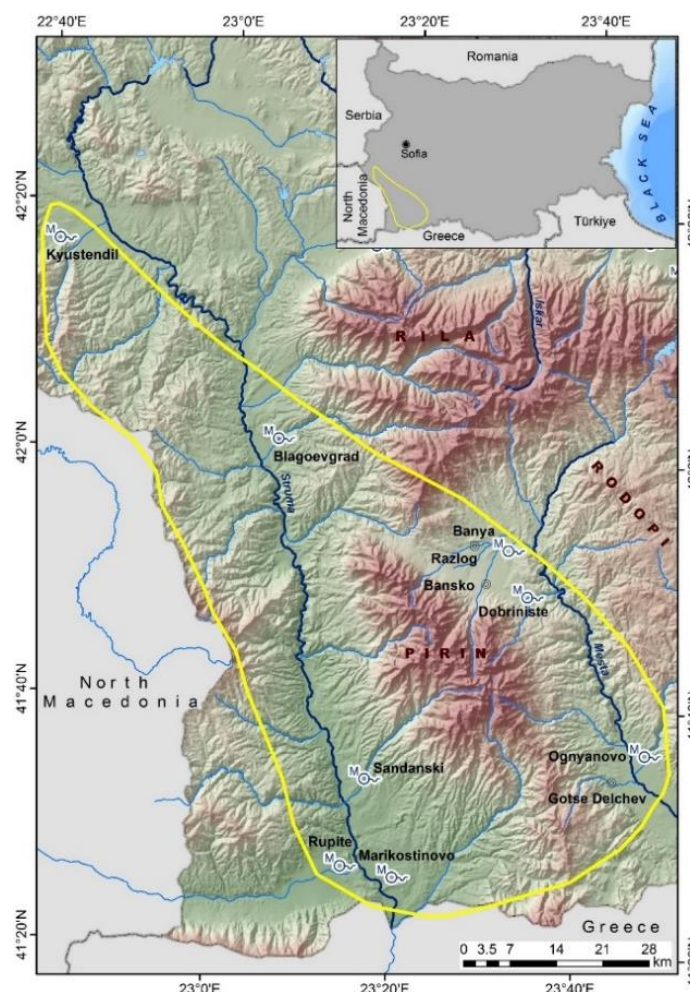


Figure 2. South-west balneo and spa destination - "Health along the Struma and Mesta River Valleys"  
(Source: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024)

The town of Bankya is located about 17 km from the center of the capital. The springs are formed in volcanic rocks and materials of Upper Cretaceous age. There are about 15 deposits and their capture was carried out at the beginning of the 20th century (1905). Over the next few years, the small and large baths were successively built, the latter one being the symbol of the city to this day. By its nature, mineral water from the Bankyan springs is homothermal (36°C), its alkalinity is pH 9.6, and its total mineralization is 0.28 g/l. The municipality of Kostenets is a well-established traditional balneological destination in the country. The three main areas for balneological tourism have been formed around the deposits of mineral waters - Momin Prohod, Vili Kostenets and Pchelinski Bani.

The springs in Momin Prohod were the main reason for the foundation of the settlement by the Thracian tribes - Serdi and Besi already in antiquity. The nine mineral springs have a water temperature above 56°C, reaching even 64°C, pH 7.8 and total mineralization 0.95 g/l. The mineral water in the balneo resort "Pchelin Mineral Baths" located near the village of Pchelin is internationally known for its healing properties. The water temperature is hot and reaches 72°C, the pH is 9.2, and the total mineralization is 0.97 g/l. The municipality of Dolna Banya is located in Southwestern Bulgaria and offers excellent conditions for an year-round development of balneo and spa tourism. Numerous mineral springs have been discovered in the municipality, which were tapped for the first time in the early 1940s. Their use gradually continued in the middle of the 60s of the 20th century. The water temperature is about 64°C, pH 8.8, and the total mineralization is 0.57 g/l.

One of the highest mineral springs in the country is located near the village of Belchin, at about 900 m above sea level. The mineral water in the deposit is hot reaching 72°C, with pH 9.2 and total mineralization 0.97 g/l.

In Sapareva Banya springs the hottest geyser in Europe - 103 °C. The spring is also one of the world's hottest mineral water sources. The mineral water in Sapareva Banya has exceptional healing properties. It was highly valued and used as a medicine by the Thracians and Romans. The water is clear, colorless, with a pH of 9.3 and has a total mineralization of 0.65 g/l. According to the temperature it is hyperthermal with a hydrogen sulfide content of 15.5 mg/l (Sapareva Banya



Municipality, 2012-2022). For this reason, the characteristic smell of sulfur can be seen near the geyser. In winter, no snow cover remains around the geyser fountain. Colorful lights are turned on around the fountain in the evening in the summer, which makes it an attractive and at the same time beautiful sight. Northeast of the town of Gotse Delchev, 12 km away, is the famous balneological center near the village of Ognyanovo. It is part of a larger area for unloading thermal waters, which also includes the springs near Gotse Delchev. The mineral water in the deposit is hyperthermal (40°C), with a pH of 9.3 and a total mineralization of 0.27 g/l. It contains R. The town of Dobrinishte is a balneotherapy resort in South-West Bulgaria with 17 mineral springs. The mineral water is hyperthermal (43°C), with a pH of 9.1 and a total mineralization of 0.29 g/l. In this resort, as in Ognyanovo village, the water has a R. content.

The village of Banya is located 850 m above sea level in the center of the Razlozhka Valley. The area is markedly mountainous. The Guliina Banya mineral water deposit is one of the largest in the country. As a result of the combination of the many hot mineral springs, the climate (moderate continental and mountainous) and its location, the village of Banya is an extremely promising balneo and spa destination. The water in the deposit has a temperature of 57°C, pH 9.3 and total mineralization 0.33 g/l. Before drilling explorations began, there were two groups of natural water sources, in the valleys of the Pihla River in the west and of the Konestchitsa River in the east. Their total number was 27 catchments, fountains, and springs. After 1956, 8 boreholes with a depth between 85 and 500 m were drilled. Initially, after the penetration, the water flow rate increases almost 2.5 times but gradually decreases to approximately the original water amounts over time.

The village of Marikostinovo is 11 km away from Petrich and 17 km from Sandanski. In the area of the village, there were originally about 50 natural mineral springs that came to the surface of the waterspouts. In the 1930s, only one spring was captured. In the 1950s, 47 boreholes were drilled, with a depth between 23 and 125 m. The mineral water in the area is hot (62°C), with a pH of 7.3 and a total mineralization of 1.01 g/l. It also contains carbon dioxide, hydrogen sulfide and R. A lake with healing mud has formed around the springs. The village of Rupite is located in the Petrichko-Sandansky valley at 147 m above sea level eastern of the Kozhuh volcanic plateau. The mineral waters at Kozhuh are connected to the youngest volcanic rocks in Bulgaria. The area is known for its healing mineral springs with temperatures up to 75 °C, pH 6.7 and a total mineralization of 2.2 g/l. The presence of hot mineral springs was the leading factor for the settlement of the area around the present-day city of Sandanski. Initially, there were 16 springs along the Sandanska Bistrica river, among which the largest was the so-called "Parilloto". Today there are about 80 deposits. The mineral water in the area is hot (80°C), with a pH of 7.8 and a total mineralization of 0.59 g/l. Popular for its abundance of mineral springs since ancient times, the city and the area around it attracted people and it is the main reason for its development and prosperity. The town of Sandanski, with its wealth of mineral waters, is a famous natural balneological center for the treatment of diseases concerning respiratory system - an excellent destination for balneo treatment or a spa holiday all year round. The mineral waters in the area are clear, odorless and safe to drink. The thermal springs in the area of Blagoevgrad have been known since Thracian and Roman times. In modern days deposits were captured at the end of the 1930s (in 1939). The mineral water is hot (60°C), with a pH of 9.3 and a total mineralization of 1.08 g/l.

The Kyustendil thermal mineral deposit is known and used since ancient times. The well-known Roman resort of Ulpia Pautalia is located around it. There are more than 40 mineral springs in Kyustendil, and the first modern catchments were drilled in 1910-1911. In the 1950s and 1960s, additional drillings were made, which revealed thermal waters with a temperature between 26 and 76 g. The waters are hot (74°C), with a pH of 9.3 and a total mineralization of 0.62 g/l. The city has more than 20 centuries of history as a balneological center. Of particular importance is the composition of the mineral water, which has low mineralization and contains sulfur, salts and various ions. It is clear, colorless with a slight smell of hydrogen sulfide (Specialized Rehabilitation Hospitals-National Complex Joint- Stock Company, 2024).

### 3. Materials

The conceptual framework of the article is based on a pre-collected and processed base of materials in two main directions: sources of information on the set issue - scientific publications, official information sources (sites, reports, decisions, references, informational messages, protocols) and relevant administrative legal documents (Directives, laws, regulations, strategies, etc.).

### 4. Methods

In order to achieve the goal set in this article, the methods of scientific analysis and synthesis of the collected information database, and geographic information systems (GIS), through which the study area is visualized, were used.

### 5. Legislation on Mineral Water Resources in Bulgaria and Related Administrative Documents

This research is based on a wide range of legal documents with direct or indirect relevance to the issue under consideration, some of which are shown below:

- Water Framework Directive (WFD) – 2000/60/EC, which introduces a holistic approach to water management in the EU;
- Directive 2006/118/EC on groundwater (GWD), regulating groundwater quality standards and measures for prevention from all forms of pollution;
- Directive 2009/54/EU on the exploitation and marketing of natural mineral waters;
- Water Law. Announcement, SG No. 67 of 27.07.1999, in force since 28.01.2000;
- Environmental Protection Act. Announcement, SG No. 91 of September 25, 2002;
- Concessions Act Promulgated, SG No. 36/2.05.2006, effective 1.07.2006;
- Subsurface Resources Act Promulgated State Gazette No. 23/12.03.1999, amended SG No. 28/4.04.2000;
- Law on Energy from Renewable Sources, effective from 03.05.2011. Official Gazette No. 35 of May 3, 2011;
- Municipal Property Act, effective from 01.06.1996;

- Law on Public Health (Repealed, SG No. 70/2004) in force from 01.01.2005);
- State Property Law, Promulgation of State Gazette No. 44 of May 21, 1996;
- Law on Access to Public Information. Announcement, SG No. 55 of 7 July 2000;
- Law on Territorial Planning. Announcement, SG No. 1 of January 2, 2001, the Protected Areas Act. Announcement, SG No. no. 133 of 11 November 1998;
- Regulation (EC) No 1059/2003 of the European Parliament and of the Council of 26 May 2003, on the establishment of a common classification of territorial units for statistics (NUTS), OJ L 154, 21.6 .2003;
- Law on Tourism Promulgated, SG No. 30 of March 26, 2013;
- National Strategy for Sustainable Development of Tourism in the Republic of Bulgaria, 2014-2030, with Decision No. 65 of February 2, 2018, of the Council of Ministers, Based on Art. 16, paragraph 1 of the Tourism Law (ZT), with Order No. T-RD-16-103/11.03.2015;
- Regulation No. 1 of 10.10.2007 on research, use and conservation of groundwater;
- Regulation No. 3 of 16.10.2000 on the Conditions and Procedures for the study, design, approval and operation of Sanitary protection Zones around Water Sources and Facilities for drinking and Domestic Water Supply and around Water Sources of Mineral Waters used for Medicinalq Preventive, Drinking, and Hygiene Needs, Pron. DV. No. 88 of 27.10.2000;
- Regulation No. 1 of 11.04.2011 on Water Monitoring, Promulgation DV. No. 34 of April 29, 2011.

## RESULT AND DISCUSSION

### 1. Defining the Basic Concepts of Balneology and Spa Tourism

*Balneology* (lat. *balneum, bath*) is a form of treatment and rehabilitation of various disease states through the healing powers of water. According to the Collins English Dictionary, balneology is defined as a branch of medical science concerned with the therapeutic value of baths, especially those taken with natural mineral waters (Collins English Dictionary). It has been known since ancient times and is practiced by bathing or various procedures in places (balneoresorts) where there are mineral springs. Different types of healing clay could also be used in balneology. The term *Balneology* refers also to the activities related to healing and rehabilitation practice, bathing, hot baths, and pools with natural steam, as well as to various procedures with mud or sand. As with any medical treatment, it must be recommended or prescribed by a doctor. In some cases, such as cardiovascular diseases and pregnancy, balneotherapy may be contraindicated and lead to adverse effects (Health and Medical tourism in Bulgaria, 2024).

According to the International Spa Association, (an American organization set up to 'advance the spa industry') 'Spa' is a place: "devoted to overall wellbeing through a variety of professional services that encourage the renewal of mind, body and spirit" (International Spa Association, 2019). Cambridge Dictionary defines a spa as: "a town where water comes out of the ground and people come to drink it or lie in it because they think it will improve their health", or "a place where people go to become healthier, by doing exercises, eating special food, etc" (Cambridge Dictionaries Online). It is thought that the word Spa it is either an acronym for the Latin phrase 'sanus per aquam' ('health through water'), or it comes from the town of 'Spa' (in Latin Aquae Spadae) – a spa town in Belgium.

### 2. General Categorization and Status of Mineral Water Resources. Peculiarities of Bulgarian Mineral Springs.

Mineral waters in Bulgaria are classified as waters with very low mineralization < 50 mg/l, low mineralization 50–500 mg/l, medium mineralization 500–1500 mg/l, high mineralization > 1500 mg/l (Quattrini et al., 2016). By temperature, mineral waters are classified as cold (< 20°C at source), hypothermal (20–30°C at source), mesothermal waters (30–40°C at source) and hyperthermal waters (> 40°C at source). Other physical parameters of the mineral waters are pH and hardness (Albertini et al., 2007). According to the legislation in the Republic of Bulgaria, mineral waters can be used for economic purposes only after granting a concession or issuing a permit for water abstraction. This is done in accordance with the Water Act on the one hand and is issued by a relevant competent authority on the other - director of the Basin Directorate, mayor of a municipality, etc. The most significant deposits are comprehensively listed in Appendix 2 of the Water Law. They have proven qualities of mineral waters and are exclusive state property - 102 in total. The remaining deposits and manifestations of mineral water are public municipal property.

The diverse composition, properties and temperature range (up to 103°C) of the mineral waters in the country is determined by the specific natural conditions, which help to enrich them with valuable microcomponents, gases and bioactive substances. The high temperature of the Bulgarian mineral waters is a mark of their deep origin. This is a condition for protection from surface influences, as well as their formation under specific conditions determining their healing properties (Ministry of Environment and Water, Mineral water resources, 2024). As a result of the analysis, the following important generalizations can be made: The southwestern planning region has favorable conditions for the development of balneological and spa tourism. Among the reasons, in the first place, the large number of natural mineral springs with diverse water properties should be mentioned. Based on the analysis of the curative and prophylactic properties of the mineral springs in the studied area, a systematization of their impact on certain groups of pathologies was carried out, presented in Table 1 and Table 2.

The mineral water wealth in combination with long-term scientific experience in the field of balneology, the use of modern technologies and the application of the best European and world practices give Bulgaria and the region in particular the opportunity, with good management, to rank at the forefront of the development of health and wellness tourism in Europe. In the last three decades, after the collapse of the socialist block and overcoming the initial shock of the transition to a market economy, one of the sectors in which serious investments were made was precisely tourism. Although not everywhere, much of the water's potential and its benefits to society and the economy have been appreciated

by investors, and major investments have been made in numerous new hotel complexes with spa centers offering wellness and health treatments. The emergence of modern spa and balneological centers on the Bulgarian market has increased interest not only at the local level, but as a result of this development, the flow of foreign tourists has increased. Visitors from abroad are mainly from Scandinavia, the United Kingdom, Israel, Russia, Cyprus and Greece. In recent years, net sales of spa and water-related therapeutic services have shown an upward trend. The lack of seasonality in this type of service is the reason why health and wellness tourism in Bulgaria is second in popularity after beach tourism.

Table 1. Treatment and prevention of the main groups of diseases  
(Source: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024)

A Group of Diseases → Mineral Spring (settlement) ↓	Female and Male Reproductive System	Peripheral Nervous System and Metabolic Disorders	Dermatological Pathology	Musculoskeletal System and Spinal Column Diseases
Sofia	*	*	*	*
Pancharevo village	*	*	*	*
Bankya	*	*	*	*
Momin Prohod	*	*	*	*
Kostenets	*	*	*	*
Dolna Banya	*	*	*	*
Pchelin village	*	*	*	*
Belcinski Bani village	*	*	*	*
Sapareva Banya	*	*	*	*
Kyustendil	*	*	*	*
Blagoevgrad	*	*	*	*
Sandanski	*	*	*	*
Rupite village	*	*	*	*
Marikostinovo village	*	*	*	*
Banya village (Razlog)	*	*	*	*
Dobrinishte	*	*	*	*
Ognyanovo village	*	*	*	*

Table 2. Treatment and prevention of specific groups of diseases  
(Source: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024).

A Group of Diseases → Mineral Spring (settlement) ↓	Gastrointestinal Tract and Liverbiliary system	Urinary Excretory System	Cardiovascular System	Respiratory System	Rheumatic, Orthopedic and Traumatological Diseases
Sofia	*	*	*	*	
Pancharevo village	*	*	*	*	
Bankya	*	*	*	*	
Sapareva Banya					*
Kyustendil			*	*	*
Blagoevgrad					*
Sandanski				*	*
Rupite village					*
Marikostinovo village					*
Banya village (Razlog)					*
Dobrinishte					*
Ognyanovo village					*

According to the official register on the website of the Ministry of Tourism in the Republic of Bulgaria, there are 26 spa facilities in the region with a valid certificate that welcome guests from the country and abroad (Figure 3). The largest number spa facilities are in the territory of the municipality of Bansko and in the city of Sofia, 7 and 5, respectively. Most facilities are modern and offer a wide range of procedures to their clients (Figure 4). There are also 5 certified balneo sanatoriums operating in the Southwest Planning Region.

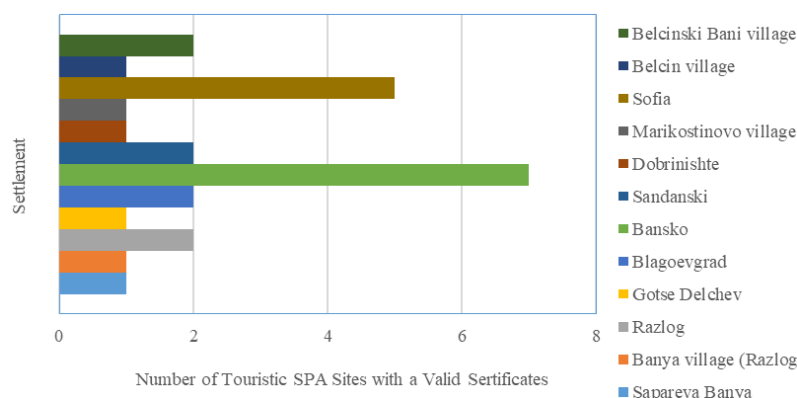


Figure 3. SPA sites with a valid certificates in the study area

(Source: National Tourist Register; Balneotherapy (medical spa), spa, wellness and thalassotherapy centers, 2024)

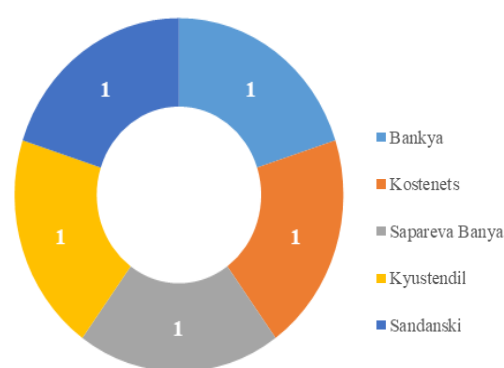


Figure 4. Number of certified balneo sanatoriums

### 3. Additional Attractions in the Study Area

The area is rich in cultural, cultural-historical and religious sites. An interesting group of elements of this variety is the so-called Sofia's Holy Forest, which is a peculiar complex of 14 monasteries, located mainly around Vitosha Mountain, Western Stara Planina and the neighboring mountain ranges. The development Sofia world is burning or the so-called Small Holy Forest dates back to the 13th century. The more significant monasteries are the Dragalevski Monastery "St. Mother of God", Etropolevski "Holy Trinity", Osenovlashki "Seven Thrones", Klisurski Monastery "Saint Petka" and others. Over the centuries, settlements were gradually created around these religious centers, some of which are now part of the capital Sofia.

Near the village of Belchin is the restored fortress "Tsari Mali Grad". The complex itself includes several sites: a medieval church, an ethnographic complex and a late antique fortress (Ministry of Tourism of the Republic of Bulgaria, Tourist destinations, 2024). One of the symbols of the country in religious terms is located in the research area - the Rila Monastery of St. Ivan Rilski. Being a protected place in the lists of cultural heritage of the international organization UNESCO since 1983, the holy abode attracts laity and tourists from the country and the world. In the southernmost parts of the researched area is one of the oldest monasteries in the country - the Rozhen Monastery "Rozhdestvo Bogorodichno". It is considered to have been created at the end of the 9th century and is the largest spiritual abode in the Pirin region. The monastery is famous for its well-preserved wall paintings, its stained glass windows and unique wood carvings.

At a distance of a few kilometers from the Rozhen Monastery is the smallest town in the country - the town of Melnik. The city is located in the midst of picturesque nature, represented by natural phenomena, for example, the so-called Melnik pyramids. The area has been known for its vineyards and wine production since ancient times. Houses of rich wine merchants have been preserved as a historical and cultural value, for example, the Kordopulova house.

Museum collections of national, regional, and local importance are organized in the study area. In the first place is the National History Museum, located on the outskirts of the capital city and near the Vitosha Nature Park. The museum's collections include over 650,000 cultural and historical exhibits (National Historical Museum, Sofia, Bulgaria, 2024). The National Natural Science Museum is another unique museum collection, presenting a large array of exhibits and artifacts related to nature and species diversity. It is located in a building in the ideal center of Sofia, next to the National Art Gallery. There are also many museum collections and art galleries operating in the area, such as: Regional History Museum - Blagoevgrad, Archaeological Museum - Sandanski, History Museum - Melnik, Regional History Museum "Academic Yordan Ivanov", Museum Complex Church "St. Georgi", Art Gallery "Vladimir Dimitrov - the Master", Kyustendil, History Museum - Razlog, etc. The territory of the study area includes the Vitosha Nature Park and the Rila and Pirin National Parks, providing excellent recreation opportunities combined with rich biodiversity.

### 4. Recommendations

In regard to the analysis and evaluation carried out in the present study, the following summaries and recommendations can be made, which will serve as a good basis for making informed decisions and preparing policies by the branch organizations, bodies and institutions for local, regional and national governance:

- The effective and sustainable development of balneo and SPA tourism should become a priority of the state;
- It is necessary to transform them into a year-round tourism industry;
- It is imperative to regulate the conditions for the development of balneology and SPA activities in parallel with the development of the territory adjacent to the springs;
- Development of new regulations for professional categorization and requirements for retraining, as well as initial training in the sector by the established norms;
- Implementation of transfer and synchronization of successful programs for effective development of balneology and SPA procedures to local conditions.

### CONCLUSION

Based on the conducted research, the territory of the Southwest Planning Region has a serious potential of mineral water resources, which in case of sustainable and effective use, would contribute significantly to the development of tourism in the region. It should be noted that during the last 3 decades, serious investments have been made in the field of balneo and spa tourism in the region, by the construction of numerous completely new hotels and spa centers that successfully meet and satisfy the needs of their customers. An example in this regard is the district Blagoevgrad, where in the municipalities of Bansko, Razlog, Petrich, Sandanski, etc., this type of tourism is well developed. There are also good examples in this sense in Kyustendil district. Unfortunately, in other parts of the region, there is still much to be desired in terms of the development or preservation of this type of tourism and the traditions associated with it.

The lack of a consistent state policy during the decades of the transition from a planned to a market economy had a negative impact on the sustainable exploitation of mineral water resources. Despite the significant progress in the field of spa tourism and the procedures that are offered in the sector, many buildings and facilities related to mineral waters and balneology were left in disrepair for various reasons. Mainly due to lack of a clear concept of how to use them going forward and who should manage them. Significant number of facilities and spas, once state owned are abandoned or sit idle for years, thus wasting a valuable resource and revenue opportunity. The case with the Sofia Central Bath is typical example for mismanagement. The valuable spa facilities which has not functioned as intended for more than 3 decades, and the building, an architectural and cultural monument, periodically undergoes only cosmetic repairs.

Similar was the fate of the large mineral bath in the town of Bankya, which for more than two decades did not function as intended - a circumstance that has changed over the past 2 years. Despite some circumstances related to the poor use of mineral waters in the South-West planning region, there is serious potential for development in the two balneo spa destinations under consideration. This circumstance, in combination with various other factors, for example,

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## WHY ARE INTERNATIONAL TOURISTS SATISFIED WITH ECOTOURISM IN THE MEKONG DELTA, VIETNAM?

Phan Van PHUNG<sup>ID</sup>

Department of Business Administration, University of Cuu Long, Vinh Long, Vietnam, e-mail: phungdhcl@gmail.com

Nguyen Giac TRI<sup>ID</sup>

Faculty of Economics, Dongthap University, Dong Thap, Vietnam, e-mail: ngtri@dthu.edu.vn

Quoc Nghi NGUYEN<sup>ID</sup>

School of Economics, Can Tho University, Can Tho, Vietnam, e-mail: quocnghi@ctu.edu.vn

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**Abstract:** The satisfaction of tourists plays a crucial role in the success of a tourist destination. This study aims to demonstrate factors influencing the satisfaction of international tourists with ecotourism in the Mekong Delta, Vietnam. The study employs a convenient sampling combined with direct interviews of 256 international tourists who have experienced ecotourism services in the Mekong Delta region of Vietnam. Quantitative analysis methods used in the study include testing the reliability of the scale using Cronbach's alpha, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and covariance-based structural equation modeling (CB-SEM). The research results have proven 06 factors influencing the satisfaction of international tourists with ecotourism in the Mekong Delta, including trust, responsiveness, assurance, empathy, tangible facilities, and local characteristics. Among these, the local characteristic factor has the most impact on the satisfaction of international tourists with ecotourism in the Mekong Delta. The research results will provide managerial implications to enhance service quality and improve the satisfaction of international tourists with ecotourism in the Mekong Delta region, Vietnam.

**Keywords:** satisfaction, service quality, international tourists, ecotourism, destination, Mekong Delta

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### INTRODUCTION

Tourism is one of the fastest-growing industries globally, playing a crucial role in the economy (Osman and Sentosa, 2013), contributing positively to the economic, social, cultural, and international integration processes of Vietnam (Hong et al. 2022). Alongside the rapid development of the tourism industry, competition among tourist destinations has become increasingly fierce (Nguyen and Mai, 2021). The success of tourist destinations is often gauged through tourist satisfaction (Kozak and Rimmington, 2000; Nowacki, 2009). Enhancing tourist satisfaction not only positively affects the reputation of destinations but also increases tourist loyalty, reduces operational costs, and enhances operational efficiency (Chen et al., 2013). In tourism studies, tourist satisfaction is investigated from various perspectives, such as focusing on the antecedents of satisfaction, the process of achieving satisfaction, measuring satisfaction, the importance of satisfaction in tourist loyalty and behavioral intentions (Engeset and Elvekrok, 2015).

In recent decades, many studies have demonstrated that tourist satisfaction is influenced by various factors such as trust (Ibrahim et al., 2015; Cilliers et al., 2018; Shah et al., 2018; Long, 2019; Masrurul, 2019), responsiveness (Ibrahim et al., 2015; Cilliers et al., 2018; Shah et al., 2018; Long, 2019; Masrurul, 2019; Thi et al., 2020), assurance (Shah et al., 2018; Thuy, 2020; Hong et al., 2022; Cheraghzadeh et al., 2023; Sapkota et al., 2023; Son et al., 2023), empathy (Shah et al., 2018; Long, 2019; Masrurul, 2019; Thanh and Ha, 2021), tangible elements (Ibrahim et al., 2015; Shah et al., 2018; Long, 2019; Masrurul, 2019; Thi et al., 2020; Thuy, 2020; Hong et al., 2022; Cheraghzadeh et al., 2023; Sapkota et al., 2023; Sugiyama et al., 2024), and local characteristics (Thanh and Ha, 2021; Son et al., 2023).

In Vietnam, the Mekong Delta region possesses impressive tourism development potential, characterized by its ecological landscape, coastal areas, attractive river systems, fruitful orchards, pristine environment, and abundant natural resources (Mai et al., 2023). Various forms of tourism have emerged and flourished here, attracting tourists, especially international visitors (Dung et al., 2023), with ecotourism being the most distinctive and favored by many international tourists when coming to the Mekong Delta region. In recent decades, the tourism industry in the Mekong Delta has consistently experienced high growth rates. The image and service quality of ecotourism areas are continuously improving to meet the growing demands of international tourists.

However, there are limitations in ecotourism areas, such as environmental pollution, inadequate quality of tourism human resources, lack of diversity and creativity in tourism products, etc., thereby negatively affecting the experiences

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\* Corresponding author

of international tourists. Therefore, this study is conducted to demonstrate the factors influencing the satisfaction of international tourists with ecotourism in the Mekong Delta region.

## LITERATURE REVIEW

Customer satisfaction is their response to the perceived difference between their experiences and their expectations (Spreng and Mackoy, 1996; Parasuraman et al., 1998). In the tourism context, tourist satisfaction is defined as the quality of service experience achieved after a tour (Baker and Crompton, 2000), or when tourists feel satisfied after a vacation due to results that exceed their pre-travel expectations (Altunel and Erkurth, 2015). Tourist satisfaction is the evaluation of the destination's service quality, meeting the needs and expectations of tourists (Severt et al., 2007; Fu et al., 2019). The success of tourist destinations is often measured through tourist satisfaction (Nowacki, 2009).

Ibrahim et al. (2015) evaluated the impact of service quality on tourist satisfaction in the Maldives tourism industry. The study identified three factors positively influencing tourist satisfaction: responsiveness, tangible facilities, and reliability. Cilliers et al. (2018) demonstrated positive factors influencing tourist satisfaction in a resort in South Africa, including accessibility, service style, responsiveness, and reliability. Shah et al. (2018) identified factors positively correlated with tourist satisfaction in the hotel industry in Pakistan, including reliability, responsiveness, assurance, empathy, and tangible facilities. According to Masrurul (2019), reliability, responsiveness, empathy, and tangible facilities positively influence tourist satisfaction in the tourism industry in Bangladesh. Sapkota et al. (2023) investigated and demonstrated that price, infrastructure, safety, and security are factors influencing tourist satisfaction with Gandaki, Nepal as a destination. Cheraghzadeh et al. (2023) indicated that safety and security are the most significant factors affecting tourist satisfaction with the quality of ecotourism services at Bisheh Waterfall, Iran. Additionally, tourist satisfaction is influenced by other factors including infrastructure, transportation costs, culinary quality, accessibility, natural beauty, hospitality, guidance, and accommodation management. Talukder et al. (2024) established a positive relationship between the quality of ecological services (reliability, responsiveness, assurance, empathy, tangibles) and tourist satisfaction with Kuakata destination in Bangladesh. Sugama et al. (2024) identified that attractiveness, accessibility, and facilities are significant predictors of satisfaction and intention to revisit water parks among young tourists.

In Vietnam, the topic of tourist satisfaction has garnered significant attention from scholars. Dai and Quynh (2019) demonstrated three factors positively influencing tourist satisfaction with the service quality of the Xeo Quyt ecotourism area: empathy, reliability, and tangible facilities. Thi et al. (2020) showed factors influencing international tourist satisfaction with the quality of tourism services in Vietnam, including responsiveness and tangible facilities. Thuy (2020) measured the influence of service quality on tourist satisfaction with attractions in Ho Chi Minh City. The research results showed that five service quality factors influence tourist satisfaction: reliability, responsiveness, service capacity, empathy, and physical facilities. Thanh and Ha (2021) pointed out that tourist satisfaction with the service quality in tourist areas of Ha Giang Province is affected by six factors: empathy, responsiveness, reliability, service capacity, local characteristics, and tangible facilities. According to Hong et al. (2022), five factors influencing tourist satisfaction with river tourism in Danang City: tangible facilities, reliability, responsiveness, assurance, and attractiveness. Son et al. (2023) showed that local culture, natural landscape, local characteristics, assurance, and tourism human resources positively influence tourist satisfaction with agricultural tourism in the Mekong Delta region (Vietnam).

The literature review indicates that most studies focus on demonstrating the components of tourism service quality (reliability, responsiveness, assurance, empathy, tangibles) that affect tourist satisfaction. Few studies explore local characteristic factors to explain tourist satisfaction with tourist destinations. For ecotourism, local characteristic factors are an important component shaping the image of a local ecotourism destination. Therefore, this study combines the components of service quality (reliability, responsiveness, assurance, empathy, tangibles) with local characteristics to broaden the explanatory power of tourist satisfaction with ecotourism in the Mekong Delta region, Vietnam.

## RESEARCH MODEL

### Research hypotheses

Based on the literature review, it is evident that service quality components (trust, responsiveness, assurance, empathy, tangible facilities) and local characteristics are factors influencing tourist satisfaction with tourist destinations. Therefore, the study proposes the following hypotheses:

**H1:** Trust positively influences the satisfaction of international tourists with ecotourism in the Mekong Delta region;

**H2:** Responsiveness positively affects the satisfaction of international tourists with ecotourism in the Mekong Delta region;

**H3:** Assurance positively impacts the satisfaction of international tourists with ecotourism in the Mekong Delta region;

**H4:** Empathy positively influences the satisfaction of international tourists with ecotourism in the Mekong Delta region;

**H5:** Tangibles positively influence the satisfaction of international tourists with ecotourism in the Mekong Delta region;

**H6:** Local characteristics positively impact the satisfaction of international tourists with ecotourism in the Mekong Delta region. Thus, the research model of factors influencing the satisfaction of international tourists with ecotourism in the Mekong Delta region is established as follows (Figure 1).

### Research scale

The research scales were referenced from related studies and adjusted to fit the context of this research. The trust scale (4 observed variables), responsiveness scale (4 observed variables), assurance scale (4 observed variables), empathy scale (4 observed variables), and tangible facilities scale (4 observed variables) were referenced from studies of

Parasuraman et al. (1988) and Cronin and Taylor (1992). The local characteristic scale (4 observed variables) was preferred from studies of Thanh and Ha (2021), and Son et al. (2023) with 4 observed variables. The satisfaction scale (4 observed variables) was referenced from studies by Mai et al. (2021), and Nguyen and Mai (2021). All scales in the research model were measured using a 5-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

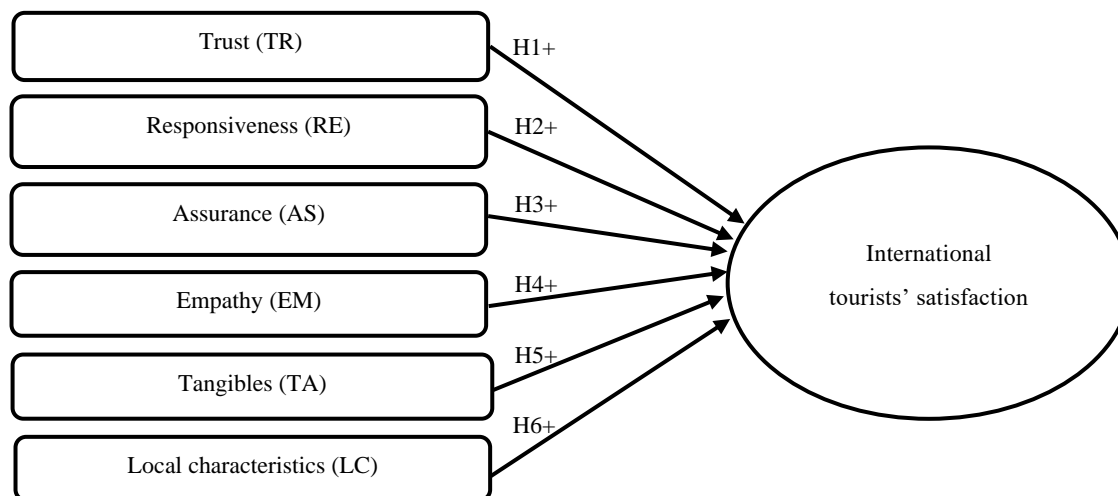


Figure 1. Proposed research model (Source: Compiled by the authors)

## RESEARCH METHODOLOGY

### Analytical methods

To demonstrate the factors influencing the satisfaction of international tourists with ecotourism in the Mekong Delta region, the following quantitative analysis methods were used in the following order (Figure 2): Step 1: Testing the reliability of the scales using Cronbach's alpha; Step 2: Exploratory Factor Analysis (EFA); Step 3: Confirmatory Factor Analysis (CFA); Step 4: Covariance-based Structural Equation Modeling (CB-SEM).

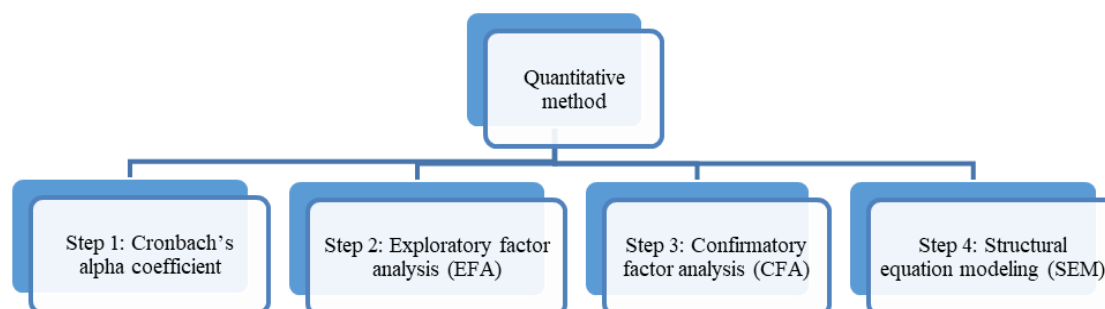


Figure 2. Research methodology flowchart (Source: Compiled by the authors)

### Data collection method

In this study, convenient sampling was employed due to the difficult accessibility of the survey subjects. Direct interviews were used to collect data. The survey participants were international tourists who had experienced ecotourism services in the Mekong Delta region (Vietnam). The survey was conducted from November 2023 to December 2023. Several representative ecotourism sites in the Mekong Delta region were selected for the survey, including Vam Xang Ecotourism Area (Can Tho City), Gao Giong Ecotourism Area (Dong Thap Province), Tan Lap Floating Village Ecotourism Area (Long An Province), Con Phung Ecotourism Area (Ben Tre Province), and Thoi Son Ecotourism Area (Tien Giang Province). The sample size of the study reached 260. After excluding unsuitable survey responses (due to lack of reliability), a total of 256 valid survey responses were used to test the research hypotheses.

## RESEARCH RESULTS AND DISCUSSION

### Evaluating scale reliability

Based on the test results in Table 1, Cronbach's alpha of all scales meets the requirements, with values ranging from 0.835 to 0.897 (Nunnally, 1978; Peterson, 1994). The EFA analysis results meet the requirements based on statistical indices as follows: The suitability test of the model is ensured ( $0.5 < KMO = 0.898 < 1.0$ ) with the Bartlett test achieving significance level ( $Sig. = 0.00 < 0.05$ ); Factor loadings of observed variables  $> 0.5$  (Anderson and Gerbing, 1988; Hair et al., 1998). The analysis results have formed 07 factors with 28 observed variables similar to the proposed research model.

The CFA analysis results are ensured with statistical indices as follows: Chi-square/df =  $1.574 < 2.0$  with P-value =  $0.000 \leq 0.05$ ; TLI and CFI have values of 0.949 and 0.955, respectively, both  $> 0.9$ ; RMSEA =  $0.047 < 0.08$  (Bentler and Bonett, 1980; Carmines and McIver, 1981). This indicates that the model fits the market data. According to the calculated composite

reliability (CR) and average variance extracted (AVE) in Table 2, all scales meet the conditions (Fornell and Larcker, 1981). Additionally, the test results show that the correlation between the conceptual structures achieves discriminant validity. Therefore, the data meets the requirements for conducting Structural Equation Modeling (SEM).

Table 1. Results of reliability test of scales

Scale	Cronbach's alpha	Corrected Item-Total Correlation	Factor loading
Trust (TR)			
TR1	0.849	0.665	0.706
TR2		0.716	0.824
TR3		0.703	0.787
TR4		0.670	0.741
Responsiveness (RE)			
RE1	0.897	0.784	0.862
RE2		0.771	0.748
RE3		0.765	0.762
RE4		0.760	0.877
Assurance (AS)			
AS1	0.894	0.774	0.817
AS2		0.779	0.845
AS3		0.753	0.774
AS4		0.756	0.811
Empathy (EM)			
EM1	0.885	0.784	0.831
EM2		0.696	0.744
EM3		0.755	0.829
EM4		0.763	0.808
Tangibles (TA)			
TA1	0.835	0.619	0.645
TA2		0.676	0.773
TA3		0.707	0.808
TA4		0.661	0.748
Local characteristics (LC)			
LC1	0.856	0.718	0.768
LC2		0.668	0.788
LC3		0.717	0.736
LC4		0.692	0.792
Satisfaction (SA)			
SA1	0.891	0.766	0.729
SA2		0.762	0.690
SA3		0.745	0.704
SA4		0.772	0.760

Table 2. Correlation matrix between conceptual structures

	CR	AVE	EM	AS	TR	RE	TA	LC	SA
EM	0.886	0.660	0.812						
AS	0.894	0.679	0.491	0.824					
TR	0.850	0.586	0.253	0.232	0.766				
RE	0.896	0.684	0.225	0.376	0.486	0.827			
TA	0.836	0.561	0.383	0.452	0.146	0.403	0.749		
LC	0.856	0.598	0.322	0.370	0.370	0.492	0.463	0.773	
SA	0.892	0.673	0.506	0.551	0.516	0.632	0.558	0.680	0.820

### Testing research model and research hypotheses

According to the test results in Table 3 and Figure 3, all research hypotheses are accepted with 95% confidence. This indicates that the satisfaction of international tourists with ecotourism in the Mekong Delta region is influenced by 06 factors, including trust, responsiveness, assurance, empathy, tangible facilities, and local characteristics.

Table 3. Results of estimating relationships in the SEM model

Hypothesis	Relationship	Estimate	P-value	Result
H1	TR → SA	0.189	0.001	accepted
H2	RE → SA	0.227	0.000	accepted
H3	AS → SA	0.148	0.011	accepted
H4	EM → SA	0.172	0.002	accepted
H5	TA → SA	0.161	0.009	accepted
H6	LC → SA	0.314	0.000	accepted

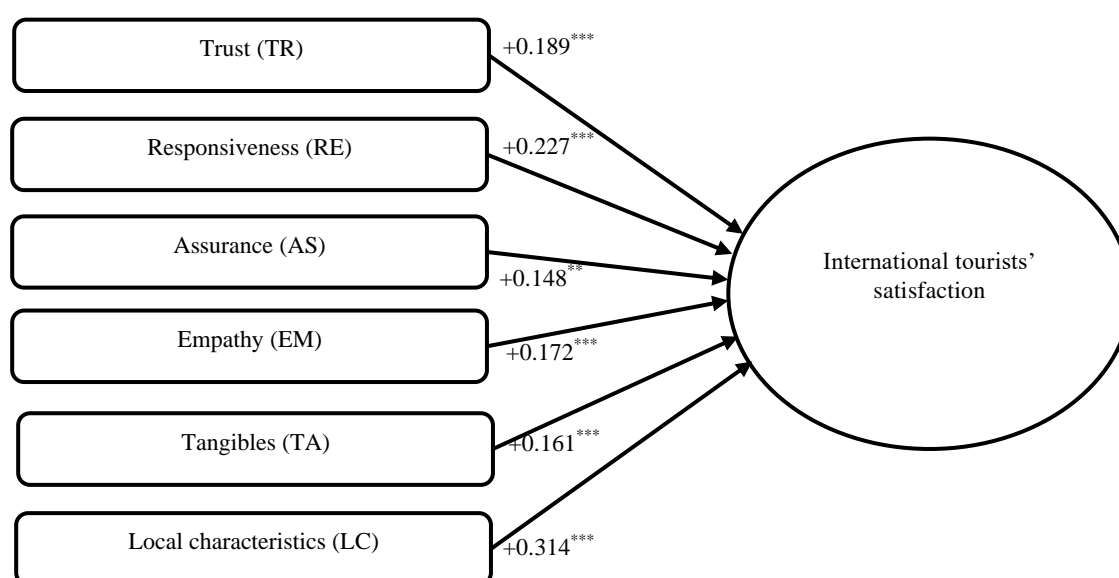


Figure 3. Research model testing result (Source: Compiled by the authors)  
 Note: \*\*\* statistical significance level 1%, \*\* statistical significance level 5%

## DISCUSSION

Based on the estimation results in Table 3, trust positively influences the satisfaction of international tourists with ecotourism in the Mekong Delta region with a standardized estimation value of 0.189 and a statistical significance p-value of 0.001. This indicates that when ecotourism destinations ensure reliability in providing services on time, service quality, and service commitments, the satisfaction level of international tourists will be higher. The research result further affirms that trust is an important component of service quality, positively affecting customer satisfaction (Ibrahim et al., 2015; Cilliers et al., 2018; Shah et al., 2018; Long, 2019; Masrurul, 2019).

The result in Table 3 indicates that responsiveness positively influences the satisfaction of international tourists with ecotourism in the Mekong Delta region. This hypothesis is accepted after considering the standardized estimation value of 0.227 and a statistically significant p-value of 0.000. The willingness to respond to the requests of international tourists, especially exceptional requests, enhances their satisfaction with ecotourism in the Mekong Delta region. The study results demonstrate that responsiveness is an important component of service quality, positively impacting customer satisfaction. The finding is consistent with several studies in the tourism field proposed by Ibrahim et al. (2015), Cilliers et al. (2018), Shah et al. (2018), Long (2019), Masrurul (2019), Thi et al. (2020).

Based on the test results in Table 3, assurance positively impacts the satisfaction of international tourists with ecotourism in the Mekong Delta region, with a standardized estimation value of 0.148 and a statistically significant p-value of 0.011. This indicates that safety and security during the tourism service experience are of great concern to international tourists. If ecotourism destinations ensure safety and security for international tourists, their satisfaction will be higher. The research result continues to affirm that assurance is a very important criterion of service quality, influencing customer satisfaction with service quality. This result is similar to several studies proposed by Shah et al. (2018), Thuy (2020), Hong et al. (2022), Cheraghzadeh et al. (2023), Sapkota et al. (2023), Son et al. (2023).

The research results from Table 3 show that empathy positively influences the satisfaction of international tourists with ecotourism in the Mekong Delta region, with a standardized estimation value of 0.172 and a statistical significance p-value of 0.002. The empathy of staff during service delivery and their understanding of the psychological needs of tourists contribute to higher satisfaction with service quality. Additionally, the hospitable attitude of residents is also an important factor leading to the satisfaction of international tourists. This finding is consistent with several studies in the tourism field proposed by Shah et al. (2018), Long (2019), Masrurul (2019), and Thanh and Ha (2021).

Based on the estimation result in Table 3, tangible factors are positively correlated with the satisfaction of international tourists with ecotourism in the Mekong Delta region. This hypothesis is accepted after considering the standardized estimation value of 0.161 and a statistical significance p-value of 0.009. Therefore, investment in infrastructure, facilities, and equipment by ecotourism destinations will improve service quality and enhance the satisfaction of international tourists. Indeed, tangible factors contribute positively to the quality service experience of tourists (Hai et al., 2023). The finding is consistent with studies proposed by Ibrahim et al. (2015), Shah et al. (2018), Long (2019), Masrurul (2019), Thuy (2020), Hong et al. (2022), Cheraghzadeh et al. (2023), Sapkota et al. (2023), and Sugiyama et al. (2024).

Table 3 indicates that local characteristics positively affect the satisfaction of international tourists with ecotourism in the Mekong Delta region, with a standardized estimation value of 0.314 and a statistical significance p-value of 0.000. This factor has the most impact on the satisfaction of international tourists. The novelty, attractiveness, and uniqueness (culinary, natural landscapes, indigenous products) of destinations provide a special experience for international tourists, thereby increasing their satisfaction. The research result confirms that local characteristics are the factors that create differentiation and leave an impression on tourists, enhancing their satisfaction (Thanh and Ha, 2021; Son et al., 2023).



## CONCLUSION

Satisfaction is an important factor contributing positively to the success of tourist destinations. The research results have demonstrated the factors influencing the satisfaction of international tourists with ecotourism in the Mekong Delta region, Vietnam. The study has shown that the satisfaction of international tourists with ecotourism is positively influenced by 06 factors, including trust, responsiveness, assurance, empathy, tangible factors, and local characteristics. Among these, local characteristics have the most impact on the satisfaction of international tourists with ecotourism in the Mekong Delta region. The research results provide useful reference materials for destination managers in the Mekong Delta region and researchers in the tourism field. Despite the achieved results, the study still has certain limitations.

First, this is a cross-sectional study, thus its generalizability is limited; Second, the study only selected a few typical ecotourism destinations in the Mekong Delta region for investigation, which somewhat affects the representativeness of the service quality of ecotourism in the region; Third, although the sample size ensures statistical power to test the research model, it is limited in terms of the diversity of international tourists (focused only on English-speaking tourists); Fourth, the study did not assess differences in international tourist satisfaction based on demographic characteristics.

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## THE MODERATING ROLE OF INTERNAL MARKETING ON THE RELATIONSHIP BETWEEN ORGANIZATIONAL TRUST AND JOB ENGAGEMENT: EVIDENCE FROM HOTELS AND TRAVEL AGENCIES

**Amira Haliem Ibrahim AWAD\*** 

Tourism Studies Department, Faculty of Tourism and Hotels, Helwan University, Cairo, Egypt, e-mail: mirabas18@yahoo.com

**Mohamed Khalil ELNAGGAR** 

Department of History and Islamic Civilization, College of Arts, Humanities and Social Sciences, University of Sharjah,  
Sharjah, United Arab Emirates, e-mail: mo.alnajar@sharjah.ac.ae

**Ahmed Abd El-Karim Ghanem Abd EL-HALIM** 

Hotel Studies Department, Al Alson Higher Institute for Tourism, Hotels and Computer, Caro, Egypt, e-mail: Ghanem-ahmed84@yahoo.com

**Maisa Fathey Abd El-Latief AHMED** 

Hotel Studies Department, Higher Institute of Tourism and Hotels, (E.G.O.T.H), Luxor, Egypt, e-mail: mfl11@fayoum.edu.eg

**Sara Atef Mokhtar WAHBA** 

Tourism Studies Department, Faculty of Tourism and Hotels, Beni-Suef University, Beni-Suef, Egypt, e-mail: Dr.sara\_wahba@hotmail.com

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**Abstract:** Employees play a crucial role in service firms, significantly influencing performance and value creation. Success in this regard depends on the efficient management of human resources as internal consumers. Therefore, this study examines the influence of organizational trust (OT) on job engagement (JE) and explores the moderating role of internal marketing (IM) on the relationship between organizational trust and job engagement. The study model was formulated and tested using data from 448 full-time employees in five-star hotels and category-A travel agencies in Egypt, specifically, in the Greater Cairo area. Findings revealed that OT positively impacts JE. IM positively impacts OT and JE. In addition, IM has a positive moderating impact on the relationship between OT and JE.

**Keywords:** Organizational trust, job engagement, internal marketing, five-star hotels, category-A travel agencies

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### INTRODUCTION

The turbulent hospitality and tourism industry demands a competitive workforce capable of exceeding expectations to ensure organizational survival and sustainability (Meynaar et al., 2021; El-Sherbeeney et al., 2023; Alshehri et al., 2024). Recognizing this critical need, the industry is strategically shifting its focus from conventional elements to cultivating passionate and engaged employees (Han et al., 2023; Khairy et al., 2023a; Khairy et al., 2023c). This shift prioritizes fostering a work environment that inspires dedication, vigor, and absorption, ultimately leading to superior performance and customer satisfaction (Liu et al., 2022; Kanjanakan et al., 2023). JE defined as a positive work-related state characterized by dedication, vigor, and absorption (Schaufeli et al., 2006), is demonstrably linked to higher levels of employee motivation and performance (Ashour et al., 2023). Vigor reflects the willingness to invest sustained effort and persevere through challenges. Dedication signifies a strong sense of involvement and identification with the organization and one's role. Finally, absorption denotes a state of complete immersion and focus on work tasks (Kulikowski, 2019). Research has identified several factors influencing JE (Liu et al., 2022), with two emerging as particularly relevant: organizational trust and internal marketing (Khawaja and Ahmed, 2021).

While interpersonal trust thrives on personal interactions, OT delves deeper, examining the confidence and openness employees exhibit towards their organization (Berraies et al., 2021). The current study focused on OT, which is defined as encompassing employees' confidence in the organization's actions and their willingness to disclose themselves to another party (Hon and Grunig, 1999), and their overall perception of the organization's trustworthiness (Nyhan and Marlowe, 1997). OT transcends mere faith; it embodies employees' belief that the organization will operate with integrity, keep its promises, and deliver on its commitments (Berraies et al., 2021). Previous literature indicated three pillars that underpin OT: integrity, which reflects employees' belief that the organization adheres to ethical principles and acts justly, considering the needs of all stakeholders (Vanhala et al., 2016); dependability which is the belief that the organization will

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\* Corresponding author

honor its promises and commitments (Connelly et al., 2018); and competence, which refers to the confidence employees have in the organization's skills, resources, and leadership to deliver on its promises and navigate challenges successfully (Lee and Li, 2021). Previous studies highlighted the interplay of various factors in cultivating OT, such as leadership style, employee empowerment, internal marketing, organizational structure, organizational culture, and perception of organizational justice (e.g., Kesen et al., 2017; Alshaabani et al., 2020; Berraies et al., 2021; Khairy et al., 2023b; Shuhua and Kanokporn, 2023).

The success of any hospitality or tourism enterprise hinges on its ability to deliver exceptional guest experiences (Bharwani and Mathews, 2021; Alsubaihi et al., 2023; Deac et al., 2023; Suksutdhi, 2024). This is profoundly influenced by the motivation, engagement, and customer-centricity of its employees. This is where the strategic philosophy of IM comes into play (Hashad et al., 2023). IM was defined as treating employees like valued customers, crafting jobs that fulfill their needs and aspirations while aligning with the organization's goals (Berry and Parasuraman, 2004). IM transcends traditional marketing practices. It recognizes employees as valuable internal customers whose needs and aspirations deserve consideration (Matanda and Ndubisi, 2013). IM goes beyond simple communication; it's about activating every employee as a brand ambassador (Narteh and Odoom, 2015). As Shazia (2017) stated, it's more crucial than external marketing because engaged employees become powerful allies in achieving organizations' marketing goals. Previous studies indicated that IM leads to virtuous outcomes such as increased motivation, improved job performance, stronger organizational commitment, and enhanced organizational citizenship behaviors (Joung et al., 2015; Duyan, 2021; Hashad et al., 2023). Previous research has extensively explored the connection between organizational trust and job engagement in various contexts, including higher educational institutions (Yildiz, 2016), the health sector (Al-Weshah, 2019; Ragab and Saleh, 2020; Håvold et al., 2021), and retail food businesses (Khawaja and Ahmed, 2021).

Despite the acknowledged importance of organizational trust in the hospitality and tourism sector (Khairy et al., 2023b), a significant research gap exists, as no prior studies have investigated its potential impact on employee job engagement within this sector. This notable absence underscores the need to recognize the direct link between OT and JE in hospitality and tourism organizations. To date, there has been a dearth of research examining the direct relationship between OT and JE or the potential indirect correlation between these constructs, considering IM as a potential mediating/moderating factor. This gap in the literature is particularly pronounced within Egyptian hospitality and tourism organizations.

Consequently, the study aimed to address this gap by investigating the relationship between OT and JE. Additionally, it explored the moderating role of IM in the OT-JE relationship within Egyptian hotels and travel agencies. Through these efforts, the research endeavors to contribute valuable insights to the existing literature and advance our understanding of the dynamics influencing employee engagement in the hospitality and tourism sector.

### **Organizational Trust and Employee Job Engagement**

JE transcend mere attendance; it embodies the investment of one's full self—cognitive, emotional, and physical—into their work roles (Schaufeli, 2006). This intensified commitment manifests as a willingness to contribute beyond formal requirements (Kazimoto, 2016). Engaged employees demonstrate enhanced job satisfaction, positive organizational emotions, and a strong alignment with the organization's mission and values (Knight et al., 2017). JE is not a uniform concept. It represents a complex interplay of attitudes towards work, organizations, and tasks, influenced by both organizational and personal factors (Nešić et al., 2020). Strong relationships, both personal and professional, thrive on a foundation of mutual respect and trust (Kandade et al., 2021). This principle extends to the workplace, where respect, trust, and performance form the cornerstones underpinning employee engagement (Melhem and Al-Qudah, 2019; Rahal and Farmanesh, 2022). The logical link between OT and JE is undeniable. Leaders bear a significant responsibility for shaping employee morale, providing guidance, and demonstrating reliable leadership (Stander et al., 2015). When employees perceive them as effectively fulfilling these roles, it energizes them to connect with their work, exhibit passion, and dedicate themselves fully, leading to predictable increases in job engagement (Khawaja and Ahmed, 2021). This positive influence extends to immediate supervisors as well. When they facilitate work, offer encouragement, collaborate in problem-solving, and recognize efforts authentically, employees trust them more, leading to predictable boosts in JE (Maximo et al., 2019; Basit, 2021). Social exchange theory (SET) provides a compelling lens to understand the link between OT and JE. This theory, proposed by Blau (1964, 2017), suggests that individuals view work relationships as a social exchange built on reciprocity. When employees perceive trust in their organization and management, they feel obligated to reciprocate that trust through enhanced dedication and engagement. They believe that if the organization treats them fairly, they should return the favor by being more dedicated and productive (Ugwu et al., 2014; Alshaabani et al., 2021). Hence, the study hypothesized that:

**H1:** Organizational trust increases employees' job engagement.

### **Internal Marketing and Organizational Trust**

Trust was defined as a psychological state where individuals choose vulnerability based on positive expectations of another's intentions and actions (Rousseau et al., 1998). This trust can manifest in various forms, ranging from trust in colleagues to trust in management and the organization itself (Wildman et al., 2012). OT was defined as the extent to which employees confide in their organization's intentions and actions (Guzzo et al., 2021). OT serves as a cornerstone for positive employee attitudes and behaviors. Research demonstrates its crucial role in influencing various aspects of the workplace, including job satisfaction, job engagement, commitment, and turnover (Biełkowska et al., 2018; Håvold et al., 2021; Mubashar et al., 2022). OT isn't simply a desirable attribute; it's a strategic imperative. OT influence is shaped significantly by the actions, behaviors, and communication of leaders, particularly managers (Dai et al., 2013). This is

where effective internal marketing strategies become instrumental in shaping employee perceptions of trust (Mazzei and Ravazzani, 2015). IM empowers employees with the knowledge, skills, and engagement they need to become advocates for the organization's mission and brand. This involves providing training and development opportunities, fostering clear and regular internal communication, and implementing strategic initiatives that deepen their understanding of the overall marketing orientation (Shazia, 2017). The impact of communication goes beyond mere messaging. Fuoli et al. (2017) highlight the nuanced effects of different communication approaches on trust, particularly in its rebuilding phase. This underscores the critical role of leaders in intentionally fostering organizational trust through their communication. OT, the bedrock of positive employee-management relationships, hinges on effective internal communication; internal communication is one aspect of internal marketing (Huang and Rundle-Thiele, 2015). It also thrives on two-way, symmetrical communication. This communication style emphasizes reciprocity, employee voice, responsiveness, and empowerment, fostering a workplace environment where employees feel heard, valued, and trusted in the organization (Kang and Sung, 2017). This crucial link becomes evident when considering that both trust and reliable information are essential for fostering mutual understanding, cooperation, and ultimately, job engagement. Based on SET, viewing employees as valued stakeholders fosters trust and belief in the organization (Akroush et al., 2013). This customer-centric approach emphasizes respectful internal communication and investment in employee development. By providing training and skills enhancement, organizations can motivate employees to perform better and stay loyal (Kesen et al., 2017). Furthermore, reciprocal communication fosters a culture of joy, pride, and appreciation strengthening trust and organizational success (Yue et al., 2021). This virtuous cycle demonstrates that treating employees as internal customers is not just ethical, but also leads to improved organizational trust. Therefore, the following hypothesis was formulated:

**H2:** Internal marketing increases employees' organizational trust.

### **Internal Marketing and Employee Job Engagement**

In today's competitive landscape, organizations are recognizing the strategic importance of a satisfied and engaged workforce (Mansour, 2020). This understanding fuels the growing adoption of IM, a managerial philosophy that acknowledges the direct link between employee well-being and customer satisfaction (Kimura, 2017). IM, essentially, is a direct marketing strategy that views employees as internal customers whose needs and aspirations deserve focused attention (Kimura, 2017). By offering fulfilling internal jobs and addressing employee concerns, organizations aim to achieve their overall objectives while fostering a motivated and loyal workforce (Li and Ko, 2021). IM initiatives hold the key to unlocking employee ownership, a powerful force that drives increased effectiveness and job engagement. IM fosters a sense of personal responsibility and commitment among employees, ultimately boosting their job engagement (Al-Weshah, 2019). The relationship between IM practices and employee JE is a critical area of research, with the SET offering a compelling perspective for this correlation (Imani et al., 2020). SET posits that individuals engage in social exchanges based on perceived fairness and reciprocity (Blau, 2017). Organizations that invest in IM practices create a favorable social climate to motivate and satisfy employees' needs, encouraging employees to reciprocate through increased JE (Yildiz, 2016; Ragab and Saleh, 2020). Contemporary research underscores the strategic significance of IM in fostering employee JE, particularly within the realm of cognitive engagement (Črnjar et al., 2020). This targeted approach, focused on motivating employees, cultivating loyalty, implementing effective internal communication, and investing in training, demonstrably enhances employee focus, and dedication (Yildiz, 2016). Drawing upon SET, the current study posits that hospitality and tourism organizations that treat their employees as valued internal customers and design tasks that fulfill their needs will foster a sense of obligation within employees to reciprocate replies through more job engagement. Consequently, the following hypothesis was formulated:

**H3:** Internal marketing increases employees' job engagement.

### **The Moderating Role of Internal Marketing**

Employee marketing, also known as IM, is a strategic practice of communicating a company's goals, mission, culture, and brand directly to its employees (Joung et al., 2015). This approach aims to create a knowledgeable and engaged workforce that feels deeply connected to the organization (Kimura, 2017). Numerous studies have highlighted the direct correlation between robust IM practices and elevated employee JE (e.g., Al-Weshah, 2019; Črnjar et al., 2020). For example, Črnjar et al. (2020) investigated the impact of various IM elements on employee JE. Their findings revealed that internal communication held the strongest link to all engagement dimensions, particularly emotional engagement. Further analysis showed that motivation and loyalty, among other elements of IM, also had a strong association with emotional engagement. In the same vein, Yildiz (2016) concluded that there is a positive link between IM and JE. When treated like valued "internal customers", employees exhibited increased motivation, satisfaction, and resilience. They displayed greater enthusiasm and pride in their work, demonstrating a stronger emotional connection and focus.

Effective internal communication is the cornerstone of successful IM (Huang and Rundle-Thiele, 2015). IM focuses on regularly sharing company news, updates, and achievements, which fosters transparency and builds employees' OT (Kesen et al., 2017). Organizations prioritizing communication and training foster a more satisfied and engaged workforce. By prioritizing these IM elements, organizations cultivate a more engaged, satisfied, and ultimately trusting workforce. Additionally, IM encourages open communication and feedback, creating a two-way dialogue that strengthens employee JE and commitment (Yildiz, 2016; AlWadi et al., 2023). Building trust between organizations and employees is crucial for fostering JE (Yildiz, 2016). The current study argues that IM plays a key role in moderating this relationship, drawing from the principles of SET (Blau, 2017). Based on SET, when organizations invest in their employees through IM practices, they



offer valuable "rewards" like open communication, advancement chances, empowerment, constructive feedback, training, and development. These investments foster employees' OT (Kesen et al., 2017). This trust, in turn, leads to increased satisfaction and JE, as evidenced by research (Håvold et al., 2021; Khawaja and Ahmed, 2021; Mubashar et al., 2022).

Consequently, the study hypothesized that:

**H4:** IM moderates the relationship between OT and JE; it strengthens the OT→JE relationship.

The conceptual framework of the study is illustrated in Figure 1 below.

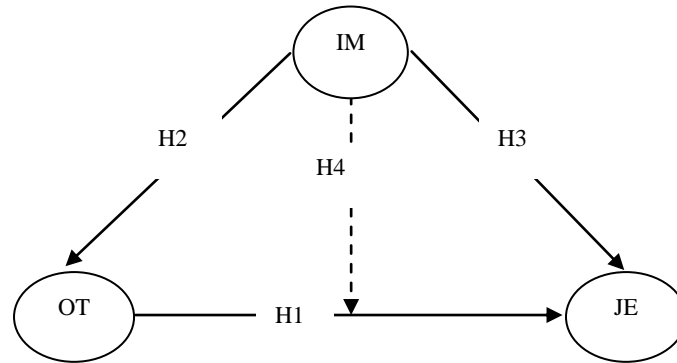


Figure 1. Conceptual framework of the study

## METHODOLOGY

### Measures and Instrument Development

The study utilized a self-administered questionnaire divided into two sections, one examining latent variables and the other focusing on study sample characteristics like gender, age, education, experience, and work organization. The study assessed organizational trust using a 9-item scale suggested by Pearce et al. (1994). For instance, "The performance appraisal system shows that this organization trusts its employees" and "The personnel policies suggest that this organization has confidence in its employees". The study also used a 5-item scale from Jung et al. (2021) to measure job engagement. For example, "My job inspires me" and "I am enthusiastic about my job". Lastly, the study utilized a 12-item scale developed by Wu et al. (2013) for measuring internal marketing. For example, "Two-way information flow across management levels is encouraged" and "I am made aware of the overall policies and goals of my company".

### Sampling, Data Collection, and Data Analysis

The study model was tested using data from full-time staff in five-star hotels and category-A travel agencies in Egypt, which dominate the hospitality and tourist industry and both deal with international visitors. This study used a convenience sample technique and included personnel from 22 five-star hotels and 52 travel agencies category-A in the Greater Cairo area. In the Greater Cairo area, there are 30 five-star hotels and 1666 category-A travel agencies, according to the Egyptian Ministry of Tourism and Antiquities (2022). To acquire permission to distribute the surveys inside their workplace, the human resources managers of the properties that are the subject of the investigation were contacted. A total of 800 questionnaires were issued, however, 448 (56% response rate) made up the research sample. The study employed PLS-SEM, a popular analytical technique in tourism and hospitality research, to assess research hypotheses via the usage of statistical software namely, WarpPLS 7.0. PLS is a technique used when theory is insufficiently grounded, variables or measures don't fit a specific measurement model, and the researcher primarily focuses on predicting the dependent variable.

### Participants' characteristics

The study involved 448 employees, with men comprising 76.8%. 59.4% had a bachelor's degree, 40.2% aged 18-30, and 43.8% had one to four years of experience. More precisely, 45.5% were employed by category-A travel agencies, while 54.5% were employed by five-star hotels. The detailed participants' profile is presented in Table 1 below.

Table 1. Participants' characteristics (N=448)

		Frequency	Percent
Gender	Male	344	76.8
	Female	104	23.2
Age	18:< 30 years	180	40.2
	30 : <45 years	174	38.8
	≥45 years	94	21.0
Education	Other (High schools/institutes etc.)	98	21.9
	Bachelor	266	59.4
	Master/PhD	84	18.8
Tenure	1:< 4 years	196	43.8
	4 to ≤8 years	178	39.7
	>8 years	74	16.5
Enterprise	5-star hotels	244	54.5
	Category-A travel agencies	204	45.5

## RESULTS

### Reliability and validity

According to Table 2, the study's confirmatory factor analysis demonstrated acceptable item loadings ( $>0.50$ ), reliability ( $>0.70$ ), and validity ( $AVE > 0.50$ ). In addition, with a value of  $\leq 3.3$ , the variance inflation factor (VIF) is computed to show pathological collinearity and the absence of common method bias in the model. According to data presented in Table 3, the discriminant validity of the current study is established because the square root of each AVE value for each latent construct is significantly greater than any correlation between any pair of latent constructs.

Table 2. Item loadings, Cronbach Alpha, CR, AVE, and VIF  
(CR: Composite reliability; CA: Cronbach's alpha; AVE: average variance extracted; VIF: variance inflation factors)

Construct	Item loading	CR	CA	AVE	VIF
Organizational Trust (OT)	-	0.834	0.774	0.513	1.093
OT .1	0.682				
OT .2	0.747				
OT .3	0.751				
OT .4	0.666				
OT .5	0.673				
OT .6	0.748				
OT .7	0.626				
OT .8	0.837				
OT .9	0.691				
Job Engagement (JE)	-	0.940	0.917	0.758	1.187
JE .1	0.782				
JE .2	0.949				
JE .3	0.941				
JE .4	0.737				
JE .5	0.923				
Internal Marketing (IM)	-	0.945	0.936	0.590	1.512
IM .1	0.601				
IM .2	0.625				
IM .3	0.822				
IM .4	0.794				
IM .5	0.819				
IM .6	0.772				
IM .7	0.778				
IM .8	0.809				
IM .9	0.781				
IM .10	0.753				
IM .11	0.788				
IM .12	0.834				

Table 3. Discriminant validity results

	OT	JE	IM
Organizational Trust (OT)	0.611	0.123	0.209
Job Engagement (JE)	0.123	0.871	0.274
Internal Marketing (IM)	0.209	0.274	0.768

### The research model fit

As illustrated in Table 4, the study research model successfully met all model fit and quality indices recommended by Kock (2021).

Table 4. Model fit and quality indices

Model fit indices	Results
"Average path coefficient" (APC)	0.341, $P < 0.001$
"Average R-squared" (ARS)	0.246, $P = 0.003$
"Average adjusted R-squared" (AARS)	0.230, $P = 0.004$
"Average block VIF (AVIF)	1.186
"Average full collinearity VIF" (AFVIF)	1.315
"Tenenhaus GoF" (GoF)	0.409
"Simpson's paradox ratio" (SPR)	1.000
"R-squared contribution ratio" (RSCR)	1.000
"Statistical suppression ratio" (SSR)	1.000
"Nonlinear bivariate causality direction ratio" (NLBCDR)"	0.750

### The Multi-group analysis

The Multi-group analysis confirmed no significant changes in path coefficients were observed between employees of travel agencies and five-star hotels due to workplace differences.

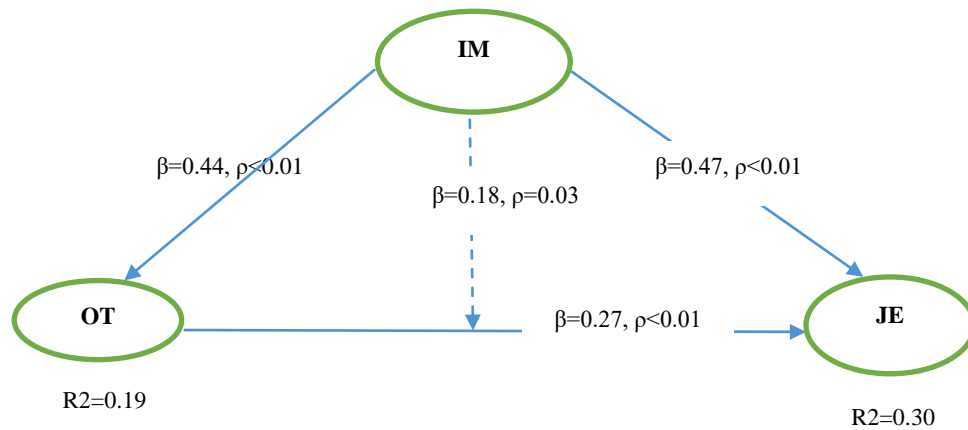


Figure 2. Final study results

### Results of testing hypotheses

As shown in Figure 2. The study revealed that organizational trust (OT) positively impacts job engagement (JE) ( $\beta=0.27$ ,  $P<0.01$ ). Therefore, the study supports the hypothesis that higher OT leads to higher JE. In addition, internal marketing (IM) positively impacts OT ( $\beta=0.44$ ,  $P<0.01$ ) and JE ( $\beta=0.47$ ,  $P<0.01$ ). This means that higher IM leads to higher OT and JE, thus, H2 and H3 are supported. Moreover, IM has a positive moderating impact on the relationship between OT and JE ( $\beta=0.18$ ,  $P=0.03$ ), thus H4 is also supported. Figure 2 also revealed that IM interprets 19% of the variance in OT ( $R^2=0.19$ ), while OT and IM interpret 30% of the variance in JE ( $R^2=0.30$ ).

### DISCUSSION

Employees are crucial for service firms, influencing performance and value creation. Effective management of human resources as internal clients is essential for their success (Huang et al., 2019). However, the impact of internal marketing on organizational trust and job engagement has not been thoroughly examined before. Therefore, this study examines the influence of organizational trust (OT) on job engagement (JE) in the tourism and hospitality industry and explores the moderating role of internal marketing (IM) on the relationship between organizational trust and job engagement. Findings revealed that organizational trust (OT) positively impacts job engagement (JE), internal marketing (IM) positively impacts OT and JE, in addition, IM has a positive moderating impact on the relationship between OT and JE. The results align with and can be interpreted based on the findings of previous studies. Pascual-Fernández et al. (2020) claimed that internal marketing involves treating employees as valuable customers, generating information about their needs, and implementing strategies to meet their requirements, thereby building internal market knowledge. In addition, internal marketing involves understanding employee needs and implementing strategies to respond to internal market wants. This includes employee participation in decision-making and leveraging market knowledge in service development. It also creates customer-oriented employees who are motivated and trained to provide superior value and excellent service. It fosters an environment where employees can solve problems and empower tourism and hotel employees (Huang et al., 2019).

Organizations that communicate their objectives and vision to employees boost performance, satisfaction, and engagement (Back et al., 2011; Kanyurhi and Akonkwa, 2016). Developing personnel is a central element of internal marketing orientation, involving training, materials, courses, and supervisors, which significantly increases job satisfaction and individual performance (Nemteanu and Dabija, 2021). In addition, organizations that treat employees as internal clients maintain and increase satisfaction over time (Frye et al., 2020). Supporting employee development through appreciation and recognition leads to increased job satisfaction. Psychosocial support and mentoring quality directly impact employee development (Nemteanu and Dabija, 2021).

Internal marketing focuses on addressing the needs and concerns of employees fairly and equally within an organization. Organizational commitment stems from employees' emotional response to internal marketing practices, including value exchange, market segmentation, communication, management concerns, work/family incentives, and job development (Moreira et al., 2020). Moreover, internal marketing practices can enhance employee trust and relationship development between organizations and employees; it fosters a culture of joy, pride, and appreciation, ultimately increasing trust and trust in the organization (Kang and Sung, 2017). Organizations should communicate timely, accurate information to employees, involve them in decision-making, and consider their impact on work and life to build trust and authentic intentions (Men et al., 2021; Qin and Men, 2023).

### Theoretical and practical implications

Our study findings offer valuable insights into the relationship between organizational trust, internal marketing, and job engagement, enriching the understanding of these concepts within the framework of social exchange theory. Firstly, the results resonate with the core tenets of SET, demonstrating that organizations work to facilitate work, offer encouragement, collaborate in problem-solving, and recognize efforts justly. When employees perceive these behaviors as consistently practiced, it fosters trust in their organizations. This trust, in turn, ignites a sense of job engagement. Secondly, the study

highlighted the role of internal marketing in increasing employees' organizational trust and job engagement. Building organizational trust is no accident. It requires a deliberate approach that shapes employee perceptions of leadership, values, and commitment. In this context, internal marketing emerges as a powerful and strategic tool by empowering employees with knowledge, fostering trust through communication, and providing training and development opportunities. Furthermore, internal marketing transcends mere communication; it recognizes employees as valued internal customers. Focusing on motivation, loyalty, clear communication, and investing in training cultivates job engagement. Organizations adopting this approach design tasks that fulfill employees' needs, fostering a sense of reciprocity. This translates to increased job engagement as employees feel valued and connected to the organization's goals. Thirdly, the study highlighted the potential of internal marketing as a moderator between organizational trust and employee job engagement. The study proposed that internal marketing serves as an effective communication channel for conveying the organization's commitment to fairness, respect, and appreciation for employees. This, in turn, fosters increased levels of trust, which ultimately leads to enhanced employee engagement. This implies a positive cycle where effective internal marketing fosters trust, which in turn leads to higher engagement, ultimately benefiting both employees and the organization.

Besides the theoretical contributions, the study provides important practical implications for managers and practitioners. First, our research emphasizes organizational trust as a critical driver of employee job engagement within the hospitality and tourism industry. It's crucial to remember that building trust is not solely a managerial responsibility but a shared endeavor between managers and employees. Regarding employees' roles, they must proactively communicate their changing needs and concerns to managers, take initiative in their personal and professional development, deliver excellent work to showcase their commitment to the organization's success and collaborate effectively with colleagues to achieve shared goals. For managers' roles, they must keep employees informed and foster open communication, ensure fair treatment and respect for all employees, invest in training and opportunities for employee growth, and acknowledge and appreciate employee contributions to build morale. Second, the hospitality and tourism industry thrives on engaged employees. Our study suggested that organizations should prioritize job engagement as a key selection attribute when recruiting employees. By prioritizing engagement in recruitment, hospitality and tourism organizations can secure motivated and enthusiastic employees who contribute significantly to the team and the organization's success.

This translates to a positive work environment that benefits both employees and the organization. Third, utilizing internal marketing strategies serves as a crucial tool for fostering trust within an organization, facilitating collaboration, and facilitating the exchange of knowledge among various parties. This, in turn, promotes organizational trust and has a positive impact on the engagement of employees. In the context of hospitality and tourism organizations, the adoption of internal marketing practices involves significant investments in training and development programs designed to enhance the skills and competencies of their workforce. The focus on employee development not only leads to heightened organizational trust but also contributes to increased levels of employee engagement. Organizations demonstrate a strong commitment to nurturing their employees by providing avenues for professional growth and advancement. This dedication, in turn, becomes a catalyst for building trust within the organization and bolstering employee engagement. Continuous training initiatives not only keep employees updated on industry trends but also contribute to ongoing improvement in their job engagement, ultimately benefiting the whole organization.

### **Limitations and future research**

While this study offers valuable insights into organizational trust, job engagement, and internal marketing in the hospitality and tourism sector, there's ample room for further exploration. The initial investigation focused on the impact of OT on JE within the hospitality sector, specifically in hotels and travel agencies, with IM as a moderating factor. To deepen our understanding, future research could explore the broader implications of OT, extending beyond JE to include green organizational attitudes and behaviors. This expansion might encompass areas such as green innovative work behavior, green job engagement, green citizenship behaviors, and green commitment, offering fresh perspectives. Moreover, the study primarily concentrated on five-star hotels and category-A travel agencies in Egypt, which may limit the generalizability of its findings. To enhance applicability, future research should replicate the study in diverse settings, considering various hotel star ratings, exploring other segments of the hospitality industry (such as restaurants or airlines), and extending the geographical scope to include regions beyond Egypt, such as the Middle East and Africa. This broader approach would contribute to a more comprehensive understanding of the relationships between organizational trust, job engagement, and internal marketing. Additionally, while the study investigated the moderating role of IM in the OT-JE relationship, future research could explore alternative factors. Examining the mediating or moderating influence of variables like job insecurity, nepotism, transformational leadership, distributive injustice, etc., would provide a more nuanced understanding of the dynamics at play in OT and its impact on employee outcomes. Lastly, by exploring these avenues, future research can build on the valuable foundation laid by this study, providing a more comprehensive understanding of OT, JE, and IM in diverse contexts, and ultimately leading to practical benefits for organizations and employees alike.

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visualization, A.H.I.A., M.K.E., A.A.G.A., M.F.A.A., and S.A.M.W; supervision, A.H.I.A., M.K.E., A.A.G.A., M.F.A.A., and S.A.M.W; project administration, A.H.I.A., M.K.E., A.A.G.A., M.F.A.A., and S.A.M.W. All authors have read and agreed to the published version of the manuscript.

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## PLANNING THE INSERTION OF SUSTAINABLE TRANSPORT MODES BASED ON AN ACCESSIBILITY ANALYSIS. CASE STUDY: SAN JOSÉ DEL GUAVIARE, COLOMBIA

**Jhon Jairo ROMERO\*** 

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: jhromerov@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, Manizales, Colombia, e-mail: daescobarga@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

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**Abstract:** This research objective is to determine the impact on the operability of private vehicle transport mode, given the proposed implementation of the new bicycle route, pedestrian a transit network in San Jose del Guaviare (Colombia), with the aim to propose an urban planning instrument for decision-making that promotes the insertion of alternative transport means to a private vehicle. The methodology includes the application of transport infrastructure supply models as an evaluation basis, supported by geographical accessibility, coverage and geospatial impact analyses. The main results show that the proposal for the insertion of alternative modes of transport would be beneficial in terms of providing other mobility options for the inhabitants without deteriorating the current mobility conditions of the private mode. The above result point to the benefits that are shown for the municipality's development and planning to maximize their use by decision-makers.

**Keywords:** accessibility, transport modes, pedestrians, cycle routes, public transport, sustainability

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### INTRODUCTION

Urban and land-use planning has been directly linked to the development of transport systems and the public policies of those who govern them. In recent decades, urban planning models have been developed that seek to represent in a simplified way the operational conditions of different modes of transport to make decisions in the short, medium, and long term (Ortúzar and Willumsen, 2008), in such a way that environmental sustainability concepts are involved in modal complementarity. These models take on great relevance as they justify large financial investments, which is a fundamental resource for cities in the context of developing countries such as Colombia; likewise, depending on the prioritized mode of transport, the environmental sustainability conditions of cities would be strengthened and improved through the implementation of adequate planning processes.

Accessibility is a term that has been used since the 1920s based on studies on location theory and regional economic planning (Batty, 2009). From the transport-supply-model point of view, it is defined as the potential for interaction opportunities that an individual possesses (Hansen, 1959). In this case, opportunities are defined as the different facilities in which some kind of relationship can be built, including jobs, education, hospitals, and commercial centers, among others. Dalvi and Martin (1976) defined the concept as the ease with which it is possible to reach a land use from a location using a particular transport system. Ingram (1971) classified accessibility into two types: i) relative accessibility, which is measured between two points; ii) comprehensive accessibility is measured from several points to one or vice versa. Later, Talen and Anselin (1998) defined another type of accessibility measure, which is made between all the road networks, each one taken as opportunities, which they call global average accessibility. Accessibility has been used throughout the world in issues related to transport project prioritization analysis (Escobar and García, 2012), sustainable development (Vega, 2011), health (Yiannakoulis et al., 2013), education (Walsh et al., 2017) and cycle path (Ferster et al., 2021), among others. Furthermore, in Colombia these analyses have been used since the beginning of the 21st century in issues related to transport infrastructure at the regional level. Besides, at the urban level in cities such as Bogotá D.C. (Guzmán et al., 2017), Manizales (Escobar and García, 2012), Pitalito (Montoya et al., 2018), among others.

San José del Guaviare, the Departmental capital city of Guaviare (figure 1), is home to 36,290 inhabitants in its municipal capital (DANE, 2018), is located in south-central Colombia (Figure 1) at 175 masl and a distance of 396 km from the national capital, Bogotá D.C.; its economy is based on trade, fishing, agriculture, and livestock (Gobernación del Guaviare, 2017). In

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\* Corresponding author

terms of urban mobility, its inhabitants make journeys using a scarce pedestrian network, a deficient network of cycle routes, and motor vehicles; it should be noted that the municipality does not have a collective public transport system.



Figure 1. Municipality of San José del Guaviare (Source: authors)

On the other hand, the World Economic Forum (WEF) has made a series of priority recommendations, including those related to infrastructure, equipment, and environmental sustainability (CPC, 2020). This is to improve efficiency in the intervention of natural resources and conserve the natural capital that communities currently possess since in the last two decades the loss of natural resources and deforestation of large areas has been notorious in our country. In the WEF rating, San José del Guaviare ranked 28th out of 32 departmental capitals; however, in the environmental sustainability component, it ranked 2nd; however, in the infrastructure component, it ranked 27th, and in the mobility component, analyzed concerning passengers using public transport, it ranked last. This is the first time that a supply model has been applied in the municipality that develops a methodology for the best choice of infrastructure projects, thus creating a tool that will allow the identification of the areas that will get the greatest benefits in alternative modes of transport.

However, some analyses and implementations of this kind have been conducted in other parts of the world such as Polonia or Irán (Tahmasbi and Haghshenas, 2019; Radzimski, 2023), validating the importance of implementing sustainable transport modes, as well as assessments in urban environments (Sun et al., 2018) or considering traffic congestion and uncertain conditions (Babaei et al., 2023). The above will strengthen the formulation and implementation of development plans in the coming years in terms of environmental sustainability by promoting the use of environmentally friendly modes of transport. Taking the above into account, the objective is proposed, to determine the impact on the operability of private vehicle transport mode, given the proposed implementation of the new bicycle route, pedestrian a transit network in San Jose del Guaviare (Colombia), with the aim to propose an urban planning instrument for decision-making that promotes the insertion of alternative transport means to a private vehicle.

After this brief introduction, the methodology used in the research is explained, followed by a presentation and discussion of the results, and finally, the main conclusions are analyzed.

## MATERIALS AND METHODS

The research methodology (Figure 2) consists of six sequential phases as described below.

**Phase 1 – Transport Network Creation and Validation:** At this first stage, shapefiles of urban polygons, environmental surroundings, and transport infrastructure networks are created using ArcMap software. For the calculation of the variable, it is essential to have the road network infrastructure; since if it does not exist, it is not possible to identify the modes of transport that provide accessibility to a specific site. The construction of the road network must follow certain suggestions; first of all, it must take into account the graph theory, which establishes that the road network must be built under arcs (roads) and nodes (road intersections); after this, the topology of the network is verified, which guarantees that the arcs and nodes are perfectly graphed and connected. As sources of information, official documents such as the Land Use Plan (Plan de Ordenamiento Territorial) and the Sectoral Environmental Management Plan (Plan de Ordenación Ambiental Sectorial) were consulted.

**Phase 2 – Network Operational Analysis and Data Collection:** Arc measurement (li) involves two key attributes: length and operational speeds (vi). Spatial length analysis utilizes GIS computational tools, and operational speed calculation



considers the hierarchization of the transport infrastructure network (Zuluaga and Escobar, 2017). Field measurements with GPS devices and calibration using Google Maps, MapQuest, and Rand McNally databases have been conducted, updating values based on user-reported conditions (Wang and Xu, 2011; Lahoorpoor and Levinson, 2020). Calibration of the transport infrastructure network involves applying the minimum paths algorithm between two nodes (Dijkstra, 1959), comparing results with Google Maps and TransCAD to determine penalties (Cardona, 2018) for network balance in average travel time.

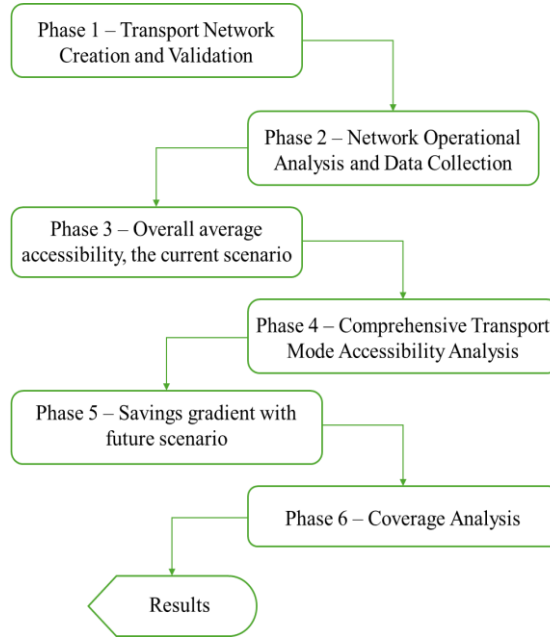


Figure 2. Methodology (Source: authors)

Phase 3 – Overall average accessibility, the current scenario: The overall average accessibility uses the existing transport infrastructure network to measure the connection conditions between all nodes of the road network by measuring the operational speeds along each of the 1533 arcs and 933 nodes of the network, which is an expression of the transport supply (Geurs and Van Wee, 2004). Likewise, the global average accessibility is considered a contour measure that relies on geostatistical analysis to make predictions throughout the territory. Initially, the travel time matrix ( $M_n$ ) is calculated through the Dijkstra algorithm, this matrix is of size  $n \times n$ , where  $n$  is the total number of nodes in the network. Subsequently, the average travel time vector ( $\bar{T}_v$ ) is calculated as shown in equation 1 (Perilla et al., 2018), where  $tv_{ij}$  is the average travel time between each pair of nodes ( $i, j$ ) expressed in minutes, and  $n$  is the total nodes used.

$$\bar{T}_v = \frac{\sum_{j=1}^n tv_{ij}}{n-1} \quad (1)$$

The Ordinary Kriging geostatistical model is used to build isochronous global mean accessibility curves, and one of the main points of its evaluation is the relationship between the data and its use for conjecturing, constructing, and modelling; as reflected in equation 2, considering that the semi-variogram is the central tool that decreases the mean square error of prediction, where  $n$  is the number of pairs of data separated by distance  $h$  (meters),  $Z_{(xi)}$  represents the value of the variable at position  $X_i$  and  $Z_{(x+h)}$  is the value of the variable at distance  $x+h$   $X_i+h$ , both in minutes. (Matheron, 1962).

$$\bar{\gamma}_{(h)} = \frac{\sum (Z_{(x+h)} - Z_{(x)})^2}{2n} \quad (2)$$

It states that the value of a variable can be predicted through the  $n$  random variables, as shown in equation 3, where  $\lambda_i$  symbolises the weights of the original values (adimensional); these weights are calculated as a function of the distance between the sampled points  $Z_{(xi)}$  and the point where the corresponding prediction is to be made  $Z_{(x0)}$ .

$$Z_{(x0)} = \lambda_1 Z_{(x1)} + \lambda_2 Z_{(x2)} + \lambda_3 Z_{(x3)} + \dots + \lambda_n Z_{(xn)} = \sum_{i=1}^n \lambda_i Z_{(xi)} \quad (3)$$

In this case, the sum of the weights must be equal to one (1) for the predictor expectation to be equal to the variable expectation. The latter is known as the unbiasedness requirement (Giraldo, 2011). Finally, the curves are built from the prediction made; the curves are made for the current scenario and for each of the proposed intervention scenarios.

Phase 4 – Comprehensive Transport Mode Accessibility Analysis: This stage assesses overall territorial accessibility based on alternative transport modes. For pedestrian analysis, the existing infrastructure network is adjusted to a walking speed of 5.47 km/h (Transportation Research Board, 2016). For cycling, a speed of 20.8 km/h is considered (Transportation Research Board, 2016). The proposal for a real cycle route network is created, utilizing existing sections that allow cycling. For public transport, which currently lacks a network, proposed routes ensure connectivity between populated areas and primary activity nodes. The operational speed for accessibility calculations in this mode is set at 18.5 km/h.

Phase 5 – Savings gradient with future scenario: The savings gradient ( $G.A$ ) is used to calculate the percentage change, in terms of average travel times, that would occur between the current scenario and the future scenario and thus establish



the sectors of the study area with the greatest changes in their accessibility conditions. For its calculation, equation 4 (Cardona, et al., 2018b) is applied, where  $\overline{Tvb}$  (minutes) represents the average travel time vector of the current scenario and  $\overline{Tva}$  (minutes) represents the average travel time vector of the future scenario:

$$G.A (\%) = \frac{\overline{Tvb} - \overline{Tva}}{\overline{Tvb}} \times 100 \quad (4)$$

Phase 6 – Coverage Analysis: In this step, the accessibility isochronous curves polygon and the neighborhood polygon data are intersected to create the percentage ogive of population coverage for each studied mode of transport. This intersection provides information on the percentage of the population covered by each mode of transport, along with the calculation of the average travel time weighted by the covered population. This facilitates a comparative and objective analysis of the proposed insertions.

## RESULTS AND DISCUSSION

Initially, socio-demographic Shapefiles were created using the ArcMap software and the official urban map of San José del Guaviare (Gobernación del Guaviare, 2017). The transport network, comprising rigid pavement, flexible pavement, cobblestones, and paving, was meticulously established with 933 nodes and 1533 arcs, totaling 149.2 km. The walking mode of transport, currently nonexistent, was proposed to connect residential sectors with primary activity nodes.

Result 1 – Walking mode accessibility: San José del Guaviare lacks a promoted walking mode of transport. The proposed 130.3 km walking infrastructure aims to safely connect residential areas with primary activity nodes. The overall average accessibility reveals a predominant 20-minute isochronous curve in the Central Business District (CBD) (Figure 3), providing access to primary activity nodes. Districts with the best accessibility include Bello Horizonte, Bicentenario 2, El Divino Niño, El Dorado, La Esperanza, Popular, Santa Rosita, Santander, Villa Angela, Villa del Parque, and Villa del Prado. Meanwhile, the 20 de Julio and San José districts register longer travel times (32-33 minutes) despite being within the main urban polygon. Expansion areas show isochronous curves up to 60 minutes due to the significant distance from existing activity nodes. Figure 4 illustrates the cumulative population coverage for the walking mode, indicating that over 50% of the population can be covered within 20 minutes. The average weighted travel time is 23.8 minutes, emphasizing the population concentration in the CBD and underscoring the importance of strategically locating primary activity nodes in expansion areas to minimize motorized travel from the periphery to the CBD.

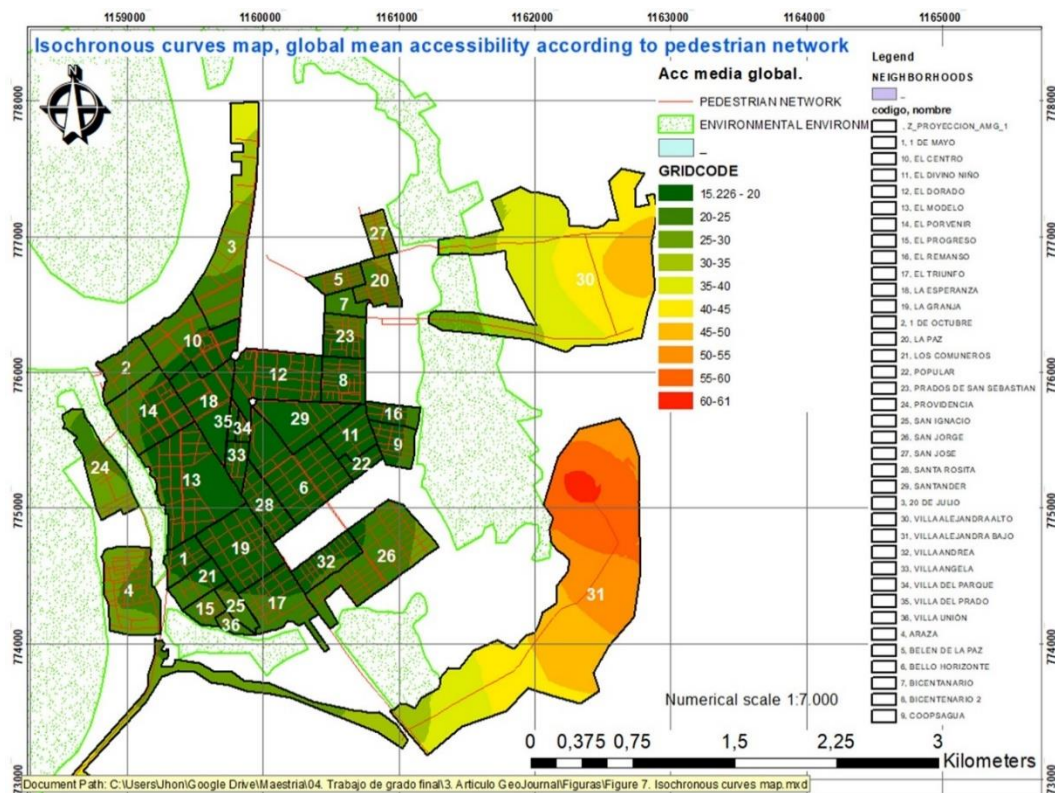


Figure 3. Overall average accessibility conditions. Mode of transport: walking (Source: authors)

Result 2 – Accessibility conditions for the cycling mode of transport: The bicycle-transport-infrastructure network is virtually non-existent, as only independent and disconnected arches were identified. The cycle route network (Figure 5) is proposed with the assumption of covering all nodes of primary activity (yellow) and seeking full coverage in the CBD of the municipality. The most remote neighborhoods of the network correspond to urban expansion areas such as San José, Arazá, Providencia, Villa Alejandra (high and low), located to the east of the municipality, where the conditions of the existing road infrastructure are deficient or are still paved without having defined a road profile.

The proposed walking mode of transport complements the cycle route network. The 7-10 minute isochronous curve covers 28% of the urban area and 46% of the total population, while the 20-minute curve covers over 50% of the walking population; in cycling, it covers 97%. This emphasizes the potential synergy between both modes, especially in connecting the eastern area to the municipality's CBD, where cycling takes up to 40 minutes. Figure 6 displays the cumulative population coverage percentage, highlighting significant coverage within a 15-minute average travel time. The population-weighted average travel time for cycling is 13.6 minutes, making it 1.75 times more efficient than walking.

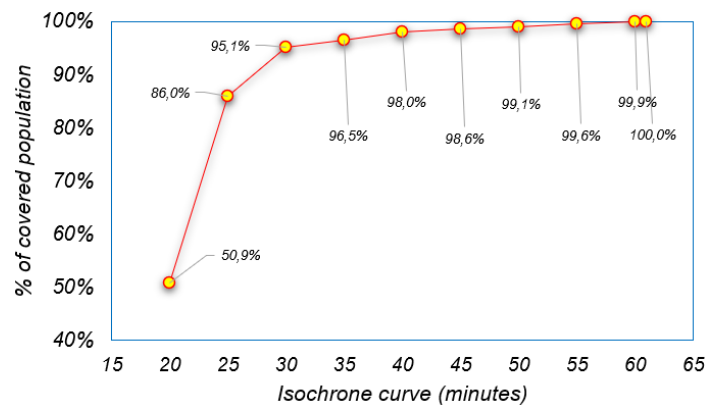


Figure 4. Ogive percentage of cumulative coverage. Mode of transport: walking (Source: authors)

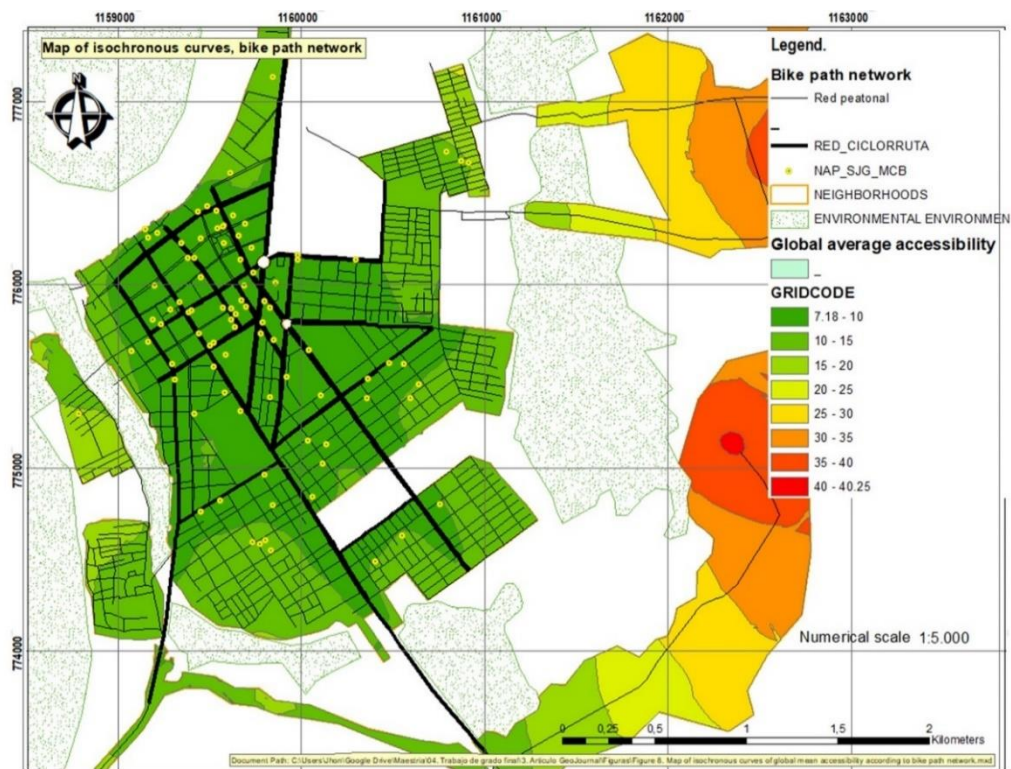


Figure 5. Overall average accessibility conditions. Mode of transport: bicycle (Source: authors)

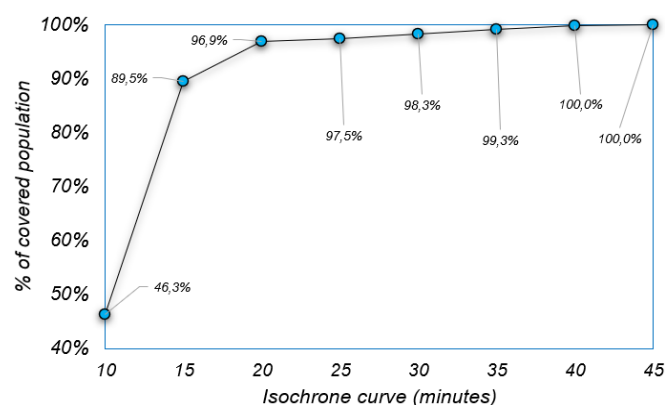


Figure 6. Ogive percentage of cumulative coverage. Mode of transport: bicycle (Source: authors)



Result 3 – Accessibility conditions for the public transport mode (Figure 7). The urban public transport proposal consists of two terminals (bus stops) located in La Paz (North) and Comuneros (South) neighborhoods (Alcaldía de San José del Guaviare, 2002), and six (6) routes designed to meet the demand between the residential sectors and the sectors where the primary activity nodes are located.

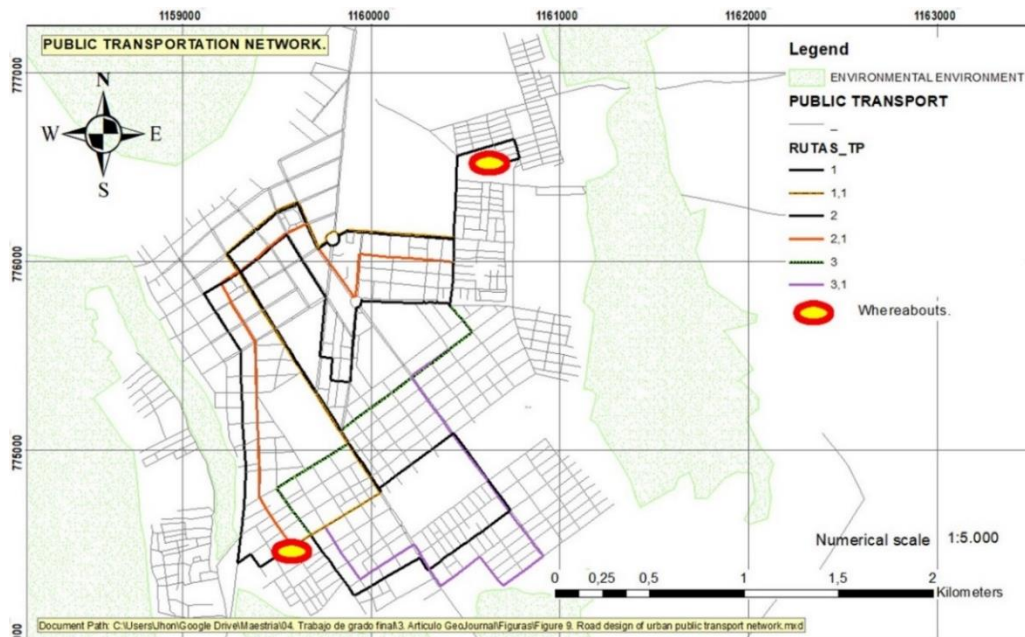


Figure 7. Proposed public transport routes (Source: authors)

The assumed operating speed for public transport in this study is 30 km/h, derived from operational data in cities like Manizales (29 km/h) and Popayán (31 km/h) with comparable characteristics (Montoya, 2019; Escobar, 2008).

The overall average accessibility for this mode, illustrated in Figure 8, reveals a 10-minute isochronous curve covering 70% of the population (29,296 inhabitants), followed by a 15-minute curve reaching 92% (33,244 inhabitants). These curves encompass the majority, and it's worth noting that all planned routes operate within or below a 10-minute average travel time. Future public transport route extensions should align with existing and potential urban expansion areas for sustainable municipal growth. Territorial accessibility proposals for the public transport network, outlined by neighborhood boundaries, indicate broad coverage within the main urban polygon but with limitations in expansion zones.

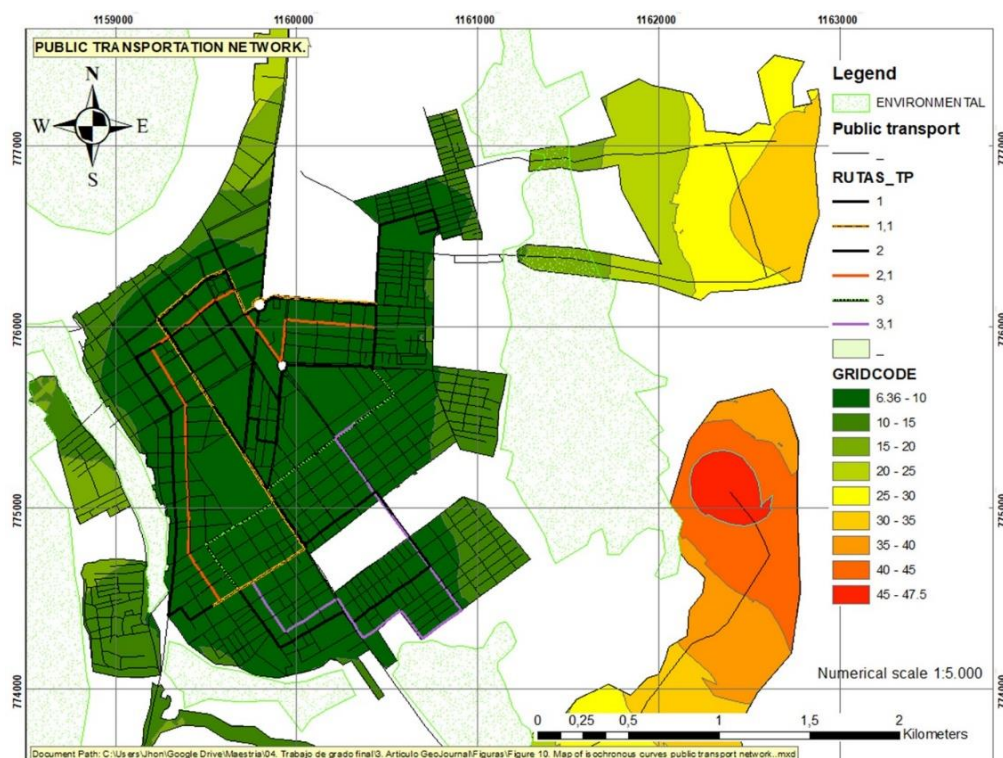


Figure 8. Overall average accessibility conditions. Transport mode: public (Source: authors)

Figure 9 displays the cumulative population coverage, showing almost 70% covered within a 10-minute travel time, encouraging the integration of active transport modes (walking and cycling). The goal is to promote environmentally friendly transportation, especially in an area requiring environmental protection.

The average travel time for public transport was found to be 12.5 minutes, one minute less than the bicycle mode of transport, which clearly establishes that there are high possibilities for the success of this type of transport mode, as long as they are articulated and their service is provided in a comfortable, safe and economically accessible way for the population, as bicycle use would be free, which would be an important advantage itself.

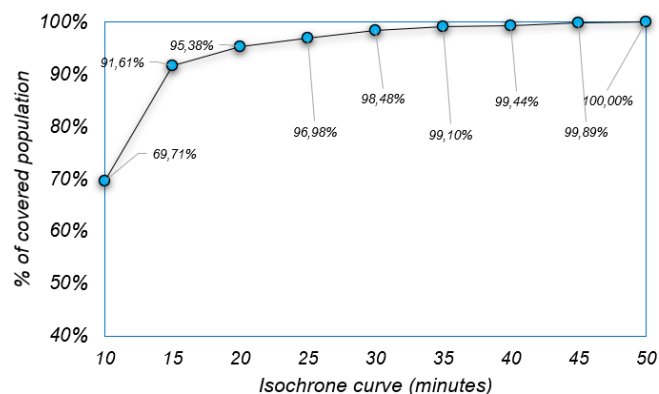


Figure 9. Ogive percentage of cumulative coverage. Transport mode: public (Source: authors)

Result 4 – Accessibility conditions for the private mode of transport: Firstly, the process of calculating the operational conditions for this mode of transport is described, which, as a special feature, is the only one that is currently considered in land-use plans, making this the first research study to involve and propose the inclusion of sustainable modes of transport in this municipality. To calculate the operational speeds, the information reported by Google Maps about the average travel time on each arc was used to calibrate the network for the appropriate adjustment of the transport supply model. A total of 182 arches in the urban area and 32 arches in the urban expansion zones were evaluated, for a total of 214 arches. The travel time results for the arches obtained using the Google Maps tool implicitly contain all turning times and other time loss events caused by any technical or social reason that affects mobility; therefore, no turning penalties will be considered in the development of the calculations. Table 1 shows the minimum travel-time calibration results for thirty random routes, calculated using Google Maps and TransCAD. Given the private-transport-mode network features of the current scenario, the values obtained for the arcs indicate that the average is equal to 18.28 km/h, with a range from 9 km/h to 39 km/h. Now, with the obtained data for the minimum travel time calculation, descriptive statistics and linear regression analysis are carried out to check the effective relationship of this variable and ensure the data calibration. These data are given in Table 2, which shows that as a linear regression analysis result carried out for the thirty (30) routes evaluated, it was possible to verify the high linear relationship of the values studied, bearing in mind the value of the coefficient of determination  $R^2$ , which makes it possible to infer an effective quality of adjustment.

Table 1. Calculation of minimum travel times in minutes for route analysis and comparison between TransCAD and Google Maps (Source: authors)

Ruta	TransCAD	Google Maps	Ruta	TransCAD	Google Maps
1	8.0072	8.00	16	7.7944	8.00
2	6.1285	6.00	17	4.9717	5.00
3	6.1180	6.00	18	4.9193	5.00
4	4.0413	4.00	19	4.1006	4.00
5	6.9419	7.00	20	4.9812	5.00
6	7.0628	7.00	21	8.9504	9.00
7	5.9991	6.00	22	5.063	5.00
8	4.2094	4.00	23	4.0187	4.00
9	6.1949	6.00	24	4.0252	4.00
10	4.8593	5.00	25	5.0172	5.00
11	3.9372	4.00	26	7.1283	7.00
12	5.0280	5.00	27	7.0883	7.00
13	6.9879	7.00	28	5.0389	5.00
14	6.0267	6.00	29	5.9712	6.00
15	4.8708	5.00	30	6.1481	6.00

Table 2. Summary of regression statistics (Source: authors)

NAME	VALUE
Multiple Correlation Coefficient	0.9974
Coefficient of Determination $R^2$	0.9949
$R^2$ Adjusted	0.9947
Typical Error	0.09725
Observations	30

The above means that the network model elaborated in TransCAD through the development described in the methodology is configured in such a way that it can serve as a basis for developing the global accessibility calculations in the current scenario, proposed scenarios with addition and/or modification of the existing road infrastructure, and scenarios according to transport modes. This will allow in this particular case of private mode to calculate the global average accessibility gradient.

The overall average accessibility conditions for the private transport mode in the current scenario show that the main urban polygon is covered by average travel time curves of between 5 and 10 minutes, while the urban expansion areas located to the east of the municipality are covered by travel times of up to 16 minutes (Figure 10). Figure 11 shows the aggregate coverage percentage ogive for the population variable, where it is possible to observe that a little more than 10% of the population is covered with 5-minute average travel times, and almost 99% is covered with 10-minute average travel times. Figure 12 shows the six proposed infrastructural interventions related to the private transport mode, which are intended to complement the external perimeter ring (interventions 1 and 2) and internal articulation of the network (interventions 3 - 6).

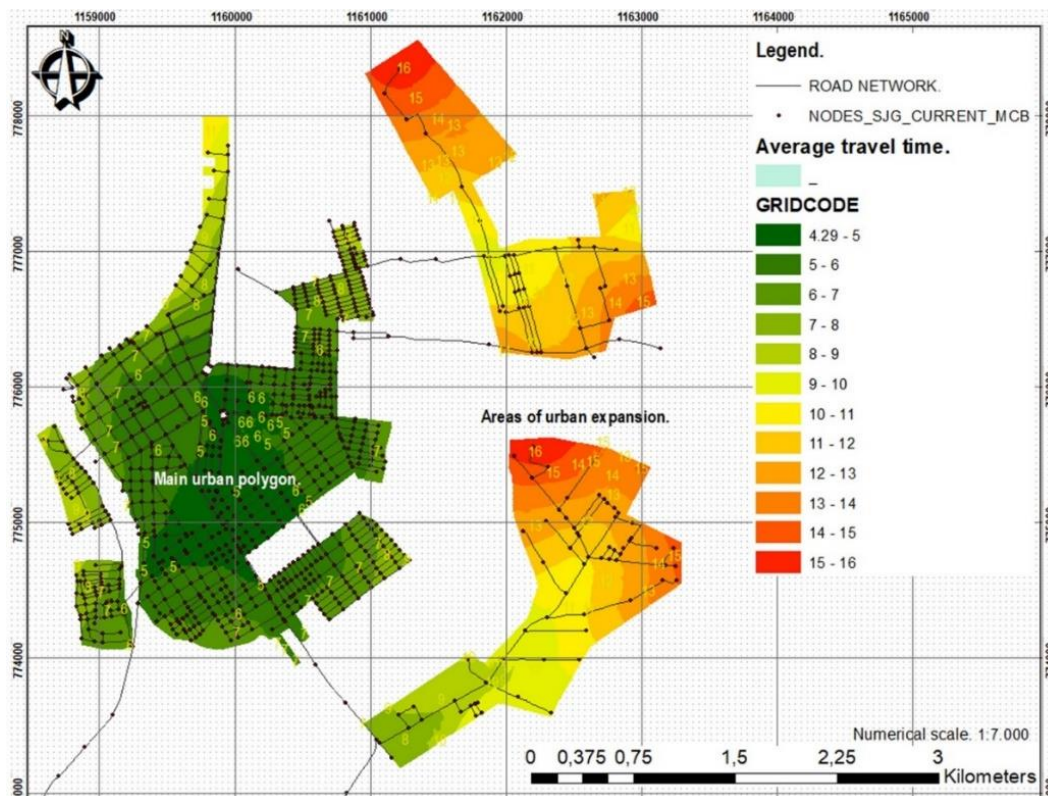


Figure 10. Overall average accessibility conditions. Transport mode: private. Current scenario (Source: authors)

Figure 13 shows the impact that the six proposed infrastructure interventions would have in terms of percentage savings in average travel times. It is highlighted that given these proposed interventions, it is the east of the city that would benefit the most from their construction, finding that the CBD continues to have the same accessibility conditions with or without the proposed interventions for this private mode. Likewise, when calculating the average travel time weighted by population, this mode of transport registers 6.6 minutes, a value much lower than that registered by the other modes of transport.

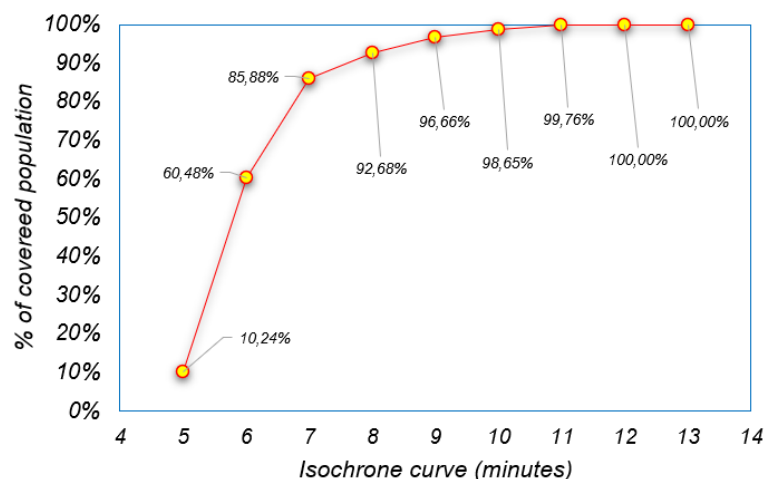


Figure 11. Ogive percentage of cumulative coverage. Transport mode: private (Source: authors)



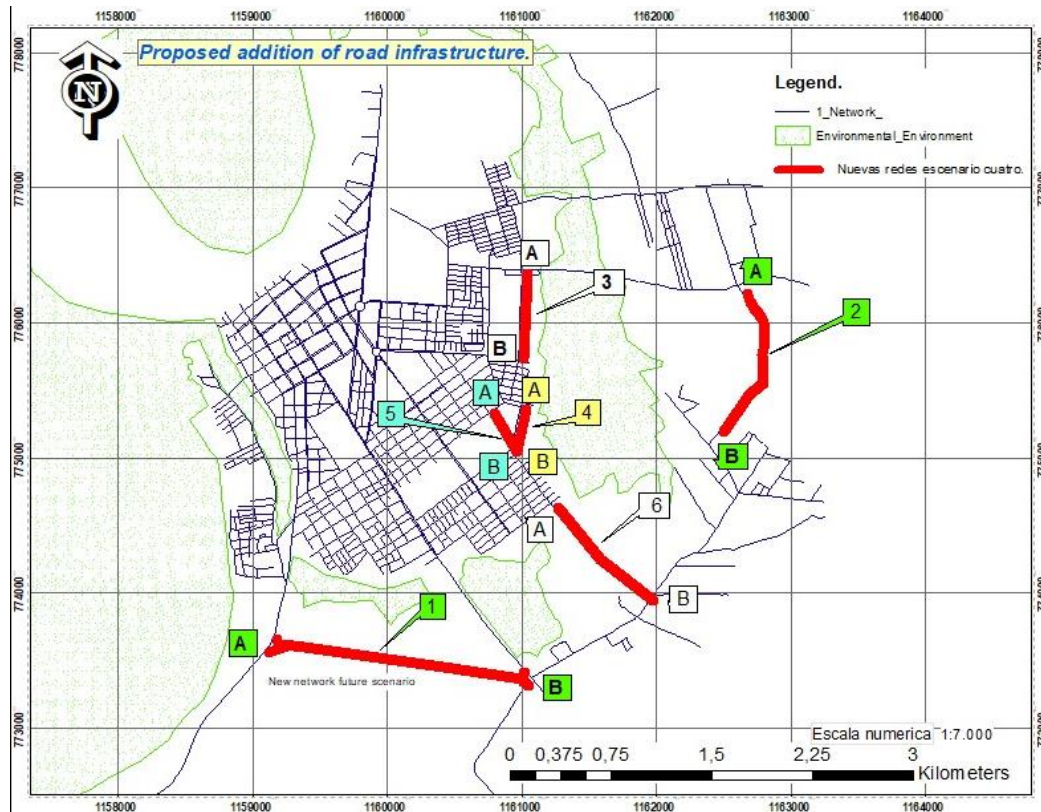


Figure 12. Proposals for infrastructural intervention in private mode (Source: authors)

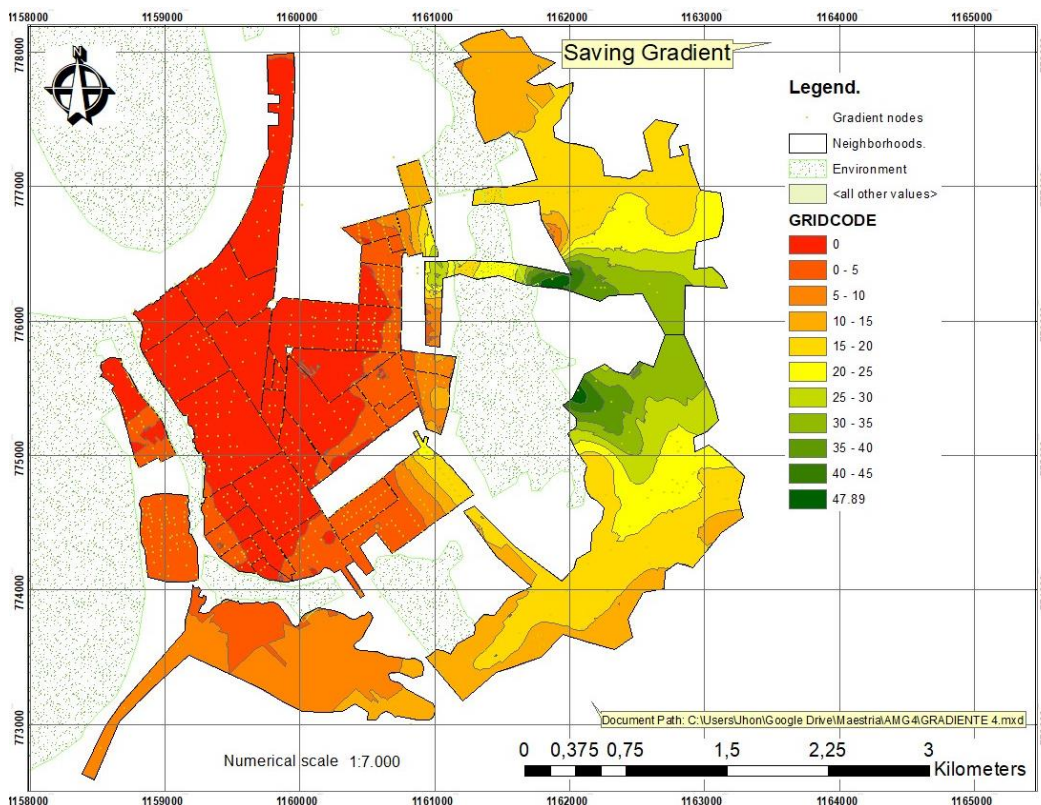


Figure 13. Private mode savings gradient (Source: authors)

## CONCLUSION

The developed methodology satisfactorily calculates territorial accessibility in areas lacking transportation network information. In digitizing geographic information layers, using base maps in ArcMap proved the fastest and most effective method. For road network connectivity validation, ArcMap's Topology function was determined as the best tool. Operational speeds of road arcs were obtained through Google Maps. Regarding the network calibration, it was concluded that the simulation process of the data loaded in TransCAD does not require estimation of penalties for turns,

as these time additions due to delays, traffic jams, and other time loss events affecting mobility are implicit in the operational speeds taken from Google Maps. In the analysis of global average accessibility, the existing network has a main urban polygon and distant urban expansion zones, with isochronous curves covering different time intervals.

For the analysis of new infrastructure, there are better results of territorial accessibility with a reduction of the isochronous curve from sixteen to thirteen minutes. The 8-minute isochronous curve covers 92.68% of the population, emphasizing the need for new road sections for planned expansion.

In alternative transport mode analysis, for the pedestrian network, territorial accessibility is mainly achieved in the main urban polygon under the 20-minute isochronous curve. In relation to the entire network, the coverage of the 25-minute isochronous curve is sufficient to cover a significant percentage of the population. In the scenario of the bike path network, different isochronous curves cover varying percentages of the area and total urban population.

Regarding the analysis of the scenario with the urban public transport network, favorable results were obtained, with isochronous curves covering a large portion of the population; comparing modes of transport, sustainable transport emerges as the most advantageous. It is essential to note that this research is the first of its kind in San José del Guaviare, emphasizing the town's topography for environmentally friendly transport.

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## PUSH AND PULL FACTORS AFFECTING DOMESTIC TOURISM IN THE ERONGO REGION, NAMIBIA

**Ebson NGONDO\*** 

Tshwane University of Technology, Department of Tourism Management, Pretoria, South Africa, e-mail: engondo@outlook.com

**Uwe P. HERMANN** 

Tshwane University of Technology, Department of Tourism Management, Pretoria, South Africa, e-mail: hermannup@tut.ac.za

**Dewald H. VENTER** 

Central University of Technology, Department of Tourism and Events Management, Bloemfontein, South Africa, e-mail: dventer@cut.ac.za

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**Abstract:** Despite being a well-established economic activity in numerous countries in the world, domestic tourism has received relatively little academic exploration, particularly in Namibia. While this study acknowledges the significance of work already done in this field, there remains a general lack of understanding of the factors motivating domestic tourists' decisions to travel in the study area. As a result, this study aims to understand the key push and pull factors for domestic tourists, using the Erongo region of Namibia as a case study. The study adopts a quantitative research approach through a survey of 400 domestic tourists in the study area. Relaxation and escapism, seeking participatory experiences, and seeking enriching experiences emerged as the three main push factors, while destination attributes, events and activities, safety and familiarity, and variety of experiences were identified as dominant pull factors. The study recommends that tourism planners and marketers tailor tourism offerings to the asserted domestic tourists' motivations to induce more domestic tourism demand and consumption among domestic tourists.

**Keywords:** domestic tourists, push factors, pull factors, domestic tourism, sustainable development, Erongo region, Namibia

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### INTRODUCTION

Domestic tourism is a pivotal and high-growth sector of the global tourism industry (Oyunchimeg and Gantuya, 2021). The sector is imperative for tourism industry growth and, thus, worldwide economic development (Nurov et al., 2021). Furthermore, domestic tourism plays an important role in a country's economic development because it supports formal, small-scale enterprises and informal sectors (Rwigema, 2024). It tends to lead to an increase in employment, improve the host community's standard of living, and develop attractions (Murima and Shereni, 2023). However, in some cases, domestic tourism has been neglected both as an area of development and as a subject of research (Rwigema, 2024), particularly in developing countries. Regardless of this, domestic tourism has developed rapidly to become one of the leading global economic phenomena (Oyunchimeg and Gantuya, 2021).

Indeed, some African countries, such as South Africa, have already recognised the potentially positive economic benefit of domestic tourism and have taken the necessary steps to understand domestic tourists and their travel needs (Nyikana and Bama, 2023). This has resulted in several campaigns aimed at promoting domestic tourism in the country through a government-led domestic tourism growth strategy (National Tourism Sector Strategy [NTSS], 2012). Unfortunately, the same cannot be said for other developing countries, such as Namibia.

Namibia has one of the world's fastest-growing tourism industries, and its rich tourism resources offer an excellent opportunity for sustainable domestic tourism development (Bohlmann, 2020). However, the sustainable development of domestic tourism is being stymied by a lack of academic research and policies that spur the sector's development and create a culture of tourism among Namibians (Remmert, 2022). Consequently, domestic tourism in the country is academically less explored and relatively ignored by policymakers and tourism promoters compared to international tourism. This also means that domestic tourists' needs are poorly understood and are rarely met as a result.

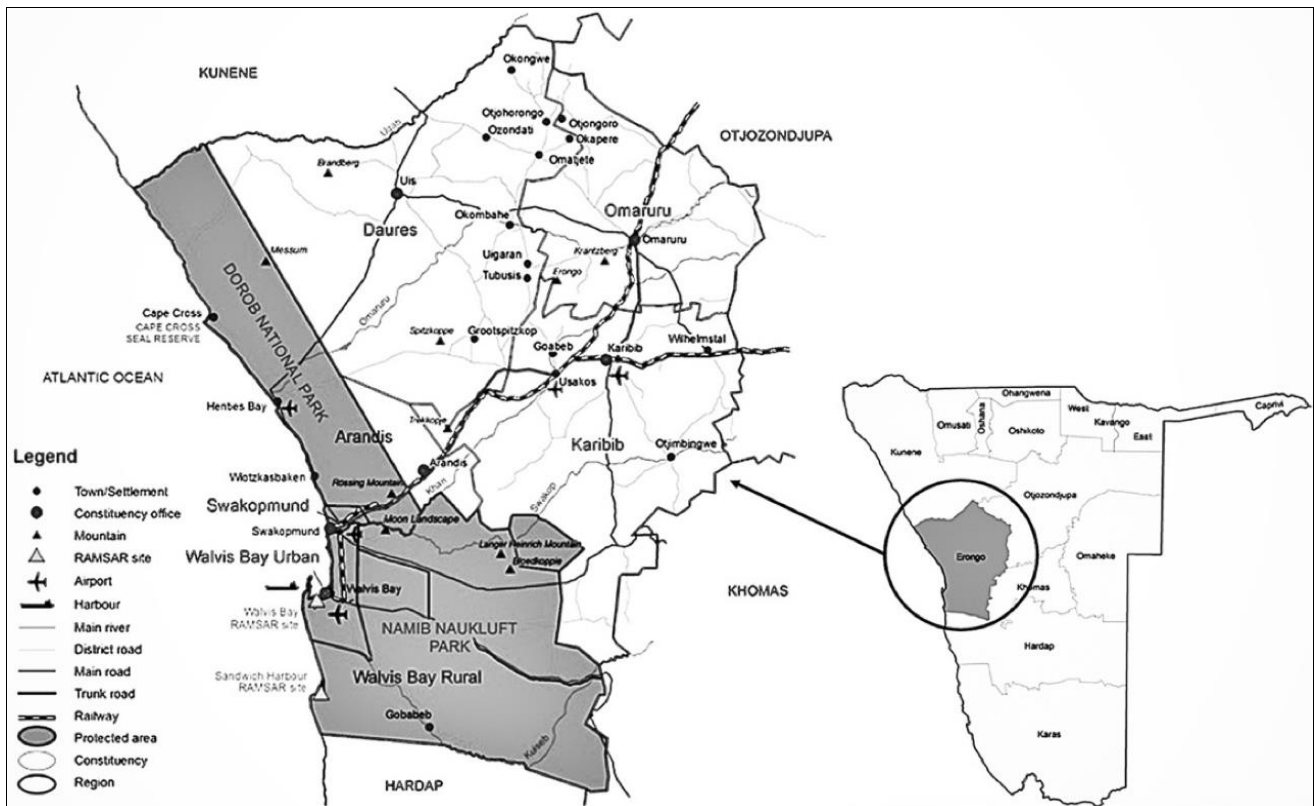
In order to capitalise on the untapped value and growth potential of the domestic tourism market, a thriving domestic tourism sector necessitates a sector response that is cogent and informed by knowledge of what drives domestic tourists to travel. The Erongo region (Figure 1) and the Namibian domestic tourism context provide the empirical setting for this study.

The Erongo region is Namibia's main domestic tourism hub, and its rich tourism resources provide an excellent opportunity for the region to tap into domestic tourism's potential. Based on an extensive Google Scholar search, there are no published studies that have focused specifically on the key push and pull factors of domestic tourists in the Erongo region and many other regions in Namibia. This is despite the fact that this understanding is critical to the sustainable

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\* Corresponding author





## LITERATURE REVIEW

From the literature, it is clear that the magnitude and economic contribution of domestic tourism cannot be overstated and that it is often considered to be the key driver of the global tourism industry (Kifworo et al., 2020). One can claim that most of the positive effects of inbound tourism demand on national economies are also valid for domestic tourism (Çuhadar et al., 2020). Equally important, a significant demand for domestic tourism can create circumstances and a conducive atmosphere for the growth and advancement of international tourism (Mohammed-Benahmed and Seffih, 2019).

Haque et al. (2014) defined motivation as a mechanism that ultimately directs people to act or behave in a particular way. Fodness (1994) simply refers to motivation as the driving force behind all human actions. From a tourism perspective, Horner and Swarbrooke (2020) view motivation as the inner state of mind that drives tourists to travel to a specific destination or purchase a specific tourism product or service. In other words, it is the underlying reasons and factors that influence individuals to travel and engage in tourism-related activities (Harahap et al., 2024). Accordingly, the concept of travel motivation is pivotal for destination planners and developers as it assists in understanding the variables that influence tourists' destination choice (Grobbelaar et al., 2019). This is also noted by Chan's (2021) study, which indicates that domestic travel motivations need to be properly understood for the sector to be developed sustainably.



Tourism literature often conceptualises tourist motives in terms of push factors and pull factors (Baniya and Paudel, 2016; Ayoub and Mohamed, 2024). According to these studies, push factors can be classified as the socio-psychological construct of tourists pushing them to travel, whereas pull factors refer to the cognitive and external factors of destination-pulling tourists. The idea behind this concept, which was first promulgated by Dann (1981), is that people travel because they are pushed by their own internal forces and pulled by the external forces of the destination attributes. This description suggests that push factors shape the desire for travel, while pull factors clarify the actual destination choice.

There are several push-pull motivational factors that ultimately influence tourists' desire to consume domestic tourism products. A series of recent studies have made a genuine attempt to contextualise the travel motivations of domestic tourists around the world. The two sections that follow discuss these studies and the proposed push and pull factors.

### **Push motivations**

Matiza and Kruger's (2022) study revealed that the primary motivators for domestic recreational tourists to travel are their relaxation and self-fulfillment needs, with a primary focus on nature and adventure activities. According to Baniya and Paudel (2016), escaping daily life, seeking relaxation, and sightseeing variety were the top three push motive constructs in Nepal. Bayih and Singh (2020:1) discovered that knowledge, family, and togetherness are strong motivational factors for domestic tourists in Ethiopia. An earlier study on Vietnamese domestic tourists' travel motivations found that disposable income, a sense of family togetherness, the prospect of relaxation, and employer sponsorship were the main push motivational factors (Bui and Jolliffe, 2011). In Mongolia, Oyunchimeg and Gantuya (2021) claim that excitement, self-exploratory relaxation and escapism, social achievement and togetherness are the most important push factors for domestic tourists. Furthermore, Duong et al. (2023) identified personal factors, escapism, knowledge, and cultural experiences as key push factors for domestic tourists in Vietnam. According to Ayoub and Mohamed (2024), domestic tourists in Egypt are pushed to travel by their need for rest and relaxation, the need to enhance their ego, and novelty and knowledge-seeking. Now that a set of push motivations for domestic tourists has been established, it becomes necessary to take a brief look at what pulls domestic tourists to visit certain destinations.

### **Pull motivations**

A study conducted on domestic tourists visiting the Changbai Mountain Biosphere Reserve in northeastern China revealed that appreciating natural landscapes and protecting the environment were the main motives of domestic tourists (Gu et al., 2015). Bayih and Singh (2020:1) discovered that natural and cultural heritage, events and festivals serve as pull motivational factors. The literature also reports that the beauty of natural resources, diverse history and culture, and excellent recreational facilities are the main driving forces for domestic tourists (Ezeuduji and Dlomo, 2020).

Baniya and Paudel (2016) highlighted events and activities, adventure, and variety seeking as some of the top pull-motive constructs for domestic tourists. While a recent study by Duong et al. (2023) noted destination information and accessibility, destination unique image, and personal factors as pull factors for domestic tourists. Along the same lines, Ayoub and Mohamed (2024) identified tourism facilities, environment and safety, and cultural and historical attractions as important pull factors for domestic tourists. Based on their very nature, some of the previous studies on domestic tourists travel motivation have several limitations. For example, some of the reviewed studies (Matiza and Slabbert, 2023; Matiza and Kruger, 2022) analysed domestic tourists travel motivation from a COVID-19 perspective, making them inefficient in informing sustainable domestic tourism development. While others focused on single attractions (Moliner-Tena et al., 2023), tiny locations (Duong et al., 2023) and a single type of traveler (Yang et al., 2023). The present study attempts to fill these gaps. Notwithstanding the limitations of some of the previous studies, the literature above fundamentally revealed that domestic tourists' travel motives vary from one destination to another. It also demonstrates the presence of certain motivational similarities in studies conducted in different countries, indicating the existence of universal traits in relation to domestic tourists' travel motivations. The review also revealed that domestic tourists' travel motives vary from one destination to another. As destinations have different characteristics, they should have unique marketing strategies, hence the need for this study in Namibia. Subsequently, this study argues that, by examining domestic tourists' travel motives in the Erongo region, this study will enable destination managers and tourism planners to create and develop effective marketing policies and strategies. These policies and strategies can enhance domestic tourism's contribution to the sustainable tourism development in the study area.

## **MATERIALS AND METHODS**

This study used a positivist philosophical lense by adopting a quantitative research approach. A questionnaire was developed on the basis of previous studies (Baniya and Paudel, 2016; Bui and Jolliffe, 2011; Oyunchimeg and Gantuya, 2021; Mappingure et al., 2019; Matiza and Kruger, 2022). This study used a sample size of 400 respondents. To collect data, the study used non-random sampling, which combines convenience sampling techniques (targeting domestic tourists at tourism hotspots in the region) and snowball sampling techniques (targeting domestic tourists via an online survey using Google Forms). The personal surveys and web-based surveys were conducted over a two-week period between September and October 2023. Data were captured using Microsoft Excel<sup>TM</sup>, while Stata 17.0 SE was used for data analysis. The interpretation was based on a mathematical measure of the dispersion of the collected information. For each of the two-factor analyses, the mathematical measure involved using a 5-point Likert scale from the data to reach conclusions. The measure produces a single value that ranges from one (1) to five (5).

To reduce the complexity of the data, dimensionality reduction analysis in the form of exploratory factor analysis (EFA) was computed (for both push and pull variables). Both analyses employed the principal component analysis

(PCA) method of factor analysis, along with the varimax orthogonal rotation technique. Based on Osborne's (2014) recommendation, this study only retained variables with Eigen values greater than 0.50 using the Kaiser criterion. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's test were used before factor analysis. Only factors with eigenvalues greater than 1 were retained, as proposed by Cliff (1988). Composite reliability (CR), a measure of consistency between multiple measurements of a variable (Bacon et al., 1995), was computed to test the factor's internal consistency. Additionally, Average Variance Extracted (AVE), a measure of convergence among assets of items representing a latent construct (Hair et al., 2014), was also computed. Using Stata 17.0 SE, Kruskal-Wallis tests, Chi-Square tests, and Spearman's rank-order correlation tests were carried out as the final stage of data analysis. The Kruskal-Wallis H-test was used to compare demographics elements and trip characteristics to the identified factors.

The interpretation was performed at a 95% confidence limit, and therefore, it is unlikely that the results occurred by chance. The sample revealed differences that were undoubtedly present in the population it came from. According to Gelman (2012), the cut-off point for significant differences in social sciences research is a P-value <0.05. Therefore, this study only reports on significant relationships encountered (P-values <0.05) between the tested variables. The study gave due importance to ethical issues. The researcher obtained ethical clearance, requested permission to collect data from the respondents, and granted them the freedom to respond to the questionnaires. Figure 2 provides the methodology flowchart.

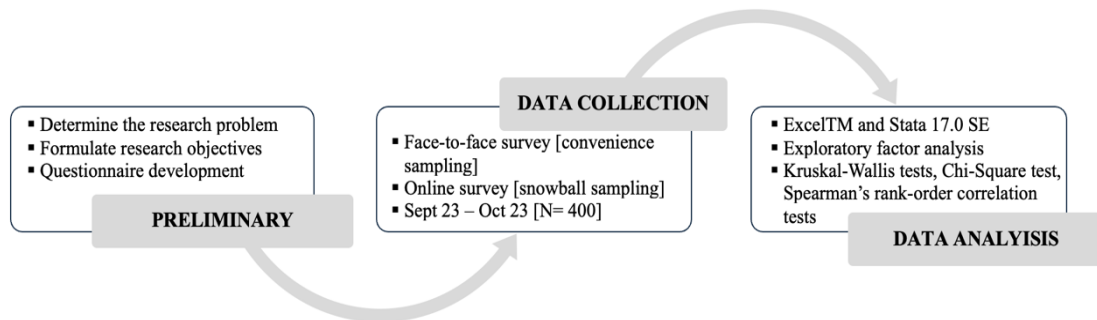


Figure 2. Methodology flowchart (source: Authors' illustration)

## RESULTS

### Demographic profile

Respondents' demographics and trip characteristics are illustrated in Table 1 and elaborated on thereafter. In summary, the surveyed domestic tourists visiting the Erongo region were mostly female, accounting for 60.50% of the respondents. They were mostly from the millennial generation (59.25%) and had at least attained a diploma or degree (51%). The results reveal that the surveyed tourists were never married (45%) and, for the most part, were repeat visitors, with 74.75% indicating that they had visited the region five (5) times or more. The results further indicate that the respondents in this study typically visited the region for leisure, vacation, or holiday purposes (56%), stayed between two (2) and four (4) nights (67.25%), and used their own car to travel to their destinations (65.75%). Hotels (22.75%), friends/family houses (21.50%), guesthouses (20.75%), and Airbnb (11%) were the most frequently used forms of accommodation.

Table 1. Demographics and trip characteristics

VARIABLES	CATEGORIES	FREQUENCIES	PERCENTAGES
Gender	Male	158	39.50
	Female	<b>242</b>	<b>60.50</b>
Age	Baby Boomers (1946-1965)	9	2.25
	Generation X (1965-1979)	81	20.25
	Millennials (1980-1994)	<b>237</b>	<b>59.25</b>
	Generation Z (1995-2005)	73	18.25
Education	No Schooling	1	0.25
	School Leaving Certificate	74	18.50
	Diploma / Degree	<b>204</b>	<b>51.00</b>
	Postgraduate	120	30.00
	Others	1	0.25
Marital status	Married	141	35.25
	Divorced/Separated	5	1.25
	Widowed	4	1.00
	Never married	<b>180</b>	<b>45.00</b>
	Living with partner	70	17.50
Number of Visit	1 time	21	5.25
	2-4 times	80	20.00
	5 or more times	<b>299</b>	<b>74.75</b>
Purpose of visit	Leisure / vacation / holiday	<b>224</b>	<b>56.00</b>
	Visiting friends and family	91	22.75
	Business/conference	19	4.75
	Attending a wedding / funeral	34	8.50

	Religious activities	5	1.25
	Medical	2	0.50
	Others	25	6.25
Accommodation Used	Lodge	26	6.50
	Hotel	<b>91</b>	<b>22.75</b>
	Airbnb	44	11.00
	Guesthouse	83	20.75
	Camping	32	8.00
	Second/holiday home	26	6.50
	Friends/Family house	86	21.50
	Other	12	3.00
Duration of Visit	Day trip	17	4.25
	1-night	15	3.75
	2-4 nights	<b>269</b>	<b>67.25</b>
	5 or more nights	99	24.75
	Others	25	6.25
Mode of Transport	Airplane	9	2.25
	Bus	51	12.75
	Own car	<b>259</b>	<b>65.75</b>
	Motorcycle	1	0.25
	Taxi / Public transport	77	19.25
	Train	1	0.25
	Other	2	0.50

### Factor analysis of push factor variables

The factor analysis process, as described in the methodology section, produced a relatively refined and moderately correlated three-component model with eigenvalues greater than 1 and coefficients above 0.5. The model explained 54.025% of the total variance, which is above the general rule level of at least 50%, as suggested by Streiner (1994). The KMO of the modified three-component model (0.776) was in the 'middling' range, according to Shrestha (2021). Moreover, the significant Bartlett's test of sphericity P-value < 0.0001 indicated that there are adequate correlations among variables to proceed (Shrestha, 2021). The three retained components, which were labeled after an extensive literature review, are depicted in Table 3 and discussed thereafter.

Table 2. Factor Analysis: Push Factors

	Factor Loading	SD	VE	Eige.	CR	AVE	Mean Value
<b>Relaxation and escapism</b>	<b>0.749</b>		<b>25.223%</b>	<b>3.531</b>	<b>0.83</b>	<b>0.499</b>	<b>4.289</b>
For relaxation	0.771	0.861					4.428
To escape from daily life	0.790	1.010					4.390
To spend time with family and friends	0.662	1.034					4.367
To do sightseeing	0.673	1.072					3.973
Availability of disposable income	0.622	1.256					3.828
<b>Seeking participatory experiences</b>	<b>0.749</b>		<b>16.232%</b>	<b>2.272</b>	<b>0.80</b>	<b>0.582</b>	<b>3.276</b>
To participation in adventure activities	0.831	1.206					3.502
To participation in cultural activities	0.541	1.410					2.973
To participation in ecotourism activities	0.875	1.186					3.353
<b>Seeking enriching experience</b>	<b>0.771</b>		<b>12.570%</b>	<b>1.759</b>	<b>0.81</b>	<b>0.592</b>	<b>3.651</b>
For Self-fulfilment	0.723	1.016					3.953
To boost my self-confidence	0.769	1.236					3.420
The need for self-exploration	0.820	1.161					3.580

SD= Standard Deviation, VE= Variances explained, Eige.= Eigenvalues

#### Factor 1: Relaxation and escapism

This factor, which was labeled *relaxation and escapism*, received the highest weighted mean score of 4.289 and is, therefore, the main push factor for domestic tourists to visit the Erongo region. This factor includes themes such as relaxation, escaping from daily life, spending time with family and friends, sightseeing and disposable income. A remarkable number of past research studies have identified relaxation and escapism as a push factor for domestic tourists (Bui and Jolliffe, 2011; Mapingure et al. (2019); Oyunchimeg and Gantuya (2021); Duong et al. (2023); Ayoub and Mohamed, 2024).

#### Factor 2: Seeking Participatory Experiences

The second identified push factor was *seeking participatory experiences*, which received a weighted mean score of 3.276. It refers to participation in ecotourism, adventure, and cultural activities. Matiza and Kruger (2022) identified this factor as a push factor for domestic tourists.

#### Factor 3: Seeking enriching experiences

*Seeking enriching experiences* was identified as the third and final push factor for domestic tourists to visit the study area. The factor received the second-highest weighted mean score of 3.651. Within this factor, the main themes identified

included self-fulfillment, boosting self-confidence and self-exploration. Ayoub and Mohamed (2024) have also identified this factor as a crucial aspect of domestic tourists visiting a specific destination.

The analysis reveals that the relaxation and escapism factor, with an eigenvalue of 3.531, accounted for the highest amount of variance, explaining 25.223% of the total variance. Participatory experiences, with an eigenvalue of 2.227, accounted for the second-highest variance, explaining 16.232% of the total variance. While enriching experiences explained 12.570% of the total variance with an eigenvalue of 1.759.

As shown in Table 2, the CR values of the factors in this model ranged from 0.83 for relaxation and escapism, 0.81 for enriching experiences, and 0.80 for participatory experiences. This demonstrates that all three factors have superior composite reliability, which is higher than Shrestha's (2021) recommended advanced phase value of 0.7. Furthermore, the AVE column ranges from 0.499 to 0.593. According to Fornell and Larcker (1981), even if AVE falls below 0.5 but CR surpasses 0.6, the convergent validity of the construct is still adequate. Therefore, it can be concluded that all items adequately converged to their respective latent constructs.

### Comparison between push factors and demographics and travel characteristics

To establish whether there were any significant differences between the identified factors and demographics and trip characteristics, a comparison between the findings was conducted. The results show significant relationships between all three push factors and some aspects of demographics and trip characteristics.

A Kruskal-Wallis H-test showed that there was a statistically significant difference in respondents' scores for *relaxation and escapism* in relation to level of education (P-value of 0.043), number of visits (0.040), purpose of visit (0.000) and source of information (0.013). The post-hoc test results show that respondents with a diploma or degree level of education (rank mean of 208.056), those who have visited the study area five or more times (208.903), those who travel for leisure (208.903), those who visit friends and family (180.780), and those who use social media (220.149) and the internet/website (194.402) as information sources are more likely to visit the study area due to their need for *relaxation and escapism*.

The test also showed that there was a statistically significant difference in scores for *seeking participatory experiences* in relation to age (0.026), number of visits (0.000), purpose of visits (0.000), mode of transport (0.014), type of accommodation (0.007) and source of information (0.000). The post-hoc test results indicate that respondents from Generation Z (293.785), those who visited the study area once (293.785), those who visited for leisure (216.895) and those who used advertisements (390.000) and travel magazines (340.500) as information sources are statistically more inclined to *seek participatory experiences*.

A Kruskal-Wallis H-test further showed that there was a statistically significant difference in respondents' scores for *seeking enriching experiences* in relation to age (0.000), duration of visit (0.022), mode of transport (0.014), and source of information (0.013). The post-hoc test results indicate that statistically, female respondents (217.316) and those who used advertisements as a source of information (208.903) were more likely to *seek enriching experiences*. This suggests that respondents' needs for enriching experiences differ significantly by gender and source of information.

### Factor analysis of pull factor variables

The process produced a relatively refined and moderately correlated four-component model with eigenvalues greater than 1 and coefficients higher than 0.5. The model explained 61.604% of the total variance. The KMO of the modified four-component models was 0.727, while Bartlett's test of sphericity p-value < 0.0001 indicated that there were adequate correlations among variables to proceed. Table 3 depicts the four retained components.

Table 2. Factor Analysis: Pull Factors

	Factor Loading	SD	VE	Eige.	CR	AVE	Mean Value
<b>Destination attributes</b>	<b>0.752</b>		<b>26.042%</b>	<b>3.385</b>	<b>0.84</b>	<b>0.575</b>	<b>4.118</b>
Excellent recreation facilities	0.667	1.054					3.908
Natural scenery	0.864	0.794					4.457
Wide open space	0.825	0.902					4.315
Famous attraction	0.656	1.144					3.792
<b>Events and activities</b>	<b>0.714</b>		<b>17.766%</b>	<b>2.309</b>	<b>0.84</b>	<b>0.574</b>	<b>3.651</b>
Sports events	0.817	1.256					3.828
Shopping opportunity	0.611	1.373					2.888
<b>Safety and familiarity</b>	<b>0.735</b>		<b>9.297%</b>	<b>1.208</b>	<b>0.70</b>	<b>0.540</b>	<b>4.175</b>
Safety of local environment	0.750	0.906					4.175
Familiarity of local environment	0.720	0.960					4.152
<b>Variety of experiences</b>	<b>0.766</b>		<b>8.499%</b>	<b>1.104</b>	<b>0.74</b>	<b>0.598</b>	<b>4.069</b>
Entertainment opportunity	0.658	1.122					3.868
Variety of experience	0.874	0.880					4.270

SD= Standard Deviation, VE= Variances explained, Eige.= Eigenvalues.

#### Factor 1: Destination attributes

The first factor received a weighted mean score of 4.118 and was labeled *destination attribute*. This factor encompasses themes such as natural scenery, wide open space, excellent recreation facilities and famous attractions. This factor was previously reported by Ayoub and Mohamed (2024) and Duong et al. (2023) as a key pull factor for domestic tourists.

**Factor 2: Events and activities**

The factor labeled *events and activities*, received a weighted mean score of 3.651 and is, therefore, one of the main pull factors for domestic tourists to visit the Erongo region. This factor's main themes include sports events and shopping opportunities. Baniya and Paudel (2016), Bayih and Singh (2020), and Oyunchimeg and Gantuya (2021) studies also identified this factor as influential in domestic tourists' decision-making processes.

**Factor 3: Safety and familiarity**

The factor labeled *safety and familiarity* was the third identified push factor, receiving the highest weighted mean score of 4.175. It concerns the safety and familiarity of the local environment. This factor was previously identified as a pull factor for domestic tourists by Ayoub and Mohamed (2024), albeit under the label of 'environment and safety'.

**Factor 4: Variety of experiences**

*Variety of experiences* was identified as the fourth and final pull factor for domestic tourists to visit the study area. The factor received a weighted mean score of 4.069 and included themes such as entertainment opportunities and the variety of experiences that the study area offers domestic tourists. Baniya and Paudel (2016) study also identified this factor as a crucial aspect of domestic tourists' pull motivation.

The analysis further reveals that the factor labeled *destination attribute*, with an eigenvalue of 3.385, accounted for the highest amount of variance, explaining 26.042% of the total variance. With an eigenvalue of 2.309, *events and activities* explained 17.766% of the total variance, *safety and familiarity* explained 9.297% of the total variance, with an eigenvalue of 1.208, while *variety of experiences* explained 8.499% of the total variance with an eigenvalue of 1.104.

In this model, the factor CR values ranged from 0.70 to 84. This indicates that all three factors have superior composite reliability, which is greater than the standard value of 0.7. Additionally, the AVE column in Table 3 is greater than the standard value of 0.5; thus, the measurement model is free from convergent.

**Comparison between pull factors and demographics and travel characteristics**

To ascertain whether there were any significant differences between the identified pull factors and demographics and trip characteristics, a comparison between the findings was conducted. The results show significant relationships between four of the five identified pull factors and some aspects of demographics and trip characteristics.

A one-way ANOVA on the rank test showed that there was a statistically significant difference in respondents' scores for *destination attributes* in relation to gender (P-value of 0.017), purpose of visit (0.000), type of accommodation (0.023) and source of information (0.011). The post-hoc test results indicate that statistically, female respondents (rank mean of 211.599), those who traveled for leisure (225.071), those who stayed at a second or holiday home (236.596) and those who used advertisement (244.000), social media (214.264) and their own knowledge (208.680) as sources of information are more likely to be pulled by destination attributes.

The results also demonstrate a significant relationship between the factor of *events and activities* and demographics and trip characteristics, including age (0.000), level of education (0.000), number of visits (0.019), purpose of visit (0.000), mode of transport (0.006) and source of information (0.000). The post-hoc test results indicate that *events and activities* was highly rated by respondents from generation Z (251.486), those who had never married (222.141), those who visited the study area once (308.500) and those who used the internet as a source of information (280.500).

The comparison between duration of visit and factor 3 (*safety and familiarity*) yielded a score of 0.029, while the difference in scores between sources of information and the same factor was 0.002. The post-hoc test results indicate that day visitors (265.500), those who used advertisement (274.833) and radio (239.733) as sources of information were more concerned about safety and familiarity than others.

A Kruskal-Wallis H-test also showed that there was a statistically significant difference in respondents' scores for *variety of experiences* in relation to age (0.033), purpose of visit (0.006), type of accommodation (0.023) and source of information (0.002). While the post-hoc test results reveal that statistically, respondents from the millennial age group (209.854), those who were attending weddings or funerals (313.617), those who stayed at campsites (300.296) and those who used radios as sources of information (324.900) are more likely to seek a variety of experiences.

**DISCUSSION**

Understanding and responding to the diversity of domestic tourists' needs and expectations have become essential aspects of overall tourism development at many destinations globally. In the same vein, the investigation of domestic tourists' travel motivation has been credited with providing a good foundation for these understandings. Consequently, this study attempted to comprehend domestic tourists' travel motivation and supplement the theoretical and empirical evidence on push and pull motivation factors.

From a travel motivation standpoint, this study shows that both push and pull are important drivers of domestic tourism development in the Erongo region. This is in line with earlier findings showing that both internal and external factors influence domestic tourists. From this study, relaxation and escapism, seeking participatory experiences and seeking enriching experiences emerged as the three main push factors for domestic tourists to visit the Erongo region. In other words, domestic tourists decide to visit the study area because they want to fulfill their intrinsic desires.

Consequently, policymakers and tourism planners should tailor tourism offerings to domestic tourists' motivations (considering the asserted relationships) to induce more domestic tourism demand and the consumption of tourism products and services among Namibians. It is essential for them to ensure that local destinations offer opportunities for relaxation and escapism. These efforts should be targeted at frequent visitors, leisure travelers, and VFR travelers through social



media. Based on the result of this study, the tourism suppliers in the study area should strive to enhance participatory experiences. These efforts should include improved adventure, cultural and ecotourism activities centered on Generation Z, first-time visitors, and leisure travelers.

Additionally, the development of products and marketing messages should highlight the destination's unique features, natural scenery, and diversity to attract more domestic tourists. Closer attention in this regard must be particularly paid to leisure travelers and second-home tourism. Furthermore, this study recommends that tourism suppliers in the study area should also focus on providing a variety of experiences in order to attract more millennials, those attending weddings and funerals, and those seeking camping experiences. This study notes that safety and security are important motivators for domestic tourists, particularly day visitors and those who use advertisements and radio as sources of information.

## CONCLUSION

This study investigates the push and pull factors influencing domestic tourism in Namibia's Erongo region. This study's findings suggest that the push and pull factors of domestic tourists in the study area differ from those of domestic tourists in other destinations, as studies conducted in other destinations disclosed other push and pull factors that did not appear in this study. Therefore, given the unique characteristics of each destination, it is necessary for the Erongo region to adopt a marketing strategy that effectively promotes the aforementioned attributes.

Equally important, because domestic tourists in different destinations have different intrinsic desires, the region must develop specifically directed and focused promotion programs designed to tap these intrinsic desires to satisfy their underlying needs. By adopting the proposed strategies, the region can tap into the full potential of domestic tourism. The outcome of this study will help guide policymakers, tourism planners, and marketers in refining market segmentation and devising effective strategies for domestic tourism development.

This study significantly contributes to the understanding of travel motivations, specifically within Namibia's domestic tourist landscape. This study not only identified the drivers behind domestic tourists' choices but also advanced the existing body of literature on tourist motivations within the Namibian context.

The study focused solely on the Erongo region and surveyed 400 domestic tourists using a quantitative research approach that involved non-random sampling, including convenience and snowball sampling techniques. Therefore, it is crucial to conduct similar studies in other regions of Namibia to determine whether motivational factors for domestic tourists are consistent or vary across different regions. Future research may also explore alternative research designs and techniques to gauge potential changes in motivational factors over time. Nevertheless, the findings of this study can serve as a guideline for sustainable domestic tourism development in the study area and other developing economies.

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## EXPLORING THE EFFECTS OF CRIMINAL ACTIVITIES ON SUSTAINABLE TOURISM DEVELOPMENT IN CROSS RIVER STATE-NIGERIA

**Ayuk Awunghe ACHU\*** 

Department of Sociology, University of Calabar, Calabar, Nigeria, e-mail: aawunghe@yahoo.com

**Jacob Otu ENYIA** 

Faculty of Law, University of Calabar, Calabar, Nigeria, e-mail: Jake.enyia@yahoo.com

**Ebegbulem JOSEPH** 

Department of Political Science, University of Calabar, Calabar, Nigeria, e-mail: jcebegbulem@yahoo.com.

**Cleverty Afu NJONG** 

Faculty of Law, University of Calabar, Calabar, Nigeria, e-mail: Clevertyafu001@gmail.com

**Odinka Godfrey EKENE** 

Department of Sociology, University of Calabar, Calabar, Nigeria, e-mail: Ekeneodinka2@gmail.com

**Oko Peter EREH** 

Department of Geography and Environmental Management, University of Calabar, Calabar, Nigeria, e-mail: Okopeter36@yahoo.com.

**Okongo John NSOR** 

Department of Business Management, University of Calabar, Calabar, Nigeria, e-mail: nsor-john@yahoo.com

**Ojiho Isaac HONEY** 

Department of Social Work, University of Calabar, Calabar, Nigeria, e-mail: jihoisaac7@gmail.com.

**Hodo B. RIMAN** 

Department of Banking and Finance, University of Calabar, Calabar, Nigeria, e-mail: horim105@yahoo.com

**Tiku Oru TAKIM** 

Department of Social work, University of Calabar, Calabar, Nigeria, e-mail: takimtiku@unical.edu.ng

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**Abstract:** The study examines the impact of crime on sustainable tourism development in the southern senatorial district of Cross River State, Nigeria, focusing on kidnapping, armed robbery, and drug abuse/trafficking in relation to the Calabar Carnival. Employing a survey design, data from 384 respondents were collected through questionnaires and interviews. Simple linear regression analysis indicates a significant association between kidnapping, armed robbery, drug abuse/trafficking, and sustainable tourism, particularly the Calabar Carnival. Recommendations include prioritizing local community involvement in tourism management to address security concerns, enhancing security personnel training in tourism education and modern policing techniques, and allocating increased funding for alternative means of subsistence for indigenous populations. These measures aim to mitigate negative impacts, encourage tourism, and foster sustainability in the region.

**Keywords:** Tourism. Crime, sustainability, armed robbery, Drug abuse, trafficking.

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### INTRODUCTION

Over the past six decades, the tourism industry has continued to expand to assume the status of the fastest- growing sector in the global economy (Zibanai, 2020; Maphanga and Henama, 2019). Besides, the tourism sector has proven to be resilient to the economic crisis and unforeseen challenges, such as kidnapping, armed robbery, drug abuse and trafficking and terrorist attacks (Tyler, 2021). It may seem surprising, but even in the face of natural disasters or terrorist attacks; the numbers of international tourists have not waned; rather only the map of tourist destinations is changing (Global Terrorism Index, 2022). Tourism is also considered a strong incentive for other branches of the economy, and beyond its direct impact, tourism serves as a robust catalyst for other sectors like construction and agriculture (Quang, 2021). Hence, many governments and supranational organizations perceive tourism as a positive phenomenon (Wanner et al., 2020). For

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\* Corresponding author

example, the United Nations General Assembly declared the year 2017 the International Year of Sustainable Tourism for Development (United Nations, 2023). It was then recognized that tourism has the potential to be a driver of development and peace, promoting the harmonious co-existence of people from all countries (Giampiccoli et al., 2020).

In another development, Sustainable tourism marks a transformative evolution in the conceptualization and administration of tourism, focusing on minimizing adverse environmental and socio-cultural effects while optimizing advantages for local communities (Rantala et al., 2020). Additionally, the intricate interplay between crime and sustainable tourism introduces a potential hazard that, if not appropriately tackled, may redirect resources from development endeavours to targeting crime prevention or mitigation (Wu et al., 2021). Moreover, a heightened crime rate possesses the capacity to undermine the social fabric of communities in tourist destinations, resulting in a breakdown of trust and cohesion among residents (Bryan and Evan, 2021). This, in turn, directly jeopardizes tourism as a secure and welcoming recreational pursuit (UNWTO, 2020; Hrvoje and Ivana, 2019). As the global momentum behind sustainable tourism continues to grow, it becomes imperative to address the impact of crime on its advancement (Spencer and McBean, 2020). Crime in tourism destinations manifests in diverse forms, such as armed robbery, trafficking, drug-related offenses, and kidnapping (John et al., 2023). These incidents have the potential to discourage tourists, leading to a decline in tourism revenues. However, implementing community-based tourism strategies can enhance the security and welfare of both tourists and local communities in tourism areas (Sutresna et al., 2019). This underscores how the relationship between sustainable development and community-based tourism (CBT) may be utilized to enhance the management and operation of tourism (Putu et al., 2022). Beyond threatening the safety of tourists, such crimes undermine the integrity of a destination and dissuade potential visitors. Promoting community involvement in tourism management cultivates a feeling of ownership and accountability, resulting in heightened security measures and heightened vigilance against criminal activities and that, engaging local residents in the management of natural and cultural resources within community-based tourism can stimulate the local economy and yield more significant advantages (Lo and Janta, 2020; Pratt, 2020).

In another dimension, even when some locations may be incredible, those grappling with high crime rates could experience increased costs for security measures and law enforcement. This, in turn, can deplete the growth and sustainability of tourism (ARMORMAX's 2022 report on the world's dangerous tourist destinations). Illegal activities such as kidnapping, armed robbery, and drug abuse or trafficking tend to flourish in regions with inadequate law enforcement, posing a threat to the tourism industry (Shivam, 2022). Crime has a detrimental impact on tourism, affecting both revenue generation and the overall visitor experience (Hrvoje et al., 2019). Additionally, crime plays a role in environmental degradation, further complicating the sustainability of tourism destinations (UNODC, 2021). Illegal activities such as kidnapping, armed robbery, and drug abuse or trafficking tend to flourish in regions with inadequate law enforcement, posing a threat to the tourism industry (Shivam, 2022). Effectively addressing crime within the framework of sustainable tourism necessitates a comprehensive approach that engages multiple stakeholders (Mustafa, 2021). This includes collaboration among governments, tourism organizations, local communities, and law enforcement agencies to create a cohesive strategy for crime prevention and management in tourist destinations (Agapito et al., 2023; Offiong, 2019).

Some effective strategies that include community engagement, investment in infrastructure, legislation and enforcement, and tourist/tourism education are necessary tools in tackling crime in tourism destinations, which is essential not only for ensuring the safety and security of tourists but also for protecting the long-term sustainability of these destinations. Implementing effective strategies to prevent and mitigate crime is vital for fostering a positive and sustainable future for the tourism industry (WTTC, 2021; Baloch et al., 2022).

### **The Concern**

The modus operandi of criminals in tourism destinations has become increasingly fluid and transcends national borders. High-profile and lethal attacks targeting tourism places such as hotels, shopping centers, main streets, public squares and hospitals, as well as sites of symbolic and iconic value such as places of worship and tourist attractions, has ushered in a new era of protective planning in Europe and beyond but seriously lacking in Nigeria and some African countries (European Commission, 2022). The catastrophic effect of Crime on tourism sustainability and tourism industry is far consequential and suggest gain loss of a state and country's socio-economic trajectory. On the other hand, focusing on minimizing negative environmental and socio-cultural impacts while maximizing benefits for local communities must inescapably deals with crime and criminality for its sustainability. Nigeria, with its rich cultural heritage, diverse landscapes, and historical sites, has immense tourism potential (Madandola and Boussaa, 2023). However, the persistence of crime in various forms within the country raises significant concerns that tend to hinder the achievement of sustainable tourism goals. The safety and security of tourists are paramount for the success of any tourism destination. But where tourists' lives are threatened like in Nigeria, by insecurity, it becomes difficult for sustainable tourism to be realized (Winnie, 2022). These incidents deter potential tourists and damage the country's reputation as a safe tourism haven. Socially and culturally crime abrades the social cohesion of local communities, breakdown of trust among residents which can result to hostile environment for tourists and impede the preservation of cultural heritage and traditions.

Any environment related to tourism that allows criminal activities to persist and lack a robust legal framework and enforcement mechanisms would inevitably hamper efforts to advance the course of tourism. Put differently, public space like tourism sites and destinations that are generally open and accessible to people must always be subjected to safety and security strategies. But with the increasing rate of kidnapping, armed robbery trafficking and other forms of crime, fear have been expressed that sustained tourism will bear the brunt of failure of not providing adequate security globally

(Brugger and Zongo, 2023; The Will, 2023; Olanrewaju et al., 2022). But in Kenya as part of the design to safe tourism, the government utilizes the reformation and rehabilitation of not only addicts but also criminals as well as ex-convicts, as a vital strategy in the prevention of crime to boost tourism (Nelson and Kenedy, 2023).

Many countries across the world, particularly those grappling with the challenges of armed robbery, kidnapping, and substance abuse, have implemented extensive treatment and rehabilitation initiatives as a preemptive strategy. Research indicates that such interventions hold promise in altering individuals' harmful behaviors (Vanguard, 2023; CNDBlog, 2023; Afunugo, 2023). Neglecting to address crime proactively poses a significant threat to the hospitality industry (Amy, 2024). For instance, statistics reveals a substantial impact on tourism sustainability due to kidnapping incidents in various countries: Colombia (5,181 cases), Mexico (1,434), Russia (250), Brazil (515), Philippines (512), Nigeria (34), India (76), Ecuador (66), Venezuela (109), and South Africa (11) (Kpada and Jeffrey, 2022; Eseosa and Eguonor, 2023). Additionally, reports indicate that 7 out of 10 Nigerians fear falling victim to crime (Olumoyegun et al., 2023). Ensuring internal safety and security remains fundamental for hosting tourists (Santana-Gallego et al., 2020).

The Pacific countries of Fiji, Palau, Marshall Islands, Solomon Islands and Tonga in a study, showed that citizens are subjected to the exploitation, for both forced labour and sexual exploitation, which seems to take place especially in the tourist areas (UNODC, 2023). The criminal activity of trafficking is considered to equate to a modern day form of slavery and it involves particularly egregious breaches of fundamental human rights. There is less information about the criminal gangs operating trafficking in persons and drugs in the region. Though Patterns of small groups of traffickers exists, deceiving foreign women to work in hospitality industry and eventually sexually exploiting them- is a minus to tourism sustainability. The leading countries have been found to be hit by the excessive use of hard drugs, including cocaine and heroin. According to the biannual report by NACADA, at least 45 percent of the residents in the region admitted to having used at least one substance (NACADA, 2023). Undoubtedly, the menace of drugs and substance abuse in the region is one of the thorny issues that have affected tourism industry negatively.

Any serious attempt towards developing tourism in Nigeria and the world generally must therefore begin with effective crime prevention and control strategies geared towards ensuring internal security (Hope, 2023). However, the regular targeting of tourist spaces by terrorist groups, with the aim of inflicting mass casualties, causing material damage, attracting public attention or enhancing the feeling of public insecurity, has necessitated, among other things, the consideration of protective security in the overall design (United Nations World Drug Report, 2022). In recognition of these challenges the government has put in place some policies in terms of laws and other related provisions to address real and perceived threat to tourism sustainability in cross river state. Among such include; tourism bureau law, which provides inter-alia; promote tourism and provides tourist facilities throughout cross river state, tourism development levy law, the Nigerian tourism police and development corporation act cap N137, LFN, 2004 and the likes ,all in an attempt to create a conducive environment for tourism to thrive. Unfortunately in spite of these efforts, sustaining tourism is still a herculean task with crime not abating. Hence the questions; what possibly could inform the meteoric rise in kidnapping, armed robbery, drug abuse and trafficking in areas associated with tourism?, to what extent can community activities assist or otherwise impact tourism sustainability in Cross-River State and Nigeria.

### **Research hypotheses**

1. There is no significant relationship between tourism sustainability, Calabar carnival and kidnapping in cross river state.
2. There is no significant relationship between tourism sustainability, Calabar carnival and armed robbery in cross river state.
3. Drug abuse, trafficking and Calabar carnival has no relationship with tourism sustainability in cross river state.

### **Calabar carnival as cross river tourist event**

The Calabar Carnival is one of Nigeria's most celebrated and internationally recognized cultural festivals. Located in the vibrant city of Calabar in Cross River State, this annual event has gained a reputation for its grandeur, diversity, and artistic splendor. The Calabar Carnival is often referred to as "Africa's Biggest Street Party." The Calabar Carnival was first conceived in 2004 by the Cross River State government as a way to promote tourism and celebrate the rich cultural heritage of the region. It has since grown into a massive event, attracting participants and tourists from across Nigeria and around the world. One of the defining features of the Calabar Carnival is its diverse cultural displays. It brings together people from various ethnic groups, showcasing a colourful array of costumes, dances, music and traditions from different parts of Nigeria and the world. The festival offers a unique opportunity to experience the country's cultural music in one place. The carnival features several parades and processions, with the main highlight being the "Carnival Float," where beautifully decorated and themed floats glide through the streets. These floats are often a visual spectacle, each representing a different aspect of Nigerian culture, history and contemporary issues.

The carnival hosts a variety of competitions, including dance competitions, masquerade displays, and beauty pageants. These events add an element of competition and excitement to the festival, with participants vying for coveted titles and prizes. The streets of Calabar come alive during the carnival with performances by local and international artists. Musicians, dancers, and other entertainers create a lively atmosphere for spectators and participants alike. The Calabar Carnival has significantly boosted tourism in the Cross River State and Nigeria as a whole. It attracts tourists, both domestic and international, contributing to the local economy and the growth of the tourism industry. Beyond the entertainment and economic aspects, the Calabar Carnival plays a crucial role in preserving and promoting Nigeria's rich cultural heritage. It provides a platform for different communities to showcase and celebrate their traditions, helping to ensure that these customs are passed down to future generations. In recent years, the carnival has taken on an



environmentally conscious theme, with a focus on eco-friendliness and the conservation of natural resources. This demonstrates a commitment to sustainable practices and responsible tourism, which stands as a testament to the cultural richness and vibrancy of the region. The Carnival Calabar is a dazzling testament to the unity, creativity, and cultural wealth of Nigeria. Its evolution into "Africa's Biggest Street Party" is a shows of the passion and dedication of all those involved. Through its vibrant displays, spirited competitions and dynamic performances, the Carnival Calabar continues to inspire, educate and entertain, leaving an indelible mark on the cultural landscape of Nigeria and beyond.

## **LITERATURE REVIEW**

### **Kidnapping and Tourism sustainability**

Tourism stands as a crucial economic strength for many countries, playing a substantial role in GDP, job creation, and foreign exchange earnings. Despite its significance, the sustainability of tourism faces escalating challenges, with one notable threat being the surge in kidnapping incidents. Kidnapping, constituting a criminal act involving the unlawful abduction and confinement of individuals, poses serious ramifications for tourism. The connection between kidnapping and tourism holds grave implications for the tourism industry, which is pivotal for the economic growth of many nations globally. The potential disruption occasioned by kidnapping incidents has the capacity to dissuade tourists from visiting specific destinations, thereby exerting enduring repercussions on the affected region's tourism sector (Ibrahim et al., 2021; Eyisi et al., 2021; Kanu et al., 2023). In the same vein, kidnapping incidents can exert severe consequences on tourism sustainability, targeting tourists, tour operators and local residents alike. Varied impact of kidnapping, do exist to include but not restricted to; the economic impact, which is conspicuous, as kidnapping incidents can precipitate a substantial reduction in tourism revenue. Tourists may opt to cancel their trips or choose ostensibly safer alternatives, leading to diminished income for businesses operating within the tourism sector, including hotels, restaurants and tour operators. No doubt kidnapping is a global problem that affects countries all over the world from the economically advanced regions of the west to the economically backward regions of Africa, Asia, and beyond. Governments world over are working hard to address this problem and ensure that the perpetrators are captured and brought to justice. Unfortunately criminals in African countries, such as Nigeria and Cameroon, have used kidnapping of tourists and indigenes as funding and intimidation tactics (Godwin et al., 2022; Oketa, 2018).

Furthermore, the consequences of kidnapping extend to the realm of reputation and image, wherein it tarnish a destination's perception as a safe and secure place to visit. In modern businesses, the success of an organization is heavily reliant on the satisfaction of various stakeholders, such as customers, employees, creditors, suppliers, public authorities, and advocate groups, who hold diverse environmental, social, and economic interests. To effectively manage these stakeholders, businesses must consider the interests and concerns of all groups and individuals when making management decisions. This is essential to maintain a level of satisfaction among all stakeholders or at least ensure the most important ones are satisfied with the decision made. It is the moral obligation of managers to balance the interests of all stakeholders and direct the activities of the firm in a way that serves and coordinates the interests of all groups (Elda, 2023). The kidnapping effect encompasses a decline in investment, as investors may exhibit reluctance to inject capital into tourism-related projects within areas marked by a history of kidnapping incidents. The adverse impact also manifests in terms of decreased employment, elucidating how kidnapping incidents can trigger a downturn in tourism industry. This negatively affects the livelihoods of individuals and communities reliant on employment opportunities stemming from the tourism sector. The global tourism industry is a multi-billion-dollar sector that significantly contributes to the economies of many countries. However, alongside its economic benefits, tourism also brings about security challenges, which in the context of global tourism can manifest in various forms, including express kidnappings involving brief abductions for ransom and more prolonged cases where tourists are held captive for an extended period. There have been several agitations in Nigeria, but none have degenerated into the current barbaric, horrendous, heinous, and despicable dimensions of carnage, massacres, and bloodletting orchestrated by terrorists, bandits, kidnappers, and other organized violent crime syndicates (Okwuwada, 2023).

Express kidnappings, characterized by their short duration and the demand for immediate ransom, are often opportunistic and tend to target tourists perceived as wealthy. An example is the 2019 incident in Mexico, where a group of American tourists were briefly abducted in the state of Michoacán, highlighting the vulnerability of tourists to such incidents in certain regions. Extremist groups also engage in tourist kidnappings. These groups target areas with high tourist traffic to gain significant attention. For instance, Boko Haram, an Islamist extremist group in Nigeria, targeted tourists and expatriates in the northeastern part of the country, abducting over 200 schoolgirls in 2014, drawing international outrage. Incontrovertibly kidnappers view tourists as potential sources of ransom due to the assumption that they have access to financial resources. Some tourists may be specifically targeted based on their nationality, as seen in the 2011 kidnapping of Western tourists in Mali by Al-Qaeda in the Islamic Maghreb (AQIM), which demanded a substantial ransom for their release. For instance, in Nigeria engineer, Olusola Olaniyi was held for five days, by kidnappers and beaten severely. Only after his family and employer agreed to pay a ransom before he was released, in the middle of the night, on a road a few miles away from where he had been kidnapped. Nigeria has faced an outbreak of kidnappings in recent years, affecting people of all ages and classes: groups of tourists, students, commuters traveling on trains and in cars through Nigeria's largest cities, and villagers in the northern countryside. With youth gangs and armed bandits finding that kidnapping for ransom produces big payoffs, such crimes have only multiplied (Egonu et al., 2023; Sedano, 2019). Proactive government responses can mitigate the trend of kidnapping in tourism-dependent regions. A State like Cross River State-Nigeria, heavily reliant on tourism, must invest in security measures to protect tourists.

However, the presence of security forces can also create tensions, as seen in Egypt's case, where increased military presence disrupted the tourist experience in response to kidnappings in the Sinai Peninsula. Tourist awareness and precautions, staying in secure accommodations, and being cautious in unfamiliar environments, are crucial to reducing the risk of kidnapping, because it can be very useful for cities that are World Heritage Sites to know the preconceived ideas that visitors have before visiting the city, along with how satisfied they feel with the trip when it is finished, this information can be used to continuously improve the tourist experience (Caple and Williams, 2023; Jimber del Rio et al., 2020; Ede and Okafor, 2023). Governments often provide travel advisories and safety guidelines for citizens traveling abroad and for leisure and recreational activities. While global tourism offers economic benefits, it also exposes tourists to security risks, emphasizing the need for vigilance and appropriate precautions in an interconnected world. Scholarly debate around tourism offers destination that have endured protracted conflict provides opportunity to be able to transition destinations to a more developed and normalized state where tourism is viewed as both a catharsis for communities to heal and a wider tool for economic development. This focuses on the potential opportunity that exists in destination regions and how can that change mature over time to form a destination for development, resilience and capacity toward socio economic advancement (Stephen et al., 2023).

### **Drug abuse, trafficking and tourism sustainability**

Global drug abuse and trafficking pose substantial challenges with far-reaching social, economic, and environmental implications. Conversely, sustainable tourism represents an approach to tourism development that seeks to reduce negative impacts while making profits for both the state and local communities. Drug abuse has become a troubling social problem in tourist destinations, such as popular beach resorts in Thailand, where a party culture prevails, and fostering recreational drug use among tourists (Kusuma et al., 2019). This poses challenges for local law enforcement and contributes to visceral patronage among tourists. For example, places like Koh Phangan, are known for its Full Moon Party, where drug abuse has led to public health concerns and heightened security measures. Drug trafficking tends to flourish in areas with high tourist traffic due to the opportunity to conceal illegal activities amid tourist crowds. This often results in violence and instability that negatively impact tourism (Marie et al., 2020). Also in Mexico, especially along the U.S.-Mexico border, where drug-related violence has discouraged tourists. Acapulco, once a prominent Mexican tourist destination, has experienced a decline in tourism due to drug cartel violence, significantly affecting the local economy (Preston, 2018).

In contrast, sustainable tourism emphasizes responsible travel practices, environmental conservation and community engagement, providing an alternative to tourism. In Costa Rica, for instance, sustainable tourism initiatives have thrived, with the country's commitment to conservation and community engagement safeguarding its natural beauty and reducing the appeal of illicit activities like drug trafficking (Jessica, 2018; Oxford Analytica, 2022). Sustainable tourism can empower local communities by offering alternative sources of income, alleviating economic desperation that often fuels drug-related activities. Community-based initiatives, such as cultural tours and artisan workshops, can divert both tourists and locals from drug abuse, as seen in Peru's Sacred Valley (Richardson, 2021). Addressing drug trafficking and promoting sustainable tourism requires collaboration at local, national and international levels. Governments, law enforcement agencies, and international organizations must unite to combat drug-related crime and advocate for responsible tourism. Drug abuse is a global public health issue affecting millions, involving the misuse of various substances with severe health consequences, including addiction, mental health disorders, physical health problems, and overdose-related deaths, imposing a significant burden on healthcare systems (Volkow and Blanco, 2023).

Drug trafficking conjures the illegal production, transportation and distribution of narcotics, often extending beyond national borders. Organized criminal groups typically control this transnational trade, leading to violence and instability in affected regions. The substantial profits derived from drug trafficking can fund criminal organizations and potentially disrupt the tourism trade industry. Hence is expedient to promote networking and initiatives focused on decoupling tourism's growth from the increased use of natural resources and addressing the challenges of pollution, biodiversity loss and climate change and stressed on youth heaths (Aulisio and Pereno, 2024). Traffickers employ various routes and methods, such as hidden compartments in vehicles, drug smuggling through postal services, and even tunnels between countries, specifically targeting tourism destinations for distribution. Global efforts led by the United Nations Office on Drugs and Crime recognize the adverse consequences of drug trafficking. Initiatives like the UN Convention against Transnational Organized Crime and the 2030 Agenda for Sustainable Development aim to combat the negative impacts of drug abuse and trafficking thereby reduce the associated risks. Sustainable tourism promotes practices that conserve cultural heritage, natural resources, reduce waste and foster peaceful coexistence. It prioritizes the respect of local cultures and involves communities in tourism activities to provide economic opportunities while preserving traditional practices. By creating jobs, generating income, reducing poverty, diversifying income sources and contributes to local economies.

### **Armed robbery and sustainable tourism development**

The prevalence of armed robbery in Nigeria is fast becoming an epidemic and is being blamed on the dwindling economic fortunes of majority and the widening gap between the affluent and the poor in our society leading to violent crimes especially armed robbery. In Nigeria at present, no place is safe from the ravages of the armed robbers, they attack homes, offices, shops, restaurants and churches to rob, rape, maim and kill. They operate at the banks with dynamites, strike at filling stations and swoop on victims at traffic jams (Patrick, 2020; Oliver, 2023). However, up until the 1960s, it was quite safe for people to travel from one part of the country to another. Before 1967, armed robbery was not a common phenomenon in Nigeria and did not attract public attention like pickpocketing, burglary, and stealing. This is because incidents of armed robbery were isolated and less violent and so did not generate a serious social problem (Habeeb and Hassien, 2018).

Recent events have shown that Nigerian society is insecure and vulnerable to crime. In tourism areas, the situation is perceived to have become worse, and in addition, the situation has diffused to non-tourism areas too (Cyril, 2023). It is also obvious that Nigeria's crime problem has implications for its position in the economic global market. A recent survey carried out by the United Nations Office on Drugs and Crime reveals that, Nigeria is rated as the riskiest country for business and tourism in the world. Since 1970, when the civil war ended, armed robbery is probably the only crime that has caused so much trepidation, apprehension, insecurity, public anger and concern to successive governments in Nigeria (Simeon and Nabil, 2022). Furthermore, it has been described as the most glamorous and fastest growing crime affecting much of the country. Armed robbery has also led to the sudden death of a good number of innocent citizens, security agents and robbers themselves. Tourists, families, and companies have lost lives and/or valuable belongings to armed robbers.

Unfortunately, it seems that insecurity of lives and property is among the major reasons that have led to poor patronage in tourism sustainability in Nigeria. Above all, it has discouraged foreign investors to invest in tourism business in Nigeria, thus affecting the economic growth of the nation. Armed robbery has truncated leisure activities in many tourism destinations in the world (Saraiva and Teixeira, 2023). A study to examine the impact of armed robbery on leisure pattern, in the city of Bamenda, found out that armed robbery was considered a crime that has wrecked serious havoc in tourist related areas of Africa. The paper argues that armed robbery in the city of Bamenda caused socio-economic and political imbalances among the social stratum of the city dwellers. The findings of the study further revealed that, armed robbery remained a source of continuous threat, harassments, violence and intimidation to the city dwellers of Bamenda, North West Region of Cameroon (Ofe Ako-Mbi et al., 2021).

A recent World Bank study on economic development in Jamaica identified armed robbery as one of the main reasons for weak economic development in Jamaica due to its substantial costs on business in the country. According to the World Bank survey, violent crime has a deterrent effect on tourism and enterprise behaviour particularly enterprise entry and expansion. A perception of armed robbery as violent crime has a serious obstacle that impact on sustainable tourism. In extreme cases, a high incidence of armed robbery may induce enterprises to exit from the market place or relocate to safer locations. Therefore, outlets in areas they perceive to be insecure are alienated and this may make business in such locations not viable. Armed robbery remains a more significant problem on Less Developed Countries (LDC's) compared to more advanced European Union member states. A large part of these differences are due to structural variations including the share of industry and services in the economy, the share of the private sector in Gross Domestic Product (GDP) and unemployment (World Bank, 2018). These interests stem from the fact that the entrepreneurial activities of firms have a relationship with economic development, job creation, spill-over effects, and, overall, macroeconomic stability. Nevertheless, such entrepreneurial activities need a quality business environment in order to thrive and to be sustainable. Available literature has shown that the presence of crime significantly erodes the quality of the business environment, either directly or indirectly. Firms operating in countries that are riddled with crime can experience a decline in profit and productivity. A possible deterring effect of crime on overall economic development includes the relationship between crime and inflows of Foreign Direct Investments (FDI) (World Bank, 2018).

## **THEORETICAL FRAMEWORK**

### **Rational Choice Theory and Criminal Behavior:**

Rational choice theory is a framework used in various social sciences, including economics, sociology, criminology, and political science, to explain human decision-making. It is based on the assumption that individuals are rational actors who make choices by carefully weighing the potential benefits and costs of their actions. This theory can be applied to understand a wide range of behaviors, including criminal activity, consumer choices, and political decisions. Rational choice theory suggests that individuals weigh the potential gains from committing a crime against the perceived risks or costs of getting caught. In the context of tourism, criminals may see opportunities to exploit the vulnerability of tourists and destinations for financial gain. Criminal activities such as theft, kidnapping and drug-related offenses often target tourists due to their perceived vulnerability. Tourists are typically unfamiliar with the local environment and legal systems, making them attractive targets for criminals seeking to maximize their gains (Aulisio and Pereno, 2024). For example, pickpocketing in crowded tourist areas like the Coliseum in Rome is a crime driven by rational choice. Offenders target tourists who are less likely to be familiar with local crime patterns and who may carry valuables.

Rational choice theory also suggests that increasing the perceived risks or costs of committing a crime can deter potential offenders. Adequate security measures, visible law enforcement, and surveillance can deter criminals from targeting tourists and thus enhance tourism sustainability (García-Hernández et al., 2023). For Example the presence of tourism police in popular tourist areas, such as the beaches of marina resort, Calabar-Nigeria, can create a visible deterrence to potential criminals, reducing the likelihood of criminal activity. Tourists themselves may apply rational choice principles when making travel decisions. Perceptions of destination safety influence tourists' choices, as they weigh the perceived risks and benefits of visiting a particular location. This can expressly show when tourists choose to avoid destinations with high crime rates, such as certain neighbourhoods in Rio de Janeiro, Brazil, in favour of safer alternatives, impacting the sustainability of those destinations. According to this theory, tourism sustainability depends on effective crime prevention strategies. Destinations that invest in crime prevention, including community engagement, education and local employment, can reduce the incentives for criminal behaviour, hence promoting long-term tourism sustainability.

Impliedly, rational choice theory helps us understand the decision-making process of criminals in targeting tourists and the subsequent impact on tourism sustainability. By examining the rational calculations made by both offenders and

tourists, we can develop effective crime prevention strategies and security measures that can enhance the safety and attractiveness of tourist destinations, ultimately promoting sustainability. While rational choice theory provides valuable insights into human decision-making, critics argue that it oversimplifies human behaviour by assuming perfect rationality and neglecting psychological factors, emotions, and social influences that can also shape choices. Nonetheless, it remains a foundational framework for understanding and predicting decision-making in various contexts.

## MATERIALS AND METHOD

The research was conducted in the Southern Senatorial District of Cross River State, situated between latitude 6.167 and longitude 8.6601 east of the Greenwich meridian, within the tropical rainforest region of Nigeria, estimated at approximately 9° 28'. This district shares its borders with the Cameroon Republic to the East, Benue State to the North, Abia and Ebonyi States to the West, Akwa Ibom State to the South West, and the Atlantic Ocean to the South. Additionally, it lies within the Cross River Basin, encompassing a total area of 53,855 km<sup>2</sup>, of which approximately 44,105 km<sup>2</sup> falls within Nigeria and Cameroon. The Southern Senatorial District of Cross River State comprises seven local government areas: Akamkpa, Akpabuyo, Bakassi, Biase, Odukpani, Calabar Municipality, and Calabar South Local Government Areas. The area is characterized by a predominantly civil service-based economy, with farming and fishing as the primary occupations. Geographically, the Southern Senatorial District extends from the coastal regions along the Atlantic Ocean to the freshwater swamps of Akpabuyo, Calabar, Bakassi, and Odukpani Local Government areas, with mangrove vegetation. It further extends through the dense, pristine forests of Akamkpa, known for its unique plant and animal species. The region experiences a tropical climate with an extended wet season from March to December (approximately ten months) and a shorter dry season of two months. The influence of the harmattan, a dry, dusty wind, is less pronounced in the Calabar Municipality and Calabar-South areas. The temperature in the Southern Senatorial District remains relatively stable throughout the year, with average temperatures ranging between 25 and 29 degrees Celsius.

The population of the Southern Senatorial District is characterized by its rich diversity, often described as a microcosm of various ethnic groups, languages and cultures. These groups, like many other residents of Cross River State, belong to the Bantu ethnic stock, originating from Central Africa. Predominant cultural groups in the Southern Senatorial District include the Efiks, Efuts, Quas, Ejagham, and Ekios. Despite linguistic variations, the people in this district share commonalities in their clothing styles, music, dancing and active engagement in small and medium enterprises, reflecting their shared heritage. The district's natural resources, accessibility and population collectively position it as the commercial hub of Cross River State. The study's population includes both male and female adult respondents residing in the Southern Senatorial District of Cross River State, Nigeria. The study focuses on respondents aged 18 years and above.

The sample size comprises individuals from various backgrounds, including village chiefs, traditional rulers, civil servants, students, artisans and entrepreneurs who currently reside in the Southern Senatorial District of Cross River State, Nigeria. As the exact population of the study is unknown, the researchers adopted the Cochran sample determinant to the sample size. The formula for Cochran's sample size determinant is as follows:

$$n_{\infty} = \frac{z^2 p(1-p)}{e^2}$$

Where: n represents the required sample size; Z signifies the confidence level (set at 95% or 1.96); p denotes the proportion of male and female adults in the Southern Senatorial District of Cross River State aged 18 years and above (given in this study as 50%, or 0.5); q represents the complement of p (set at 50%, i.e., 1 - 50%, or 0.5); e stands for the level of accuracy or margin of error (set at 0.05). Applying this formula by Cochran (1953) we get:

$$n = ((1.96)^2 (0.5) (0.5)) / (0.05)^2 = 385. n = (3.8416 * 0.25) / 0.0025; n = 0.9604 / 0.0025; n = 384.16.$$

Rounded to the nearest whole number, the required sample size is 384.

This study employed a multi-stage sampling technique, chosen for its suitability given the large and diverse study population, which comprises various clusters such as towns, villages, households and individuals. The sampling process proceeded through several stages to ensure representation. In the initial stage, the Southern Senatorial District was divided into seven distinct local government areas, namely: Calabar South, Akamkpa, Akpabuyo, Bakassi, Odukpani, Biase, and Calabar Municipality. From these seven local government areas (clusters), a simple random sampling method using the balloting technique was utilized to select four local government areas. The chosen local government areas were Calabar South, Akpabuyo, Bakassi and Calabar Municipality.

In the subsequent stage, two wards were randomly selected from each of the four selected local government areas, employing a simple random sampling technique. This led to the identification of eight selected wards. Furthermore, from these eight wards, two communities were randomly chosen, amounting to a total of sixteen selected communities. The balloting method was used to select these communities, with the initial two communities listed per ward being chosen. For the final stage of respondent selection, a systematic random sampling technique was employed. All inhabited houses within each selected community were numbered consecutively, distinguishing even and odd numbers. The study focused solely on even-numbered houses, which were systematically sampled within each enumerated cluster. Questionnaires were administered to all adults found in the selected houses. This systematic approach was consistently applied across all sixteen chosen communities. Consequently, in each of the selected communities, twenty-four respondents were chosen, resulting in a total sample size of 384 respondents from the Southern Senatorial District, Cross River State, Nigeria. This multi-stage sampling technique ensured a comprehensive and representative selection of study participants.

Data collection for this study was both primary (respondent's interviews) and secondary source (textbooks, journal articles, government publications). These two primary tools were selected for their superior validity in gathering the necessary data for the research. The questionnaire was structured with a combination of closed and open-ended questions and divided into two sections. Section 'A' of the questionnaire focused on capturing respondents' socio-demographic information, including details such as age, gender, marital status, and educational level. Section 'B' contained structured, closed-ended questions addressing the substantive issues raised in the research questions and hypotheses. The questionnaire was designed using a four-point Likert scale, with response options ranging from "Strongly Agree" to "Strongly Disagree". To ensure effective data collection, three research assistants were recruited and received training in questionnaire administration. In addition to the questionnaire, a structured in-depth interview schedule was developed to collect qualitative data. The interview schedule included a list of variables to be measured and was employed in interviews with crime victims, security personnel, and community leaders in selected communities within the study area. The selected interviewees were notified in advance, and appointments were scheduled for the interviews.

### Discussion of results

The Statistical Package for Social Sciences (SPSS) version 18 was used to analyze data. Descriptive statistics (percentages) was used to analyze the demographic data (gender; age; educational background, marital status, and occupation) and the results are presented in Table 1 While mean and standard deviation was used for other variables and presented in Table 2. Results of analysis of demographic data of respondents as presented in Table 1 above revealed that; out of the 367 accessible respondents, 142 respondents representing 38.69% are females, while 225 representing 61.30% are males. As for age distribution of respondents', 64 (17.43) are between 18-27 years, 111 (30.24) are between 28 - 37 years, 57 (15.53) are between 38 - 47 years, 105 (28.61) are 48 - 57 years, 30 (8.17) are 58 years and above. For respondents' marital status, 109 (29.70) are single, 205 (55.85) are currently married, 22 (5.99) are divorced/separated, 17 (4.63) widowed, 14 (3.81) are widowers. On respondents' educational background 21 (5.72) have completed primary education, 148 (40.32) completed secondary education, 198 (53.96) completed tertiary education. On respondent occupation; 133 (36.23) are students, 131 (35.69) are civil servants/traders, 103 (29.06) are artisans/ entrepreneurs.

Table 1.Respondents' demographic data (Source: Field survey, 2023)

Variable	Category	N	Percent (%)
Gender	Female	142	38.69
	Male	225	61.30
	Total	367	100.00
Age	18-27 years	64	17.43
	28-37 years	111	30.24
	38-47 years	57	15.53
	48-57 years	105	28.61
	58 years and above	30	8.17
	Total	367	100.00
Marital status	Single	109	29.70
	Married	205	55.85
	Separated	22	5.99
	Widowed	17	4.63
	Widower	14	3.81
	Total	367	100.00
Education background	Primary Edu	21	5.72
	Secondary Education	148	40.32
	Tertiary Education	198	53.96
	Total	367	100.00
Occupation	Student	133	36.23
	Civil servant/traders	131	35.69
	Artisans/entrepreneurship	103	29.06
	Total	387	100.00

Table 2.Descriptive statistics of study variables (source: field survey 2023)

	N	Mean	Std. Deviation
Kidnapping	367	16.2180	5.62405
Armed robbery	367	14.2289	6.69327
Drug abuse and trafficking	367	14.2289	5.35170
Valid N (listwise)	367		

Also, mean and standard deviations of study variables as presented in Table 2 above shows as follows; kidnapping (M = 16.2180, SD = 5.62405), armed robbery (M = 14.2289, SD = 6.69327), drug abuse/trafficking (M = 14.8011, SD = 5.35170),drug abuse, trafficking and tourism sustainability (M = 20.7602, SD = 13.11185).

How does the occurrence of kidnapping impact tourism sustainability, particularly concerning the Calabar carnival? Descriptive statistics, including frequency and percentages, were utilized to address this research question, with the results presented in Table 3 below. The analysis reveals participants' responses as follows: When asked whether



kidnapping constitutes a significant social problem negatively affecting tourism development and Calabar carnival, 217 respondents (59.12%) strongly agreed, 104 (28.33%) agreed, while 20 (5.44%) disagreed, and 26 (7.08%) strongly disagreed. On the question of whether families of abducted persons experience severe financial stress in the process of raising money to free their loved ones, 177 participants (48.22%) strongly agreed, 112 (30.51%) agreed, 41 (11.17%) disagreed, and 37 (10.08%) strongly disagreed. When inquired about whether relatives of abducted persons live in fear and engage less in tourism-related activities to avoid falling victim to kidnapping, 158 respondents (43.05%) strongly agreed, 163 (44.41%) agreed, 25 (6.81%) disagreed, and 21 (5.72%) strongly disagreed. Regarding whether the fear of being kidnapped has deterred some tourists from traveling for recreational engagement, 210 individuals (57.22%) strongly agreed, 130 (35.42%) agreed, 17 (4.68%) disagreed, and 10 (2.72%) strongly disagreed. As for whether most victims of kidnapping sell their properties to buy their freedom from their captors, 162 respondents (44.14%) strongly agreed, 175 (47.68%) agreed, while 12 (3.26%) disagreed, and 18 (4.90%) strongly disagreed (Figure 2).

Table 3. Responses on Kidnapping (Source: Field survey, 2023)

S/N	ITEMS	SA	A	D	SD
5	Kidnapping is a serious social problem that affect sustainable tourism and Calabar carnival negatively	217 (59.12)	104 (28.33)	20 (5.44)	26 (7.08)
6	Families of the abducted tourists or persons are subjected to severe financial stress in the processes of raising money to free their loved ones	177 (48.22)	112 (30.51)	41 (11.17)	37 (10.08)
7	Neighbours of the abducted persons live in fear and engage less in Calabar carnival activities to avoid being victims of Kidnapping	158 (43.05)	163 (44.41)	25 (6.81)	21 (5.72)
8	The fear of being kidnapped has made some persons not to travel for Calabar carnival tourism engagement	210 (57.22)	130 (35.42)	17 (4.68)	10 (2.72)
9	Most victims of kidnapping sell their properties to buy their freedom from their captors	162 (44.14)	175 (47.68)	12 (3.26)	18 (4.90)

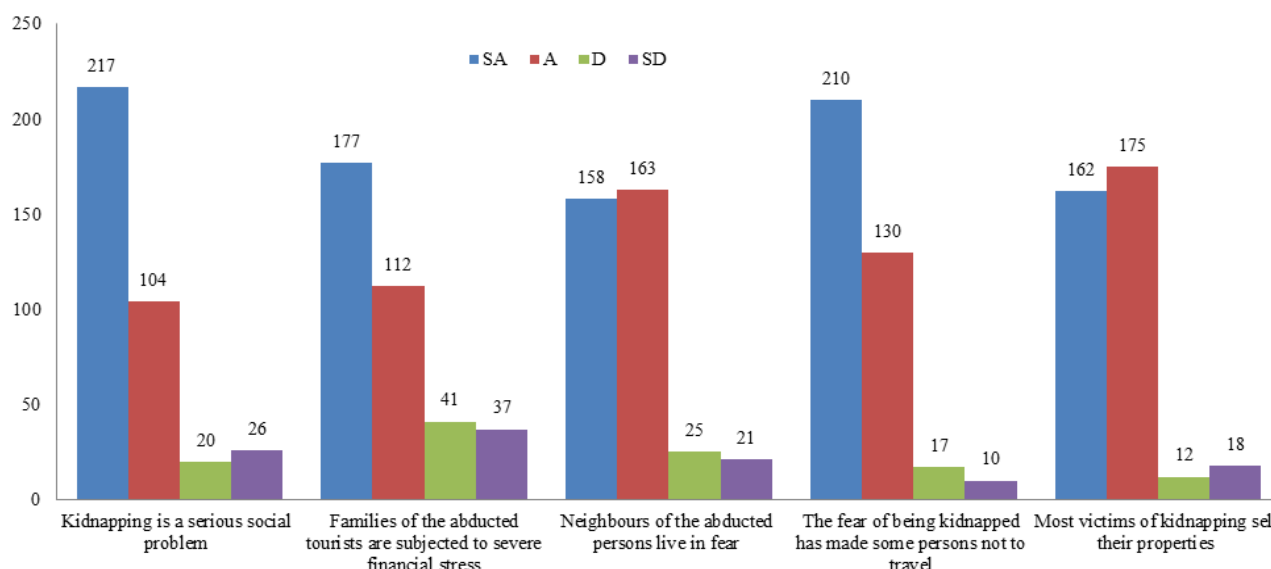


Figure 2. Responses on kidnapping

What is the relationship between armed robbery, sustainable tourism and Calabar carnival? Descriptive statistics, including frequencies and percentages, were employed to address the research question, and the findings are outlined in Table 4 below.

Table 4. Responses on armed robbery (Source: Field survey, 2023)

S/N	ITEMS	SA	A	D	SD
1	Armed robbery constitute a serious security problem during Calabar carnival	188 (51.22)	141 (38.41)	20 (5.44)	18 (4.90)
2	Individuals' properties and their valuables are stolen from them during Calabar carnival	175 (47.68)	162 (44.14)	18 (4.90)	12 (3.26)
3	Armed robbery create fear in peoples mind thereby affecting their ngagement in Calabar carnival .	221(60.21)	130 (35.42)	10 (2.72)	6 (1.63)
4	Proceeds from armed robbery are used for wasteful extravagant lifestyle instead of investment.	198 (53.95)	133 (36.23)	20 (5.44)	16 (4.35)
5	Armed robbery discourages people from engaging in carnival Calabar activities	211 (57.49)	120 (32.69)	25 (6.81)	11 (2.99)

The results of the analysis indicate participants' responses as follows: Regarding whether armed robbery constitutes a significant security problem for tourism sustainability in the area, 188 respondents (51.22%) strongly agreed, 141 (38.41%) agreed, while 20 (5.44%) disagreed, and 18 (4.90%) strongly disagreed. On the question of whether individuals' properties and valuables are stolen during 3-3 Calabar carnival period, 175 participants (47.68%) strongly agreed, 162 (44.14%) agreed, 18 (4.90%) disagreed, and 12 (3.26%) strongly disagreed. When asked if armed robbery creates fear in tourists' minds, thereby impacting their engagements in Calabar carnival, 221 individuals (60.21%) strongly agreed, 130

(35.42%) agreed, 10 (2.72%) disagreed, and 6 (1.63%) strongly disagreed. Regarding whether armed robbery attacks are responsible for the decline in patronage of Calabar Carnival as a tourism event in recent times, 198 respondents (53.95%) strongly agreed, 133 (36.23%) agreed, 20 (5.44%) disagreed, and 16 (4.35%) strongly disagreed. As for whether armed robbery discourages tourists from visiting sites, 211 participants (57.49%) strongly agreed, 120 (32.69%) agreed, while 25 (6.81%) disagreed, and 11 (2.99%) strongly disagreed (Figure 3).

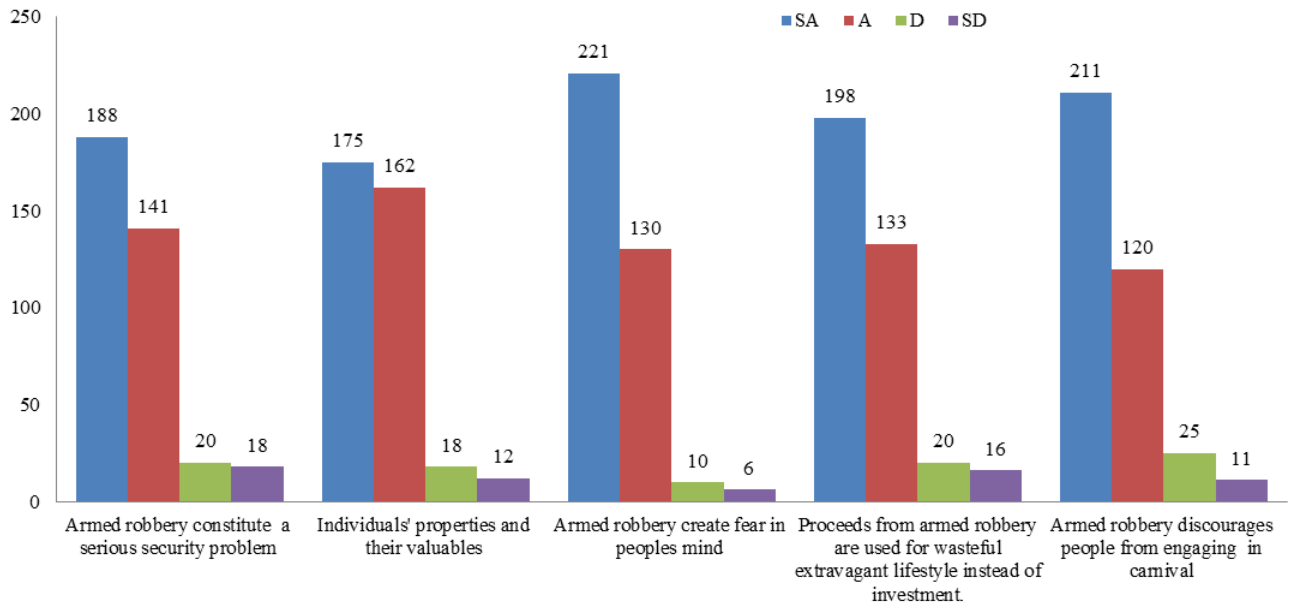


Figure 3. Responses on armed robbery

Examining the impact of drug abuse, trafficking and Calabar carnival on sustainable tourism of Southern Senatorial District, Cross River State, Nigeria. Descriptive statistics, including frequencies and percentages, were employed to address research questions. The results, presented in Table 5 below, outline participants' responses as follows: Regarding whether drug abuse/trafficking can prompt behaviour that can instigate crime during carnival calabar, 184 respondents (50.13%) strongly agreed, 155 (42.23%) agreed, while 10 (2.72%) disagreed, and 18 (4.90%) strongly disagreed. On the question of whether drug abuse/trafficking can lead to conflicts and clashes resulting in serious injuries or even death of tourists during carnival period, 154 participants (41.96%) strongly agreed, 148 (40.32%) agreed, 38(10.35%) disagreed, and 27 (7.35%) strongly disagreed. When asked if involvement in drug abuse/trafficking can pose a risky behaviour endangering tourists' lives during the Calabar Carnival, 166 respondents (45.23%) strongly agreed, 137 (37.32%) agreed, 49 (13.35%) disagreed, and 15 (4.08%) strongly disagreed. Concerning whether tourists are hesitant to visit tourism destinations where drug abuse/trafficking is prevalent, 201 individuals (54.76%) strongly agreed, 155 (42.23%) agreed, 7 (1.90%) disagreed, and 4 (1.08%) strongly disagreed. Regarding whether arrested culprits are adequately punished when apprehended, 189 participants (51.49%) strongly agreed, 166 (45.23%) agreed, 9 (2.45%) disagreed, and 3 (0.083%) strongly disagreed.

Table 5. Responses on drug abuse and trafficking (Source: Field survey, 2023)

S/N	ITEMS	SA	A	D	SD
16	Drug abuse/trafficking can prompt behaviour that can instigate crime during Calabar carnival.	184 (50.13)	155 (42.23)	10 (2.72)	18 (4.90)
17	Drug abuse/trafficking can lead to clashes resulting to injuries and even dead of tourist during Calabar carnival	154 (41.96)	148 (40.32)	38 (10.35)	27 (7.35)
18	Tourists are hesitant to visit Calabar carnival because of incidences of drug abuse and trafficking.	166 (45.23)	137 (37.32)	49 (13.35)	15 (4.08)
19	Drug abuse/trafficking poses risky behaviour endangering tourists lives during Calabar carnival.	201 (54.76)	155 (42.23)	7 (1.90)	4 (1.08)
20	Arrested culprits are tried and jailed according to the law.	189 (51.49)	166 (45.23)	9 (2.45)	3 (0.08)

There is no significant relationship between kidnapping, calabar carnival and sustainable tourism development of Southern Senatorial District, Cross River State, Nigeria. Inferential statistics involving simple linear regression was used to test at 0.05 level of significance and the result is presented in Table 5 below. The result of analysis revealed R-value of 0.195<sup>a</sup>. Correlation coefficient is a standardized measure of an observed degree of relationship between variables, it is a commonly used measure of the size of an effect, and that values of  $\pm 1$  represent a small effect,  $\pm 3$  is a medium effect and  $\pm 5$  is a large effect. Also, the R<sup>2</sup>-value of .038 imply that 38% of total variance is accounted for by predictor variable (kidnapping).

Furthermore, the regression ANOVA revealed that the  $F(2, 366) = 14.481$ ;  $p < .05$ , is significant. Thus the null hypothesis was rejected. This implies that there is a significant linear association of the predictor variable (kidnapping) on tourism sustainability and development in the study area. The adjusted R<sup>2</sup> (.036) shows some shrinkage of the unadjusted

value (.038) indicating that the model could be generalized on the population. Based on the result, it was concluded that there is a significant relationship between kidnapping and tourism development and carnival Calabar, Cross River State, Nigeria.

Table 6. Summary of simple linear regression analysis of the relationship between kidnapping, Calabar carnival and tourism development (Source: Field survey, 2023)

Variables			Mean	Std. Deviation				
Kidnapping			15.2398	6.77687				
Sustainable tourism development			20.7602	13.11185				
Model	Sum of Squares	Df	Mean Square	F	R	R Square	Adjusted R Square	Sig
Regression	2401.069	2	2401.069	14.481	.195*	.038	.036	.000 <sup>a</sup>
Residual	60521.83	36	165.813					
		0	4					
Total	62922.89	36						
	9	6						

There is no significant relationship between tourism sustainability, Calabar carnival and armed robbery in cross river state. Both variables were measured continuously and inferential statistics involving simple linear regression was used to test the hypothesis at 0.05 level of significance and the result is presented in Table 6 above. The result of analysis revealed R-value of 0.229<sup>3</sup>. Correlation coefficient is a standardized measure of an observed degree of relationship between variables, it is a commonly used measure of the size of an effect, and that values of  $\pm 1$  represents a small effect,  $\pm 3$  is a medium effect and  $\pm 5$  is a large effect. Also, the  $R^2$ -value of .052 imply that 52% of total variance is accounted for by predictor variable (armed robbery). Furthermore, the regression ANOVA revealed that the  $F(2, 366) = 27.461$ ;  $p < .05$ , is significant. Thus, the null hypothesis was rejected.

This implies that there is a significant linear relationship of the predictor variable (armed robbery) on Calabar carnival and tourism sustainability in cross river state. The *adjusted R<sup>2</sup> (.051) shows some shrinkage of the unadjusted value (.052)* indicating that the model could be generalized on the population. Based on the result, it was concluded that armed robbery has no significant relationship with Calabar carnival and sustainable tourism in Cross River State, Nigeria.

Table 7. Summary of simple linear regression analysis of the relationship between tourism sustainability, Calabar carnival and armed robbery

Variables			Mean	Std. Deviation				
Armed robbery			14.2289	6.69327				
Sustainable tourism development			20.7602	13.11185				
Model	Sum of Squares	Df	Mean Square	F	R	R Square	Adjusted R Square	Sig
Regression	8558,456	2	8558,45	27,461	.229 <sup>a</sup>	.052	.051	.000 <sup>a</sup>
Residual	54364,44	36	148,944					
		3	4					
Total	62922.89	36						
	9	6						

Drug abuse, trafficking and Calabar carnival has no relationship with tourism sustainability in cross river state. Both variables were measured continuously and inferential statistics involving simple linear regression was used to test the hypothesis at 0.05 level of significance and the result is presented in Table 7 above. The result of analysis as presented in table 4.10, revealed R-value of 0.206<sup>a</sup>. Correlation coefficient is a standardized measure of an observed degree of relationship between variables, it is a commonly used measure of the size of an effect, and that values of  $\pm 1$  represent a small effect,  $\pm 3$  is a medium effect and  $\pm 5$  is a large effect. Also, the  $R^2$ -value of .042 imply that 42% of total variance is accounted for by predictor variable (security operation). Furthermore, the regression ANOVA revealed that the  $F(2, 366) = 16.143$ ;  $p < .05$ , is significant. Thus the null hypothesis was rejected. This implies that there is a significant linear association of the predictor variable on sustainable tourism development in the study area.

The adjusted  $R^2$  (.040) shows some shrinkage of the unadjusted value (.042) indicating that the model could be generalized on the population. Based on the result, it was concluded that drug abuse and trafficking significantly affects sustainable tourism development of Southern Senatorial District, Cross River State, Nigeria.

## DISCUSSION OF RESULTS

The statistical analysis conducted for hypothesis one underscores a significant correlation between kidnapping, Calabar carnival and the sustainable tourism development of the Southern Senatorial District in Cross River State, Nigeria (Streimikiene et al., 2021). This conclusion finds support in prior research, including studies by (Yusufu, 2022; Ibrahim et al., 2021; Makua, 2023; Chen et al., 2022). These studies revealed the multifaceted economic impact of kidnapping, encompassing both direct and indirect costs. At the individual level, direct costs involve the economic value of money lost to kidnappers, while indirect economic costs include expenses incurred for preventive measures, such as the employment of private security personnel. Additionally, establish a clear link between kidnapping and the sustainability of tourism, emphasizing the profound implications for the tourism industry—a crucial driver of economic growth globally (Manzoor et al., 2019). Kidnapping incidents have the potential to disrupt tourism by deterring visitors from specific destinations, thereby

causing lasting backlash on the affected region's tourism sector. The study's findings highlight that the prevalence of kidnapping in Nigeria stems from deficiencies in the implementation of laws to prosecute offenders. Consequently, the social and economic well-being of the population is adversely impacted by the widespread occurrence of kidnapping in the country.

The result of hypothesis two indicates a significant association between tourism sustainability, Calabar carnival and armed robbery. This aligns with the observations, underscoring the pervasive threat of armed robbery across various settings in Nigeria, including homes, offices, shops, restaurants and churches (Rolake, 2023; Oliver, 2023). The perpetrators employ diverse tactics, ranging from dynamite attacks at banks to striking at filling stations and targeting victims in traffic jams. In the tourism areas, the situation appears to have exacerbated, contributing to a broader concern about Nigeria's crime problem and its repercussions on tourism sustainability and global economic standing. A recent survey conducted by the United Nations Office on Drugs and Crime (UNODC), World Drug Report 2023 designates Nigeria as the riskiest country for business globally, primarily attributing this risk to armed robbery and other criminal activities. The study further identifies armed robbery as the fastest-growing crime detrimentally impacting tourism in Nigeria, affirming assertions, that Nigeria's business and tourism environment has worsened by (Oladehinde, 2022).

The research findings also validate the concerns raised by emphasizing that armed robbery poses a persistent threat, causing disturbances, violence, and intimidation for tourists and residents in Africa. Importantly, the study underscores the substantial reduction in tourism traffic, including the Calabar Carnival, due to crime, thereby adversely affecting the overall economic performance of the state (Ofe Ako-Mbi et al., 2021).

The results of hypothesis three indicate a significant correlation between drug abuse, trafficking and sustainable tourism development. This finding aligns with the conclusions of (Preston, 2018), who argued that drug abuse and trafficking tend to thrive in areas with high tourist traffic, presenting opportunities to conceal illegal activities within the crowds of tourists. This, in turn, leads to violence and instability, negatively impacting the tourism sector. The study also notes that drug abuse and trafficking activities strongly contribute to a range of criminal activities, including armed robbery, kidnapping, looting, rape, and murder, substantially affecting sustainable tourism, including the Calabar Carnival, and the overall state economy. The study's findings are consistent with the results of research conducted on the effects of drug abuse, cultism vis-a-vis tourism development in Nigeria's fourth republic (Grace et al., 2020).

The paper argues that the consequences of drug abuse and trafficking are destructive, forming the basis for harassment, property molestation, and hindrances to tourism development. These, in turn, affect the socio-economic development and well-being of the local population. The findings of work highlights drug abuse as a significant social problem in tourist destinations, exemplified by popular beach resorts in Thailand fostering a party culture where recreational drug use is prevalent among tourists. This poses challenges for local law enforcement and contributes to social problem as affirmed by (Marie et al., 2020; Kusuma et al., 2019). In places like Koh Phangan, known for its Full Moon Party, drug abuse has led to public health concerns and increased security measures.

## CONCLUSION

The research aimed to examine the connection between crime and sustainable tourism, as well as the Calabar Carnival in the Southern Senatorial District of Cross River State, Nigeria. Following a comprehensive review of literature and data analysis, the study draws the following conclusions: There exists a notable correlation between kidnapping, Calabar carnival and the sustainable tourism development. There exists a significant relationship between armed robbery, Calabar carnival and tourism development. Drug abuse, trafficking is linked to Calabar carnival and sustainable tourism development. From the foregoing, the following recommendations were made: inclusive participation of local communities in tourism management is paramount to address security hiccups.

This strategy can substantially mitigate negative environmental and socio-cultural impacts, encourage tourists while concurrently maximizing benefits for the state and country. There should be an urgent requirement to enhance the training of security personnel, specifically in the areas of tourism education and modern policing techniques -this should include instruction in forensic science, psychology, and the utilization of DNA and ballistics techniques. Such training is essential to keep pace with the evolving landscape of crime prevention technologies.

The government should allocate increased funding towards alternative means of subsistence like snail farming, goat rearing and skill acquisition training for indigenous populations; this strategic investment not only assuages local communities, fostering sustained tourism, but also positions them as champions for the cause of tourism sustainability and further uplift the multitude of unemployed youths from the streets. This proactive approach holds the potential to significantly diminish or eradicate issues such as kidnapping, drug abuse / trafficking, and armed robbery, which have been detrimental to sustainable tourism vis-à-vis Calabar carnival.

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## SERVICE QUALITY AND ORGANIZATIONAL EXCELLENCE AND THEIR RELATIONSHIPS WITH THE WADI RUM PROTECTED AREA EMPLOYEES' JOB SATISFACTION

**Omar JAWABREH\*** 

Department of Hotel Management, Faculty of Tourism and Hospitality, The University of Jordan,  
Amman, Jordan, e-mail: o.jawabreh@ju.edu.jo

**Emad Al Dein Al FAHMAWEE** 

Department of Interior Design, Faculty of Art and Design, Applied Science Private University,  
Amman, Jordan, e-mail: e\_fahmawee@asu.edu.jo

**Ra'ed MASA'DEH** 

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

**Haitham ABDELRAZAQ** 

Hospitality and Tourism, Churchill Institute for Higher Education, Australia, Sydney, e-mail: h.abdelrazaq@churchill.nsw.edu.au

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**Abstract:** This study aims to examine the impact of service quality and organizational excellence on employees' job satisfaction at Wadi Rum Protected Areas located in Jordan. A total of 270 questionnaires containing 40 items are used to collect information from the respondents. Multiple regression analyses are conducted to test the research hypotheses. The results clearly demonstrate a significant positive relationship between service quality and organizational excellence and the job satisfaction of employees. The findings of the study assured that the common philosophy that forms an essential part of the values and culture of a Wadi Rum Protected Area is the dissemination of an organizational excellence culture on service quality to achieve employee satisfaction. Attaining organizational excellence in Wadi Rum Protected Areas in Jordan is crucial not only for the efficient administration of natural resources and tourist experiences but also for improving workers' job satisfaction and well-being. By allocating resources to enhance leadership skills, fostering employee involvement, offering educational and growth prospects, acknowledging and incentivizing accomplishments, and facilitating a harmonious work-life equilibrium, Wadi Rum Protected Areas can establish an environment of exceptional quality that empowers staff members to flourish and make valuable contributions to the organization's prosperity, all the while safeguarding the region's natural splendor and cultural legacy for posterity. This is one of the few studies that covers the impact of service quality and organizational excellence on the job satisfaction of Wadi Rum Protected Area employees and is the first to test the framework in a developing country, Jordan.

**Keywords:** Service quality, Organizational Excellence, Job satisfaction, Jordan

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### INTRODUCTION

Undoubtedly, job satisfaction is critical in the hospitality industry because of the characteristics and nature of this industry and the individual's passion towards his occupation and organization (Al-Dhaafri et al., 2016; Trivellas and Santouridis, 2016; Aquilani et al., 2017; René et al., 2019). The importance of service quality also appears as a scale for the degree of performance effectiveness and in reducing employee turnover (Chao et al., 2016). It increases employees' morale and creates loyal customers, which affects sales volume (Chi and Gursoy, 2009). Whereas, stressful work situations, a lack of supervisory leadership in hospitality and Wadi Rum Protected Areas, and an unethical management style could have a great effect on employee turnover (Jacques et al., 2015). Although technology has become a main part of Wadi Rum Protected Area service, the quality emitted from the human touch still has the greatest weight in the assessment of the provided services. Quality also refers to the working environment and the quality of the services offered (Savelli et al., 2017). It has a positive relationship with the satisfaction of customers as well as with the satisfaction of service providers. Thus, Wadi Rum Protected Areas are interested in elevating the level of their service quality to protect themselves against severe competition (Lee et al., 2000; Doeleman et al., 2014). Argues that the essence of service delivery depends on a technical and functional basis. Meanwhile, service organizations strive to differentiate themselves by adopting the concept of organizational excellence, which is connected directly to obtaining results that reflect on client attendance, operation management, employees, and the local community, encouraging creativity and continuous improvement. Organizational excellence is not restricted to governmental organizations; it can exist in non-governmental organizations as well. To win the business excellence award, organizations should focus on the skills and satisfaction of their employees in addition to the commitment and cooperation of top-level management.

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\* Corresponding author

Despite the large number of studies addressing job satisfaction (Jawabreh, 2020; Tutuncu and Kucukusta, 2010; Eriksson et al., 2016; Lau et al., 2017; Trivellas et al., 2018), leadership and job satisfaction (Jacques et al., 2015; Pantouvakis and Patsiouras, 2016), service quality (Doeleman et al., 2014; Pereira-Moliner et al., 2016; Juga et al., 2018), and organizational excellence (Asif et al., 2011; Asif and Gouthier, 2014; Doeleman et al., 2014; Terouhid and Ries, 2016; Gómez et al., 2017; Jahmani et al., 2020), little studies that tackle the impact of service quality and organizational excellence on job satisfaction particularly the impact on Wadi Rum Protected Area employees. The apparent lack of studies in this area created the chance to understand more about the factors that affect the job satisfaction of those working in Wadi Rum Protected Areas. The theme of this study is implied in the attempt to connect between two service quality dimensions (reliability and physical requirements) and organizational excellence dimensions (building a sustainable future, encouraging creativity and innovation, and adding value in favor of clients) and their impact on the workers' satisfaction. It also aims to determine obstacles that prevent realizing quality and organizational excellence in the classified Wadi Rum Protected Areas, as well as present suggestions and recommendations that can be considered as a main reference for future planning. The importance of this study stems from the increase in competition among Wadi Rum Protected Areas, the awareness of tourists, and the need for those Wadi Rum Protected Areas to distinguish their services.

## THEORETICAL DEVELOPMENT

The concept of organizational culture has greatly developed recently, and the organizational behaviors' specialists have become aware of its effect on management and employees. This urged researchers to produce many studies that cared for the behavior of the consumer and the employee.

The study by Lund (2003) focused on organizational culture and its relation to the employee' satisfaction and recommended paying attention to the sub-cultures of the employees and merging them with the culture of the organization. Other studies concentrated on quality and its effect on the customers' (Pantouvakis and Patsiouras, 2016).

### Service Quality

It is hard for the consumer to measure and assess service quality as the assessment is not made for only the final outputs of the service but also includes assessing the process through which the service is provided (Ahmed et al., 2017; Hapsari et al., 2017). The physical environment, or service cape, in which the service is offered and delivered could have an effect on guest service expectations and their perception of service quality (Tseng and Wu, 2014). It was found that there is a strong relationship between the size of the tip in a Wadi Rum Protected Area and the quality of the services provided. Nevertheless, researchers found significant links between service quality and customer satisfaction, and between service quality and repeat patronage (Chow et al., 2007); service quality attributes—tangibles, reliability, responsiveness, assurance, and empathy—have a positive relationship with customer satisfaction (Omar et al., 2016); and the right time for cooking to increase benefits and the desirable satisfaction of customers (René et al., 2019).

Antony and Ghosh (2004) support the fact that in the hospitality industry, "quality of service" can affect the quality of performance, causing internal effects on processes (the workflow of the organization) and external effects through the market (employees' satisfaction and demand (Jawabreh et al., 2023b; Jahmani et al., 2023b)). They are also considered a major source of performance improvement. Many studies have shown great positive results on the relationship between quality management practices and quality performance (Arumugam et al., 2008). The goal of any organization is to achieve employees' satisfaction. Therefore, organizations have already been found to meet the needs of customers through the provision of products and services that meet their desires and satisfy their needs.

Quality in the hospitality sector is of great importance to a large number of researchers (Getty and Getty, 2003; Luk and Layton, 2004; Kandampully, 2006; Jawabreh et al., 2023c; Jawabreh, 2020; Jawabreh, 2021). Moreover, it plays a vital role in the satisfaction of employees and as a fundamental factor in enhancing their satisfaction. It is a value presented to consumers and a means of putting service in a dynamic environment (Kaul, 2005). Shahin asserts that understanding customers' requirements about service quality and needs is beneficial in many ways (Voss and Allen, 1994), indicating that organizations do not focus on quality anymore; they ascertain the strategic use of quality. This has led organizations to be informed that quality initiatives must be integrated into the organization's strategy. The quality of services is the approach that increases the competitiveness, effectiveness, and flexibility of the whole organization and contributes to determining the competitive position of the organization and better business results (Parasuraman et al., 1988). They also emphasize that providing high-quality hospitality services that meet the needs of employees' is an important means of achieving the competitiveness of many hospitality organizations to meet their competitors. It has become a competitive advantage for all areas of the hospitality industry (Judi, 2007). Quality of service is a process-management method to ensure total employees' satisfaction at all levels, internal and external. Quality is an input connected to the behavior of the management and workers, as the management of the organizations that seek to achieve quality concentrates on supporting the workers in the first place and then the customers (Jahmani et al., 2023a; Jawabreh et al., 2023a; Cheng et al., 2018).

The quality of hospitality service can be classified into ten dimensions as follows: reliability, tangible aspects, responsiveness, competence, and qualifications; courtesy; credibility; safety; accessibility to information; communication; knowing and understanding the guest (Ali et al., 2017). The study of Al-Khaldi (2012) concentrated on the relationship between quality dimensions and their effect on creating an organizational excellence culture. The study concluded that there is a correlation between the tangible physical dimensions, cognition generation, and the development of an organizational excellence culture. The results and measurement of service quality depend on the type of preparation for the service, time, and physical requirements (Seth et al., 2005). Conversely, Malhotra and Mukherjee (2004) pointed out that employees' job satisfaction and organizational commitment affect the quality of the service provided (Al Fahmawee and Jawabreh, 2022b;

Alananzeh et al., 2023; Al Fahmawee and Jawabreh, 2022c; Al Fahmawee and Jawabreh, 2023) found that the most common critical incident involving a hospitality employee is responding to a guest request. Meanwhile, the study by Namkung and Jang (2010) assessed customer reactions to failures in the four service stages: reception, ordering, meal consumption, and checkout.

The (Al Fahmawee and Jawabreh, 2022a) study was based on measuring the quality of service in the hospitality industry on the "hospitality model" on the Riviera. The study found that all determinants of quality of service received negative differences between the expectations of the customer and the service; that is, hospitality s could not meet what guests expect. The study recommended that hospitality managers focus on identifying the gap between what customers expect to get and what they actually get in order to make appropriate adjustments and improvements to provide services as customers expect.

Quality is related to current perceptions, while satisfaction is based on past experiences and expected ones in the future. The relationship between quality of service and customer satisfaction is evident in purchase intentions. We also conclude that quality of service indicators are based on standards and specifications set by hospitality s, which express a tangible reality; in contrast, customer satisfaction indicators rely on a sensitive base difficult to touch (the perception of customers). By measuring the quality of service and customer satisfaction, the repeated inconsistency in the results becomes obvious. No matter what the real quality is, the perceived quality is more important because it is the customer who, eventually, decides with whom to deal—the institution or its competitor. Service excellence means providing services that meet or exceed customer expectations (Asif and Gouthier, 2014). It is a holistic, comprehensive, and unbreakable concept; that is, an organization cannot be excellent in one field while its performance in other fields collapses.

It is an intellectual pattern and administrative philosophy based on realizing tangible results within a framework built on learning, creativity, and continuous improvement (Asif et al., 2011). Organizational excellence is a policy that could be achieved by motivating employees and encouraging their creativity and innovation (Kessler et al., 2015). In the concept of modern management, excellence contains two central dimensions: seeking to achieve excellence and the fact that whatever systems and activities are produced by the management are shaped and described by excellence (Jawbreh and Sarayreh, 2017). Organizational excellence means measuring the satisfaction of customers, workers, and participants all the time in all the divisions of the organization and comparing the performance of those divisions about the same product or service in different geographical areas at all times. Despite the variety of literature that dealt with the concept of excellence, they all revolve around three main hubs in their interpretation of the concept of organizational excellence as follows: interpreting excellence according to the practices of the organization, the superiority of the organization over its counterparts, and achieving a performance that exceeds the client's expectations. Kaplan and Norton (1992) revealed four axes to measure the performance of the organization: the financial axis, the customer axis, the internal performance axis, and the axis of creativity. The excellence of a firm is expressed through the sustainability of its products that meet the needs of the present and future generations (Asif et al., 2011). In addition, some researchers found that both functional and personal aspects of service behavior could explain customer satisfaction at Wadi Rum Protected Areas (Jawabareh, 2017).

Excellence also comes from providing modern electronic systems that help in the service process and make it easy for the employee to present a performance that suits the high taste of customers and the physical comfort of the employee (Victorino et al., 2005). It enhances the levels of activities related to organizational development and focuses on knowledge management and supporting activities. Organizational excellence can affect other performance variables in the organization (Kessler et al., 2015) identified different types of organizational innovativeness in Jordan hospitality and analyzed their connection to innovation success. Innovativeness was measured by three dimensions (willingness, ability, and possibility to innovate) and success by five dimensions (overall performance: financial, market, and employee-related success; innovation success: product and process innovations). After viewing much literature and previous studies related to job satisfaction, researchers see that it is hard to give or determine an integrated concept for job satisfaction. This is because satisfaction differs from one person to another. The characteristics of the job and other explicit factors are vital in predicting job satisfaction (Masadeh et al., 2019; Alananzeh et al., 2018). The factor that provides job satisfaction to one person may not achieve job satisfaction for another person. Despite the multiplicity of studies related to job satisfaction, there is no comprehensive theory that shows the nature of job satisfaction, and its concept and points of view vary, but we can say that job satisfaction is the attitude of the worker towards their job. Researchers found a rarity in the previous studies that measured the effect of service quality dimensions and organizational excellence on employee satisfaction.

Therefore, the researchers suggested displaying general studies about employees' job satisfaction, which were the studies of Jawabareh (2017). All of those previous studies concentrated on the effect of income, job performance, management behavior, and social standing on the employees' satisfaction and connected it to demographic factors.

The study by Chiu et al. (2005) concluded that most job satisfaction factors that contribute to the development of employee performance efficiency are the viability of clear organizational strategy and objectives, stating the vocational needs of the employees, providing security, safety, and empowerment, and good supervisory leadership, which are positively associated with job satisfaction. The study by Gazzoli et al. (2010) conceptualized customers' perceived service quality variables according to the "hierarchical approach" model and used the performance-only index for its measurement. The study found that empowerment and job satisfaction had a significant impact on customers' perceptions of service quality.

Moreover, the study by Hwang and Der-Jang (2005) showed that internal marketing has a strong positive effect on job satisfaction and that job satisfaction has an effect on an organization's performance. Meanwhile, the study by Ashton (2017) showed that employee satisfaction was not fostered by increasing remuneration. It is more related to the quality of working life, good leadership style, regular training, employment security, the hospitality brand image, and employees' traits, which are the most important aspects. Also, the study stressed that employees will be satisfied working in a hospitality when they feel they have an opportunity to advance their abilities and skills. Based on the above discussion, the following hypotheses are proposed:



**H1:** There is a statistically significant impact of service quality on employees' job satisfaction at classified hospitality s in Wadi Rum Area.

**H2:** There is a statistically significant impact of organizational excellence on employees' job satisfaction at classified hospitality s in Wadi Rum Area.

### WADI RUM

Wadi Rum, often called the Valley of the Moon, carves its way through the sandstone and granite heart of the Arabian Desert as shown in (Figure1B), covering an impressive area of approximately 720 square kilometers. It's located in the southern part of Jordan, a country in the Middle East. This place is special and attracts many tourists every year. Situated about 60 kilometers to the east of Aqaba, Jordan's only coastal city, Wadi Rum presents a breathtaking tableau of towering cliffs, vast red sand dunes, and narrow gorges, sculpted by nature's hand over millennia. The region, which sits in the shadow of Jabal Umm ad Dami, Jordan's highest peak, offers a diverse topography that rises from the desert floor to heights of around 1,840 meters above sea level. Wadi Rum, known for its breathtaking landscapes and rich cultural heritage, serves as a unique setting for examining service quality and organizational excellence. The distinct geographic location of Wadi Rum contributes significantly to the operational dynamics and service delivery within this protected area. The remote and expansive nature of Wadi Rum, with its vast deserts and towering rock formations as it clear in (Figure 1A), poses both opportunities and challenges for employees working in tourism and conservation services.



Figure 1A. Wadi Rum Desert of Mountain; 1B. Moon Valley; 1C. sample of bubble camp's; 1D. Seven Pillars of wisdom

The exceptional natural beauty and the cultural significance of Wadi Rum attract visitors from around the world, setting high expectations for service quality. The unique location demands specialized services, from guided tours to hospitality, that respect and preserve the natural and cultural environment (Al Dein, 2021). The landscape is full of incredible sandstone mountains, vast red sand deserts, and narrow gorges. It looks like another planet! That's one reason why filmmakers often shoot movies there. There are ancient rock carvings and inscriptions in Wadi Rum that are thousands of years old (Figure1D). Visitors love Wadi

Rum for adventures like jeep tours, camel rides, rock climbing, and hiking. There's so much to explore. The bubble houses and traditional Bedouin camps offer amazing places to stay overnight as shown in (Figure1C). The desert sky is clear and full of stars, perfect for stargazing. Staying in Wadi Rum is also a chance to learn about the Bedouin culture. The Bedouins are the local people who have lived in this desert for generations (Jawabreh et al., 2023b). Employees' ability to meet these service expectations directly influences visitor satisfaction and the perception of Wadi Rum as a world-class tourist destination.

## METHODOLOGY

### Research Model

The elements of this research are established based on preceding literature, either theoretically or empirically (Hwang and Der-Jang, 2005; Lovelock and Wirtz, 2007; Mishal, 2015). Figure 1 represents a model for the study that shows the relationship between the independent and dependent variables of the research.

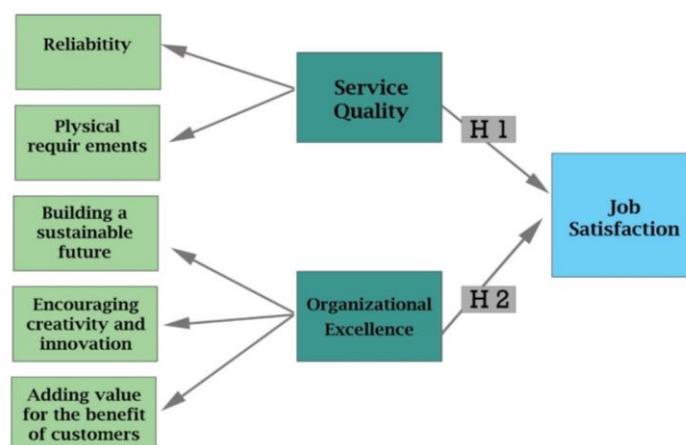


Figure 2. The proposed research model

### Operational Definitions

The current research considers two dimensions of service quality (reliability and physical requirements); which were adapted from Prayag et al. (2010), Enz (2004) and measured in the research questionnaire through six and eight items respectively. The construct of organizational excellence was measured via three dimensions namely building a sustainable future, encouraging creativity and innovation, and adding value for the benefit of customers; which were adapted from Asif et al. (2011), Victorino et al. (2005), Tutuncu and Kucukusta (2010) and measured in the research questionnaire through six items each. Also, job satisfaction, the dependent variable, adapted from Lee (2013) and measured through eight items.

### Population and Sampling

The targeted population of this study consisted of all employees who work in the Wadi Rum Protected Areas. This hospitality offers various choices of Wadi Rum Protected Areas and bars to choose from a range of international cuisine, which includes outdoor terrace dining.

According to statistics of the Ministry of Tourism and Antiquities for 2015, there were 548 domestic workers in these Wadi Rum Protected Areas. Also, according to Morgan Table data, 226 employees should be reached as the size of the statistical sample of this research (Sekaran and Bougie, 2013). However, after distributing 400 survey questionnaires, 285 were returned from respondents and 270 after eliminating the incomplete ones. The primary data was collected through a drop-and-collect survey technique. The surveys were distributed to the academic staff working in the university that agreed to participate in the study. The questionnaire consisted of two sections; the first section in the questionnaire presents general personal information about a respondent, the gender, age, academic rank, and years of experience. The second section includes questions to measure the independent and dependent variables based on their operational definitions.

## 4. Data Analysis and Results

In order to explore the impact service quality and organizational excellence on job satisfaction, in which these variables have been measured using 5-points Likert scale that varies between strongly disagree =1 and strongly agree =5. Also, reliability and validity analyses were conducted; descriptive analysis was used to describe the characteristic of sample and the respondent to the questionnaires besides the independent and dependent variables. Also, a multiple regression analysis was employed to test the research hypotheses. Validity and reliability are two important measures to determine the quality and usefulness of the primary data. Validity is about accuracy and whether the instrument measures what it is intended to measure while reliability is about precision; it is used to check the consistency and stability of the questionnaire. Indeed, the researchers depended on scales and items that were previously developed and used by other researchers with similar interest. Also, a draft of the questionnaire was formulated, and then it was reviewed by three academic lecturers –who have a sufficient knowledge and experience in this scope- to ensure that each item is measuring what is intended to be measured, and to avoid the ambiguity and complexity in the phrasing of questions. The reliability of the instrument was measured by the Cronbach's alpha coefficient. Further, some scholars (e.g. Bagozzi and Yi, 1988; Creswell, 2009) suggested that the values of all indicators or dimensional scales should be above the recommended value of 0.60. Table (1) represents the

results of Cranach's alpha for the independent and dependent variables. Cronbach's alpha coefficients of all the tested variables are above 0.60 which suggesting the composite measure is reliable.

Table 1. The Cronbach's alpha coefficients of study variables

Variables	Number of items	Cronbach alpha
<b>Reliability</b>	6	0.647
<b>Physical requirements</b>	8	0.778
<b>Building a sustainable future</b>	6	0.678
<b>Encouraging creativity and innovation</b>	6	0.735
<b>Adding value for the benefit of customers</b>	6	0.668
<b>Job satisfaction</b>	8	0.613

### Respondents Demographic Profile

As indicated in Table (2), the demographic profile of the respondents for this study showed that they are typically males, most of them Jordanians, the majorities hold high school certificates, and 40% of them have experience between one-less than four years.

Table 2. Description of the respondents' demographic profiles

Category	Category	Frequency	Percentage%
<b>Gender</b>	Males	240	88.9
	Females	30	11.1
	Total	270	100
<b>Nationality</b>	Jordanian	150	55.6
	Foreigner	120	44.4
	Total	270	100
<b>Education level</b>	No schooling completed	84	31.1
	High school	136	50.4
	Bachelor	50	18.5
	Total	270	100
<b>Experience</b>	Less than one year	74	27.4
	1-less than 4 years	108	40.0
	More than 4 years	88	32.6
	Total	270	100

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

Type of Variable	Variables	Mean	Standard Deviation	Level
<b>Independent Variables</b>	<b>Service Quality</b>	4.27	0.36	Very high
	Reliability	4.29	0.40	Very high
	Physical requirements	4.25	0.49	Very high
	<b>Organizational Excellence</b>	4.18	0.41	High
	Building a sustainable future	4.21	0.47	Very high
	Encouraging creativity and innovation	4.14	0.52	High
	Adding value for the benefit of customers	4.19	0.47	High
<b>Dependent Variable</b>	<b>Job Satisfaction</b>	4.23	0.38	Very high

### Descriptive Analysis

In order to describe the responses and thus the attitude of the respondents toward each question they were asked in the survey, the mean and the standard deviation were estimated. While the mean shows the central tendency of the data, the standard deviation measures the dispersion, which offers an index of the spread or variability in the data (Sekaran and Bougie, 2013). In other words, a small standard deviation for a set of values reveals that these values are clustered closely about the mean or located close to it; a large standard deviation indicates the opposite.

The level of each item was determined by the following formula: (highest point in Likert scale - lowest point in Likert scale) / the number of the levels used =  $(5-1) / 5 = 0.80$ , where 1-1.80 reflected by "very low", 1.81-2.60 reflected by "low", 2.61-3.40 reflected by "moderate", 3.41-4.20 reflected by "high", and 4.21-5 reflected by "very high". Then the items were being ordered based on their means. Tables (3) and (4) show the results.

As presented in Table (3), data analysis results have shown service quality in Wadi Rum classified Wadi Rum Protected Areas is applied to a very high level in which the mean score is 4.27; besides organizational excellence is applied to a high level with a mean score of 4.18. Further, job satisfaction does exist highly to a greater extent, which the mean score is 4.23. Table (4) demonstrates the mean, standard deviation, level, and order scores for each item for each variable. The opinion (Parasuraman et al., 2005) confirms this. Numerous organizational, personnel, and consumer dimensions have an impact on service quality. Organizational elements such as personnel training, technology adoption, leadership commitment, and service recovery plans influence an organization's capacity to provide services. Employee-related characteristics, such as competency, motivation, and work satisfaction, significantly shape customer experiences and perceptions of service quality (Hartline and Ferrell, 1996). Furthermore, the client's qualities and expectations have a significant impact on how they evaluate the quality of the service, emphasizing how important it is to understand and manage consumer perceptions.



Table 4. Mean and standard deviation of the study's variables

<b>Reliability</b>	<b>Mean</b>	<b>SD</b>	<b>Level</b>	<b>Order</b>
The Wadi Rum Protected Area shows a real interest in solving the problems faced by the guests in the Wadi Rum Protected Area	4.48	0.667	Very high	1
Co-workers are able to solve customers' problems	4.33	0.599	Very high	4
The Wadi Rum Protected Area follows-up customers' requests to make sure that they keep the promises	4.39	0.763	Very high	2
Co-workers provide health services from the first time	4.05	0.900	High	6
The Wadi Rum Protected Area offers good services to guests	4.35	0.726	Very high	3
Co-workers enjoy the confidence of customers	4.19	0.696	High	5
<b>Physical requirements</b>	<b>Mean</b>	<b>SD</b>	<b>Level</b>	<b>Order</b>
The Wadi Rum Protected Area uses modern equipment and devices to provide its services	4.24	0.857	Very high	4
The Wadi Rum Protected Area building is attractive	4.30	0.831	Very high	3
Arrangement and interior design of the Wadi Rum Protected Area is attractive	4.24	0.745	Very high	4
The Wadi Rum Protected Area provides easy electronic booking services	4.04	0.934	High	7
The Wadi Rum Protected Area offers elegant furnishings and upscale and attractive	4.21	0.850	Very high	5
The Wadi Rum Protected Area offers an attractive external facility	4.20	0.809	High	6
The Wadi Rum Protected Area provides clean of health facilities	4.36	0.698	Very high	2
The Wadi Rum Protected Area provides a unified and decent uniforms	4.47	0.621	Very high	1
<b>Building a sustainable future</b>	<b>Mean</b>	<b>SD</b>	<b>Level</b>	<b>Order</b>
The Wadi Rum Protected Area management is working on the future of the Wadi Rum Protected Area through the identification and dissemination of basic purpose underlying the vision, mission, values and ethics	4.30	0.650	Very high	1
The Wadi Rum Protected Area management is able to understand the most important competencies and capabilities available to them and how to use them to formulate common values to serve all communities	4.18	0.800	High	4
The Wadi Rum Protected Area management is able to accommodate the sustainability concepts in the basic content of its strategy and allocate the necessary resources to achieve its goals	4.28	0.750	Very high	2
The Wadi Rum Protected Area administration is encouraging all concerned in the Wadi Rum Protected Area to participate in activities that are beneficial to society	4.15	0.738	High	5
The Wadi Rum Protected Area allocates needed resources to meet the needs of long-term instead of focusing on quick profit in the short term	4.14	0.857	High	6
Wadi Rum Protected Area management is working on the ability to measure and achieve an optimal balance of the impact of its operations and services on the public health, safety and environmental concerns	4.22	0.789	Very high	3
<b>Encouraging creativity and innovation</b>	<b>Mean</b>	<b>SD</b>	<b>Level</b>	<b>Order</b>
The Wadi Rum Protected Area management is working on formulating methodologies to encourage its employees to create new ideas	4.19	0.765	High	1
The Wadi Rum Protected Area management is working on the establishment and management of joint cooperation networks designed to identify opportunities for creativity and innovation	4.09	0.767	High	6
The Wadi Rum Protected Area management is working on the development of clear goals and objectives for innovation supported by appropriate policies and resources needed	4.17	0.833	High	3
The Wadi Rum Protected Area management adopts a structured methodology to produce creative ideas and arrange them according to its priorities	4.18	0.781	High	2
The Wadi Rum Protected Area management is working on choosing and assessing the most promising new ideas and harness the necessary resources to achieve them within the appropriate time frame	4.10	0.863	High	5
The Wadi Rum Protected Area management is working to turn ideas into reality during the timeframe that could achieves the maximum advantage	4.13	0.805	High	4
<b>Adding value for the benefit of customers</b>	<b>Mean</b>	<b>SD</b>	<b>Level</b>	<b>Order</b>
The Wadi Rum Protected Area management is working to identify the different groups of customers, existing and potential, and then predict their needs and future expectations	4.18	0.790	High	4
The Wadi Rum Protected Area management is working on translating the needs, expectations, and requirements of the potential and existing customers to sustainable and attractive offers	4.10	0.800	High	6
The Wadi Rum Protected Area management is working to ensure that the employees have the resources, competencies, and empowerment necessary to achieve a better experience for the clients	4.27	0.706	Very high	1
The Wadi Rum Protected Area management compares its performance with the levels of relevant standard performance	4.23	0.791	Very high	2
The Wadi Rum Protected Area management is working to identify the current and the future needs of the market and provide all that is useful	4.16	0.794	High	5
The Wadi Rum Protected Area management is working to train its workers and develop their skills and provide them with the better service	4.22	0.789	Very high	3
<b>Job Satisfaction</b>	<b>Mean</b>	<b>SD</b>	<b>Level</b>	<b>Order</b>
You are satisfied with your job performance	4.22	0.730	Very high	6
The Wadi Rum Protected Area administration is working on issuing decisions that will increase the level of job satisfaction	4.16	0.771	High	7
Senior management of the Wadi Rum Protected Area are credible and transparent when they make decisions	4.15	0.806	High	8
Leadership style of the Wadi Rum Protected Area is a positive pattern leads to the upgrading of the Wadi Rum Protected Area	4.33	0.711	Very high	1
Performance standards are declared and documented	4.27	0.755	Very high	3
There is a good degree of availability of the functional requirements that cause the improvement of working conditions	4.24	0.745	Very high	5
Your workloads are appropriate for your efforts , wages, and working hours	4.26	0.772	Very high	4
There is an available environment in the Wadi Rum Protected Area for innovation and development of performance	4.29	0.668	Very high	2

The Wadi Rum Protected Area (WRPA) administration is methodically analyzing current and new client categories and anticipating their requirements and expectations. The proactive strategy has multiple convincing reasons, backed by research and practical ramifications. Improved Visitor Experience: WRPA management may personalize experiences and services to guests' different demographics and interests. Gursoy and McCleary (2004) found that customer segmentation in tourist management increases visitor happiness and loyalty. WRPA creates unique experiences for adventurers, cultural explorers, and eco-tourists by anticipating their requirements and improving the visiting experience. Sustainable tourist growth in the WRPA requires predicting client segment requirements and expectations. Butler's Tourism Area Life Cycle (TALC) model (1980) states that destinations grow through phases with different visitor needs and consequences. By forecasting future trends and preferences, WRPA management can reconcile conservation with economic growth and community development. This proactive strategy promotes responsible tourism and reduces the environmental and socio-cultural effects of unregulated tourist expansion. The proactive approach taken by WRPA management in identifying consumer groups and forecasting their needs and expectations improves tourist experiences, sustainable tourism development, stakeholder engagement, and market competitiveness. WRPA can remain a top nature-based tourist destination while preserving its natural and cultural heritage through research and practical initiatives. The administration of the Wadi Rum Protected Area (WRPA) is putting procedures into place to motivate staff members to come up with fresh concepts. This tactical decision is supported by several factors, such as encouraging an innovative culture, using staff knowledge, enhancing visitor satisfaction and service quality, and advancing organizational agility.

The first stage is to create an innovative culture inside WRPA by offering venues for idea-sharing forums, innovation seminars, and brainstorming sessions. This inclusive approach fosters a dynamic work atmosphere that is supportive of creativity and innovation, as well as a feeling of ownership and involvement. Using the experience and knowledge of field workers and frontline employees is the second stage. By requesting ideas from staff members in a range of departments and positions, WRPA may access a varied reservoir of knowledge and inventiveness, guaranteeing that creative concepts are based on workable solutions and align with the requirements and expectations of stakeholders. Enhancing the tourist experience and service quality is the third phase. Encouraging and involving employees is essential to providing excellent service results. Through process enhancements, technology adoption, or customer-centric initiatives, WRPA may improve the entire visitor experience by giving staff the freedom to suggest creative solutions. To survive in the quickly changing world of today, WRPA must foster organizational agility and adaptation. Through the promotion of an innovative and creative culture, WRPA can enhance its ability to adjust to changing market conditions, legislative modifications, and stakeholder demands. Ideas created by employees act as a catalyst for organizational learning and development, helping WRPA to stay innovative and strong in the face of difficulties.

### Hypotheses Testing Results

The current research is mainly seeking to investigate the impact of service quality and organizational excellence on job satisfaction at Wadi Rum classified Wadi Rum Protected Areas in Jordan. Consequently, in order to test the main hypothesis developed for this study, a multiple regression technique was used as demonstrated in Table (5).

Table 5. Regression analysis: Job satisfaction as a dependent variable

Variable	r	R <sup>2</sup>	f	Sig (f)	$\beta$	t	Sig (t)
Service Quality	0.355	0.126	9.532	0.000a	0.179	1.963	0.050
Organizational Excellence					0.234	2.535	0.012

a. Predictors: (Constant), Service Quality, Organizational Excellence; b. Dependent variable: Job Satisfaction

Refer to Table (5) the correlation coefficient  $R = 0.355$  indicates that there is a positive correlation among service quality, organizational excellence, and job satisfaction. The  $R^2$  indicated the generalizability of the model. It allows us to generalize the results taken from the respondents to the whole population. In this case it equals 0.126. The results showed that F-ratio for these data is equal to 9.532, which is statistically significant at  $p < 0.05$ . Therefore, we conclude that there is a statistically significant effect of both service quality and organizational excellence on job satisfaction. The  $\beta$  indicates the contribution of the predictor (i.e. the independent variable) to the model. Table (5) shows the standardized coefficients for the job satisfaction. The values of  $\beta$  for service quality and organizational excellence are 0.179 and 0.234 respectively, which do have significant effects on job satisfaction, thus H1 and H2 are accepted.

### CONCLUSION

The results of data analysis have shown service quality the classified Wadi Rum Protected Area in Wadi Rum is applied to a very high level. The results of the descriptive and statistical analysis of the service quality showed that the reliability dimension's items have a high level. As a result of competitive pressures in the environment of hospitality industry, quality of service has emerged as the fundamental organizational strategy for survival and as justification for investing in quality improvement initiatives (O'Neill, 2001). Achieving organizational excellence is essential for improving worker job satisfaction as well as for the effective management of natural resources. This article explores the connection between Wadi Rum Protected Areas workers' job satisfaction and organizational excellence, and it offers tactics for cultivating an excellent culture that enhances worker happiness. The pursuit of better performance and results via continual process, system, and practice improvement is known as organizational excellence. At Wadi Rum Protected Areas, maintaining the area's natural and cultural legacy while efficiently overseeing tourist experiences and guaranteeing sustainable tourism practices depends on organizational excellence. Organizational excellence, however, includes elements like professional growth, communication, and employee empowerment in addition to operational efficiency.



However, several variables, including the workplace, company culture, leadership, and chances for advancement and recognition, affect how satisfied employees are with their jobs. Research continuously shows that job happiness and organizational excellence are positively correlated, underscoring the possibility that workers who work in an atmosphere that prioritizes and upholds quality will feel happy, inspired, and involved. Fostering a culture of excellence requires excellent leadership to develop organizational excellence at Wadi Rum Protected Areas and, as a result, increase employee job satisfaction. By funding leadership development initiatives, managers and supervisors may gain the ability to inspire and encourage their staff, establish clear objectives, and provide insightful criticism and assistance. Including workers in decision-making procedures and asking for their opinions on matters about the workplace may boost commitment and engagement. Conversation and cooperation may be facilitated via regular channels of contact including idea boxes, team meetings, and feedback sessions. Offering workers chances for professional growth and training not only improves their abilities and competencies but also shows the company's dedication to their success. Employee performance and job satisfaction may be enhanced by customized training programs for those in the visitor services, tourist management, and conservation fields. Acknowledgment and Incentives: Giving workers credit for their accomplishments and efforts may raise spirits and increase drive. Acknowledging workers' contributions through official recognition programs, performance incentives, or little acts of kindness promotes a healthy work atmosphere and supports an outstanding culture.

Encouraging a work-life balance is essential to avoiding burnout and promoting the general well-being of workers. Encouraging time off for leisure and recreation, supporting wellness programs, and providing flexible work schedules may all assist staff in striking a good balance between their personal and work life. At Jordan's Wadi Rum Protected Areas, achieving organizational excellence is crucial for improving staff well-being and work satisfaction in addition to managing natural resources and tourist experiences. Through the implementation of strategies such as investing in leadership development, encouraging employee engagement, offering training and development opportunities, acknowledging, and rewarding accomplishments, and promoting work-life balance, Wadi Rum Protected Areas can cultivate an exceptional culture that fosters employee growth and success while safeguarding the region's natural beauty and cultural legacy for future generations.

Results revealed that the Wadi Rum Protected Area management shows a real interest in solving the problems faced by the guests in the Wadi Rum Protected Area. Also, the management follows customers' requests to make sure that they keep their promises and offers good services. The employees have the willing and authority to solve customers' problems. This privilege raises their satisfaction and makes them feel that they are not working under the pressure of management supervision or supervisor control. They feel free to help and solve customers' complaints and enjoy the confidence. Thus, the Wadi Rum Protected Area is characterized by a high degree of reliability and accuracy in the completion of the services provided to its customers and therefore it pays attention to their problems and answers their questions as well as provides the service on time. In addition, many studies have indicated that evaluating the quality of service from the perspective of the tourist depends mainly on the emotion formed in the mind of the tourist. The process of interaction between the service provider and the beneficiary plays a fundamental role in finding a specific level of quality perceived by the employees.

The tourist plays a fundamental role in the quality of service, especially when the tourist participates in the process of producing the hospitality service in its final form which he cannot obtain without participation. The tourist may also play a key role in the development of service performance. Results of service quality related to physical requirements showed that the Wadi Rum Protected Area provides its employees a unified and decent uniforms besides clean of health facilities. Wadi Rum Protected Areas, nowadays, are focusing on the attractiveness of the building as a major factor in the fiercely competitive world of customer retention. Wadi Rum Protected Areas use modern equipment and devices, in addition, to upscale and attractive furnishings to reflect their interest in quality and hygiene. Choi and Chu (2001) asserts that hospitality managers are now focusing more on the quality of service due to the high standards of employees and their demands for excellent service, especially after the increasing competition between hospitality s in the hospitality industry, which forced hospitality managements to work continuously to identify the requirements of customers and understand and meet them to achieve their satisfaction to guarantee their return to the hospitality or prolong their stay.

Regarding the organizational excellence, results revealed that building a sustainable future through the identification and dissemination of basic purpose underlying the vision, mission, values, and ethics was ranked as the first dimension. The Wadi Rum Protected Area management can accommodate the sustainability concepts in the basic content of its strategy and allocate the necessary resources to achieve its goals. They are working on the ability to measure and achieve an optimal balance of the impact of its operations on public health, safety, and environmental concerns. The findings also revealed that the Wadi Rum Protected Area management can understand the most important competencies and capabilities available, as well as able to accommodate the concepts of sustainability in their strategies. These findings are compatible with those of those who assured on the importance of innovations in services. In addition, the staff are enjoying the confidence of customers. The physical entrance of the institution can affect the employees' composition of physical construction, which includes the size, shape, the materials used in construction; site and elements of attractiveness compared to other hospitality sites contribute to the image and impression of customers. In addition to other factors such as ease of parking, the availability of parking lots, entrance design also an important and influential factor. The external appearance may suggest solidity, continuity, preservation, and progressivism. Response and reliability affect the satisfaction of the employees, as, the degree, accuracy and speed of response have an impact on the wishes of the employees' and gaining his satisfaction.

Encouraging creativity and innovation is the second most important dimension in the organizational excellence. The findings showed that the Wadi Rum Protected Area management is working on formulating methodologies to encourage its employees to create new ideas; they adopt a structured methodology to produce creative ideas and arrange them according to its priorities; they working on the development of clear goals and objectives for innovation supported by appropriate policies and resources needed. Adding value for the benefit of customers was the third dimension in the organization that

seeks excellency. If firm use the money incentive to get new ideas from their employees, employees will take the shortest possible way to get to the new idea. If employers want to get good ideas from employees, they must understand corporate strategy. Of course, there will be some employees who will be disappointed not to choose their ideas, but if they see that they have given real attention to all options, and have made a rational choice, they are likely to come back and take part in the next challenge. Marriott International Hospitality s launched TestBED for the first time in the Middle East and Africa in September, allowing start-up companies to test their products in a live environment within a Marriott hospitality in a major city (Kattara et al., 2008). The program provided regional entrepreneurs with the opportunity to transform their innovations into reality and enabled Marriott Hospitality s to revolutionize the hospitality experience in the Middle East and Africa through its Business Acceleration Program. The findings of the current research showed that the Wadi Rum Protected Area management is working to ensure that the employees have the resources, competencies and empowerment necessary to achieve a better experience for the clients. On their assessment of their job satisfaction, employees confirmed that leadership style of the Wadi Rum Protected Area is a positive pattern leads to the upgrading of the Wadi Rum Protected Area. They postulated that the organization that focuses on service quality and organizational excellence is considered as an available environment for innovation and development. The results correspond with that of Jacques et al. (2015) that authentic leaders have positive significant influences on the working environment.

### Theoretical Implications

The current study contributes to the existing literature by identifying the new compiled factors that have positive impact on job satisfaction. Researchers could benefit from the instrument of the study for further investigations on job satisfaction. The model of the study and could be utilized for additional analysis. Additional variables could be utilized to measure the level of employee satisfaction. More in-depth analysis of how job satisfaction increases the fiscal health of a company, and the image of the destination could be conducted.

### Managerial Implications

Wadi Rum Protected Area managers, tourism stakeholders, and other service operations managers should realize the importance of organizational excellence. The sustainability of services depends on the employees' better performance. Service organizations must train their staff more effectively to achieve the best quality of service delivered and the organizational excellence. Competitive advantages could be achieved through developing new products and services, applying new technology and strategy, and widen the knowledge and skills of their employees. It is important for owners, managers, and supervisors to positively understand that the journey to the best quality in service offered and organizational excellence is through their employees. The staff should be motivated, encourage, and empowered to show their maximum extent of innovation and creativity. Managers should realize the vital role of reliability when providing services and the importance of maintaining a clean attractive physical environment for the satisfaction of both the employees and the customers. Thus, the hub of success is through the investment in employees.

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## TOURIST DECISION SUPPORT SYSTEM FOR HOT SPRINGS, THAILAND

**Kewalin ANGKANANON**<sup>ID</sup>

Suratthani Rajabhat University, Department of Business Information System, Faculty of Management Sciences,  
Surat Thani, Thailand, e-mail: kewalin.ang@sru.ac.th

**Renuka KHUNCHAMNAN**<sup>ID</sup>

Suratthani Rajabhat University, Department of Business Information System, Faculty of Management Sciences,  
Surat Thani, Thailand, e-mail: renuka.kun@sru.ac.th

**Benjamaporn KONGCHANA**<sup>ID</sup>

Suratthani Rajabhat University, Department of Business Information System, Faculty of Management Sciences,  
Surat Thani, Thailand, e-mail: benjamaporn.kon@sru.ac.th

**Piyabud PLOADAKSORN**<sup>\*</sup><sup>ID</sup>

Suratthani Rajabhat University, Department of Business Information System, Faculty of Management Sciences,  
Surat Thani, Thailand, e-mail: piyabud.plo@sru.ac.th

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**Abstract:** This research aimed to: 1) gather the needs of Thai and foreign tourists in using the Decision Support System for Hot Springs Tourism in Surat Thani; 2) Design and develop the Decision Support System using the concept of an agile method; and 3) Evaluate the effectiveness of the Decision Support System implementation. The agile method enabled the System to be developed to support both the Android and IOS in Thai and English. The users' requirement was collected by using questionnaires with 30 Thai and 30 foreign tourists. The users' evaluation data was collected by using questionnaires with 400 Thai and 400 foreign tourists. The results found that: 1) Thai and foreign tourists need information in seven aspects. Most tourists use iPhones and need similar information. 2) The design of the Decision Support System consists of searching travel routes, distance calculation, nearby attractions, and evaluation assessment function. 3) Foreign tourists had a slightly higher average score of overall opinions than Thai tourists which is at the highest level in all aspects. The Thai and foreign tourists found no significant difference with the overall opinions in using the Decision Support System ( $p > .05$ ). In conclusion, the DSS for Hot Springs Tourism in Surat Thani was successfully developed for both Thai and foreign tourists. The findings indicate the system's effectiveness in supporting tourists and its potential to enhance tourism experiences in Surat Thani.

**Keywords:** decision support system, mobile application, hot spring, tourism, Thailand

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### INTRODUCTION

The tourism industry plays an important role in Thailand (Figueredo et al., 2017) for transportation infrastructure system, trade, and investment (Ministry of Tourism and Sports, 2011). Most high-end tourists focus on traveling together with medical purposes. This is consumer behavior that has changed completely, contrary to past behavior trends. During 2019, it can generate up to 2 trillion baht for Thailand (SME social planet, 2023). Community tourist attractions can have unclean places, bad atmosphere, insufficient tourist information, and inconvenient transportation (Harl and Nguanphan, 2014). Thailand is the second destination country for tourism travelers in Asia Pacific (Global Wellness Institute, 2020) and the Tourism Authority of Thailand (2020) focused on developing quality tourism and sustainability (Prachachat Business, 2022). Natural hot spring tourism is one of the most popular activities (Department of Mineral Resources, 2019) using hot, cold water, sea, and mineral water to cure disease or stay healthy (Hongkajorn, 2017). Most people believe that hot springs can reduce stress (Tourism Authority of Thailand, 2012). Seven out of ten hot springs (MGR Online News, 2007) have the potential to be developed into tourism destinations: 1) Chaiya Pak Dan Hot Spring; 2) Chaiya International Hot Spring; 3) Tha Chang Hot Spring; 4) Tham Singkhon Hot Spring; 5) Scout camp (Nasan) Hot Spring; 6) Khao Tok (Khian Sa) Hot Spring; and 7) Tha Sathon Hot Spring. Therefore, it is important to help tourists to find such information, plan their tourism, and help making decisions for travelling to the Hot Springs Tourism in Surat Thani, Thailand.

However, information needs and channels for receiving information of Thai and foreign tourists may differ in terms of tourism experience and technology experience (Tussyadiah and Fesenmaier, 2009; Chang and Hsu, 2010). These may affect information needs, technology functions, and type of media for receiving information (Mak et al., 2012). Tourist information may consist of accommodation, food, interesting points, reviews, ratings, and tourist suggestions (Figueredo et al., 2018). Tourists' requirements and behavior are important for offering the appropriate service to the right user at the

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\* Corresponding author



right time (Kontogianni and Alepis, 2020). Mobile application services meet the needs to access information without limitations of format, time and place (Angkananon et al., 2019; Chormuan et al., 2014; Kumkrua et al., 2020; Sibunruang, 2016). Consumer Behavior Tracking System and reporting the location of consumers for advertising purposes (Chotklang et al., 2015; Chowkoksung and Snae, 2011) utilizes sensors to help tourists explore the city in a limitation of time (Nitti et al., 2017). A DSS can assist analyzing a tourist's perspective, travel plan, accommodation, the best travel routes, and predicting travel expenses etc. (Chen, 2004; Smirnov et al., 2016).

The DSS was developed based on important theories to assist in analyzing a tourist's perspective, travel plan, accommodation, the best travel routes, and predicting travel expenses etc. (Chen, 2004; Smirnov et al., 2016). This paper will investigate the following research gaps: 1) What are tourist information, technology, functionality that Thai and foreign tourists' need in the use of the DSS for Hot Springs Tourism in Surat Thani? ; 2) How to design and develop the DSS for Thai and foreign tourists; and 3) What are Thai and foreign tourists' opinions in evaluating the effectiveness of the DSS implementation? This research therefore provides a contribution to both knowledge and implementation.

## LITERATURE REVIEW

### 1. Software Development

Many models are developed for software and functional design with advantages and disadvantages depending on use: Spiral Model, Structured System Analysis and Design Methodology (SSAM), Rapid Application Development Based Methodology (RAD), and Unified Modeling Language (UML). Systems analysts determine which models are suitable for their own software development. Pereira and Russo (2018) used an integrated model with Agile Methodology in software development. The research found that this model had a beneficial effect on system users, developing teams to strengthen and improve the quality and efficiency of software applications. This research uses the Agile software design model for design as it is suitable for working as a team with continuous communication and flexibility in use, can work fast and learn from mistakes, and continually make corrections. Shneiderman (2005) suggested eight rules for screen design:

- 1) In menu design, icons, colors, styles, font sizes should be consistent with the same pattern.
- 2) The design should cover all users and make most satisfied.
- 3) Design should allow users to interact with computers and have feedback to make the user feel in control when interacting with the system.
- 4) The design should have a beginning, middle, and end point.
- 5) The design should be protected from user error.
- 6) The exit button should be easily reversible to correct the error.
- 7) The system design should have internal control management to respond to the screen.
- 8) System design should reduce the length of time to present content for easy memorization.

Nielsen (1994) proposed 10 principles for user interface design called "heuristics". The Ten Usability Heuristics were : 1) visibility of system status; 2) match between system and the real world; 3) user control and freedom; 4) consistency and standards; 5) error prevention; 6) recognition rather than recall; 7) flexibility and efficiency of use; 8) aesthetic and minimalist design; 9) help users recognize, diagnose, and recover from errors; and 10) help and documentation. This research uses both Shneiderman's rules and Nielsen's heuristics in designing the DSS.

Table 1. Decision Support System in Tourism

Authors	System	System's goal	Method used
Lopes and Rodríguez-López (2022)	Decision-Making Tool for Ranking Wellness Tourism Destinations	The PROMETHEE-GAIA method considers various factors travelers care about, helping identify the most appealing options. Facilities are a big deal for travelers, and this analysis takes them into account. Plus, the wealth of data examined helps pinpoint the truly top-notch spas.	PROMETHEE-GAIA
Singthongchai, Manisri, and Anuvareepong (2020)	Decision Support System of Logistics Service Users	A DSS developed in form of web application for Logistics Service Users using the decision tree model with the J48 technique.	J48 technique, efficiency, assessment
Phorncharoen and Phorncharoen (2018)	Decision Support System for Generating Tourism Plan with Flexible Cost of Travelers	A system divided into 3 parts: 1) input: this part assigns tourism conditions e.g., budget, number of attractions, hotels, and destination; 2) process: this part involves functions and data matching with tourist requirements, and 3) output : displays lists of the tourism plan via the website.	System Usability Test
Rakphakdi et al. (2017)	Decision Support Systems for Travel Ubon Ratchathani Tourism	The DSS developed through the coordinated satellite system using the nearest neighbor technique in the grouping of tourist attractions and services e.g., accommodation, restaurants, and souvenir shops nearby via the marker point on the Google map.	Google Map API, Black Box, Testing
Kakoty and Deka (2014)	ICT as decision support for Tourism Industry	DSS functions for tourism industry are track current situation, measure travel motivators, gather competitive intelligence, recognize new opportunities, evaluate marketing activities, monitor industry satisfaction, measure return on investment, and monitor the resources and the impact of tourism activities.	-

### 2. Decision Support System in Tourism

Decision support systems are interactive computer systems helping users make choices and decisions. They use storage and retrieval with added functionality to receive and access information by using a knowledge-based model that supports reasoning for frame modeling and problem solving (Druzdzel and Flynn, 2002). Table 1 shows related works

studying DSS in tourism. The main difference between a DSS and a Mobile Application depends on use purpose. The DSS focuses on helping the decision-making process while mobile applications are designed to provide different functions on mobile devices. Table 2 shows related works focusing on studying tourism applications.

Table 2. Travel Application

Authors	System	System's goal	Method used
Trakulmaykee et al. (2023)	Mata Lumnam Application	The "Mata Lumnam" application was developed based on the logistical tourism for tourists. The app consisted of three logistical parts: 1) physical flow; 2) financial flow and; 3) information flow.	Google Maps API Efficiency assessment
Phuthong et al. (2023)	Mobile Application for Wellness Tourism Destination	The innovation mobile application was developed using a waterfall method with five clear stages: figuring out what it needed to do, designing it, building it, making sure it worked right, and keeping it running smoothly.	K-means cluster analysis, DEMATEL method
Wongamonwit and Chinavaro (2021)	Tourism Applications in Sikhio District Nakhon Ratchasima	The tourist application for Sikhio District Nakhon Ratchasima displays the recommended tourist information from the system, including travel category, and navigate to various tourist routes. It will show the travel route. The system can link to a map and navigation system for travel.	Google Maps API, JAVA, IDE Tool
Palos-Sanchez et al. (2021)	Tourism Innovation by using a Uses and Gratification Theory model	Palos-Sanchez et al. (2021) studied travel applications and found that factors affecting Behavioral Intention were Performance Expectancy, Effort Expectancy, Social Influence, App User Experience. Besides, App Quality Influences Use Behavior.	Gratification theory, Tourism Innovation
Angkananon et al. (2019)	Mobile applications of Wat Phra Mahathat Woramahawihan Nakhon Si Thammarat	The mobile applications of Wat Phra Mahathat Woramahawihan Nakhon Si Thammarat consisted of text, pictures and voice which informed tourists of important points, starting point, and rituals point with information of each point. The app is provided both in Thai and English.	TAM Model, Usability design
Sibunruang (2016)	Sukhothai Historical Park Mobile Application	A Sukhothai Historical Park Mobile Application developed on the iOS operating system. The application divides the presentation of 19 data sets into 2 languages: Thai and English. The information in the app consists of 1) historical information and history of various ancient sites; 2) 3D model of important ancient sites; 3) Important cultural information and identity of the Sukhothai Kingdom, and 4) Electronic Map System.	3D model
Chormuan et al. (2014)	Android Application for tourist Case study in Kanchanaburi Province	An android application was developed to help tourists who want to travel in Kanchanaburi. They could check information and videos of tourist attractions through YouTube before making a travel decision. Tourists can plan their trips and reduce both cost and time.	Plug-in of eclipse, Java, Google Maps API
Chowkoksung and Snae (2011)	Web map services for community-based tourism in east coastal areas using Google Maps API	A Web map services for community-based tourism in east coastal areas using Google Maps API to render maps on web pages by working with the website database system. The system can find travel routes and pin to display the coordinates of the desired location.	Google Maps API

### 3. Software Assessment

DeLone and McLean (2003) proposed a model for measuring the success of popular information systems by analyzing the factors of; 1) information quality, 2) system quality, and 3) service quality. These factors affect user satisfactions and intents when users reuse the system. Usability evaluation is based on the Technology Acceptance Model (TAM) (Davis, 1989), consisting of two factors: 1) Perceived Usefulness e.g., information helps get the job done, speed of work, and ease of work; and 2) Perceived Ease of Use e.g., ease of learning, ease of understanding, and ease of use. Both models were synthesized by the researcher and applied in the assessment questionnaire of this research.

## RESEARCH METHODOLOGY

### 1. Research Design

There was no record of the number of tourists who have visited the hot springs in Surat Thani, Thailand. The 30 Thai participants and 30 foreign participants were chosen for objective 1 for a questionnaire. User requirements were collected by questioning 30 Thai and 30 foreign tourists. The sample was selected by purposive sampling from Thai and foreign tourists who have used a travel application. There are three parts to the questionnaire: 1) personal information, 2) requirements about hot spring tourism, and 3) obstacles in visiting the hot springs in Surat Thani. Three English and three Thai experts with at least five years of experience in software development reviewed the questions.

For objective 2, agile software functionality design principles were used over the processes and tools in various parts of the work. They are users' collaboration in all groups and users' integrations over processes and tools. The navigation design and system design used Thai language sector to support the use by Thai tourists, and the English language design to accommodate foreign tourists. Black-box testing was used to test the DSS with a test case technique (Assawamekin, 2018). Three Thai experts and three foreign experts with at least five years of experience in software development evaluated the system based on the Agile Methodology.

For objective 3, Roscoe (1975) suggested 384 participants would be the appropriate number for user evaluation. This research had 400 Thai and 400 foreign tourists complete the evaluation of the DSS using questions with five-point scales (Likert, 1932). Three English and three Thai experts with at least five years of experience in software development reviewed the questions. The samples were collected using the purposive sampling method by selecting those experienced in using an application for at least one year and the call for participants was made via facebook and

facebook groups of Thai and foreign tourists who are interested in doing Yoga on Koh Phangan. Before answering the questionnaire, all participants read the participants' information sheet and signed a consent form. The experiment then started by explaining the features available in the application and demonstrating how to use it face-to-face. Then, the sample group downloaded the application "Surat Hot Spring" from the Google Play Store for Android users or the App Store for IOS users and tried it for about 5-10 minutes. If there was a problem, the participants could ask the researchers. At the end of the experiment, participants completed a secure and confidential online Google form providing personal details and their opinions on the design and usability of the DSS. The results of this paper can provide a benchmark with which any future research involving technological developments in decision support systems/AI techniques can be compared. The original data was collected before the covid pandemic and while tourist behaviour clearly changed during the pandemic tourist behaviour has now returned back to normal throughout the world in 2024.

## 2. Data Collection and Data Analysis

Data were collected between April and September 2019. There are three parts of the assessment questionnaire: 1) Personal information includes gender, age, nationality, mobile phone platform, and experience to hot springs; 2) Users' evaluation includes designing of the DSS and usability test of the DSS; and 3) Additional suggestions in an open-ended questionnaire. The Cronbach's reliability (Cronbach, 1951) of the questionnaires for 30 Thai tourists was at 0.973 and 30 foreign tourists was at 0.786, with a confidence value of 0.7 or higher and so could be used to collect the data.

The SPSS program version 26 was used to analyze data. The descriptive analysis used frequency, mean, standard deviation. A t-test was also used to compare the opinions on the DSS of two group of the tourists and One Sample t-test used to compare participants opinions' scores on the DSS.

## 3. Process in Developing the DSS

The process of developing the DSS begins with studying the concept, theory, and relevant research. Then, collecting users' requirements which include travel information, cost information, and technology information. Next, designing the system to save time and budget, three Thai and three foreign experts were asked to validate and review the DSS in various aspects. Software used was Visual Studio Code, Sublime Text, Xcode, Android Studio, Bitbucket, Command Line Interface, Ionic framework, Angular, SASS, MySQLite, JavaScript and CSS. The process in developing the DSS as can be seen in Figure 1.

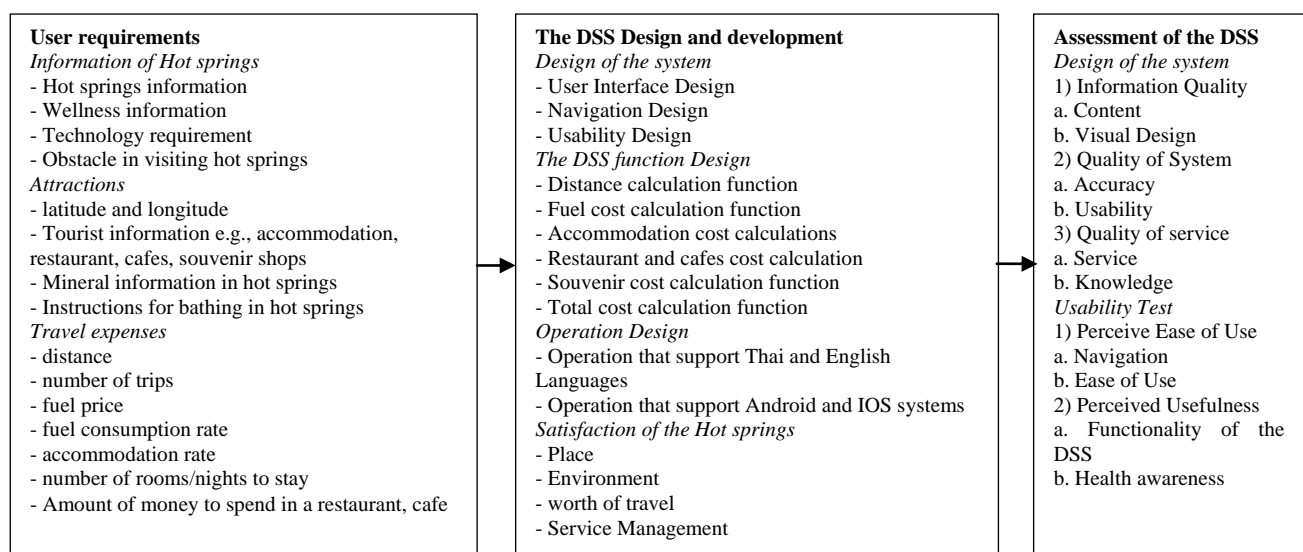


Figure 1. Process in developing the DSS for Hot Springs Wellness Tourism in Surat Thani

## RESULTS

### 1. Research Question 1

The results of interviews of 30 Thai tourists and 30 foreigners found that most Thai (60%) and foreign tourists (56.66%) are female and both groups used iPhone the most (Thai tourist 50%, foreign tourists 70%). Most Thai tourists (60%) would like to travel for recreation just like foreign tourists (66.67%). Both groups of tourists agree that tourism is a family activity. They also agree that hot spring tourism is therapeutic tourism. From the users' requirements, the researchers analyzed data into categories and took it into account to design and develop the DSS in the next step.

### 2. Research Question 2

The development of the DSS was based on an agile methodology in designing system, functionality, content, user interfaces, hot springs' satisfaction, and testing software. The DSS consists of 34 entities in database. The tourists could download the DSS namely "Surat Thani Hot spring" onto their mobile phones on Android and IOS platforms. There are twelve menus of the DSS: 1) home, 2) menus, 3) search functions, 4) hot springs information, 5) travel program, 6) type and benefits of hot spring, 7) recommendation and caution, 8) about us, setting, 9) timer setting, 10) hot springs satisfaction assessment, 11) user manual, and 12) project team (Figure 3). The system provides essential tourism

information for Thai and foreign tourists who understand English. Important functions and information are budget calculations, travel time calculations, distance calculations, tourist information, physical data of hot springs, chemical information of hot springs and information on behavior in hot springs. It also includes the hot spring site satisfaction assessment function, tourism program information, timer setting, and user manual. This is to reduce problems in accessing information of such tourists. It also assists tourists in making decision in various aspects to plan their hot springs routes.

There are two main search functions: Basic Search and Advanced Search.

#### a. Basic Search

Basic search functions (Figure 2) include specify current location, selecting hot spring to visit, fuel price in baht per liter, fuel burned value (MPG), one-way / round-trip, calculating routes, distances, and fuel costs, and link navigation to Google Maps. The basic search fuel price calculation function has the following formula:

- One-way fuel cost = (total distance / MPG) x fuel price
- Round-trip fuel cost = (total distance x 2) / MPG) x fuel price

The initial calculation function (Figure 2) is based on obtaining the user's current location information, destination information, fuel prices, MPG values (Figure 3), and one-way or round-trip. Then the obtained information calculates the distance based on user current location as a starting point. Destination locations are selected and distance is calculated by selecting the fastest route using Google Map API. Once the total distance has been obtained, all available data can be substituted in the formula. Once, the formula calculations are obtained, this result will be displayed (Figure 4) and show the navigation of the trip in Figure 5.

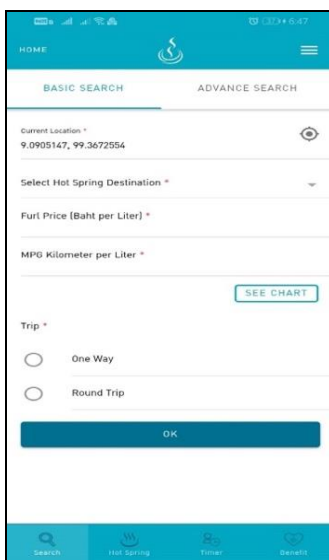


Figure 2. Basic Search

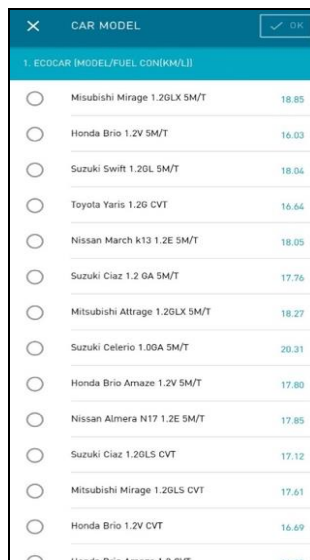


Figure 3. Car Model

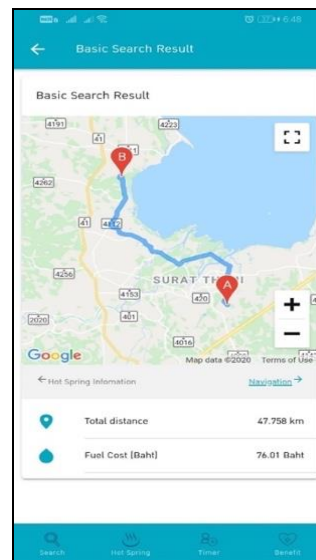


Figure 4. Basic Search result

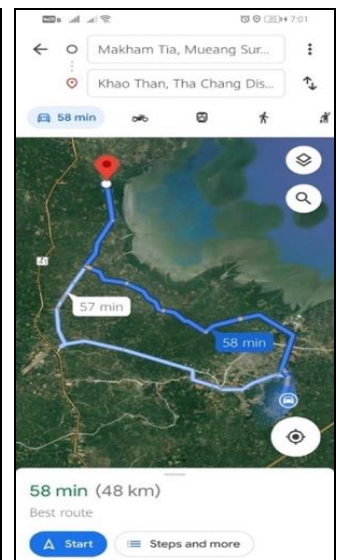


Figure 5. Navigation

#### b. Advanced Search

The Advanced search (Figure 6) differs from basic search in select nearby attractions and choose more than one place (Figure 7). Users can select a hotel, specify the room rate, and number of nights to stay (Figure 8).

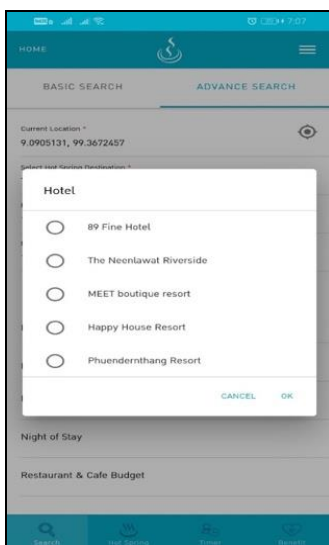


Figure 6. Advanced Search

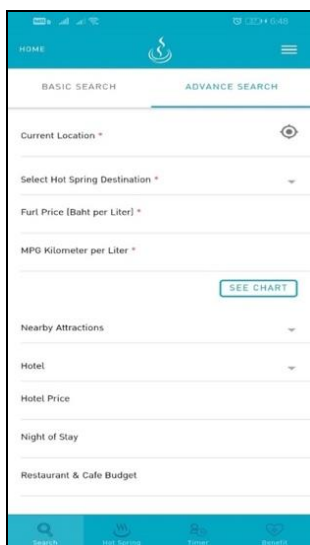


Figure 7. Nearby Attraction

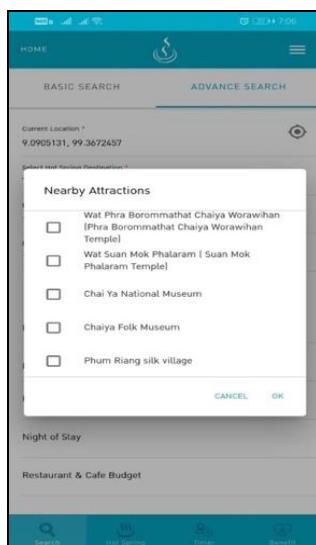


Figure 8. Hotel selection

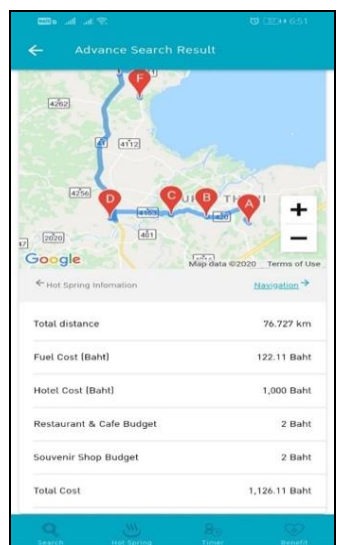


Figure 9. Advance Search

They can choose a restaurant and café and specify the budget to spend in restaurants and cafes. They can also choose a souvenir shop and specify the budget to spend there. Total budget calculation functions in advanced search have these formulas:

- One-way total cost = (total distance / MPG) x fuel cost + (accommodation cost x number of nights) + restaurant and cafe budget + souvenir shop budget
- Total round-trip expenses = (total distance x 2) / MPG) x fuel price + (accommodation x number of nights) + restaurant and cafe budget + souvenir shop budget

Total budget calculation functions in advanced search start by getting the user's current location, destination, fuel price, MPG cost, accommodation cost, number of nights, restaurant and cafe budget, souvenir budget, and the travel style is one-way or round-trip. Then the information is used to calculate distance from the user's current location and the user's destination location using the fastest route from the Google Map API. The result of the calculation formula is displayed on the DSS screen (Figure 9).

### c. Hot Springs Information

"Choose a Hot Spring" Menu shows the seven hot springs in Surat Thani with relevant information. The sub menu "General information" explains the history and detailed information of each hot springs, its location and its facilities. The sub-menu "Bathing Pool Information" shows information of each pond for soaking or bathing, photos of hot springs, physical, and health information (water temperature in the pond, PH value, radon gas concentration, health effects and BG Values). In each hot spring, there is a main source of hot spring which produces main hot water called "Main Source" and the Menu shows the temperature of the water, PH value, Conductivity, Turbidity, Total amount of dissolved substances, total hardness, bicarbonate, chloride, fluoride, nitrates, sulfates, silica, sodium, potassium, calcium, magnesium, iron, copper, zinc, manganese, the background radiation dose or the amount of radiation in the air around the study area, and radon gas concentration and health effects.

### d. Travel Program

There are four tourist routes: Route 1: "See the garden, eat, enjoy the hot springs at Sriwichai City"; Route 2: "See the garden, eat, enjoy the hot spring in the mountain town"; Route 3: "See the garden, eat, enjoy the hot springs at the city of river" and; Route 4: "See the garden, eat, enjoy the hot springs at the mining town". Other important menus are 1) Types and benefits of Hot Springs, 2) Instructions and Precautions, 3) About Us, 4) System Settings, 5) Timer Setting, 6) Hot Spring Satisfaction Assessment Function, 7) User Manual Menu, and 8) Project team information. The test results of all 15 functions of the DSS using the black box testing method by a group of 30 Thai people (100%) and 30 foreigners (100%) found that the DSS can work properly in all functions.

## 3. Research Question 3

Evaluation of the effectiveness of the decision support system is divided into two main measures: efficiency of the DSS and benefits and ease of use of the DSS. The evaluation of the DSS asked 400 Thai tourists and 400 foreign tourists to answer the questions. The sample of 400 Thai tourists was 59.75% female and 40.25% male (Figure 14), whereas the sample of 400 foreign tourists were 67.25% male and 60% females (Figure 15). Most Thai tourists were aged between 20 - 30 years (80.0%), followed by aged 31- 40 years (12.5%), with 0.75% over 60 years. Most foreign tourists are aged between 31-40 years (56.75%), followed by aged 20-30 years (23.75%), with 0.75% over 60 years. Most Thai tourists used Android smartphones (61.75%) and used iOS smartphones at (38.25%) (Figure 17). Most foreign tourists used iOS smartphones at 74.00% and used Android smartphones at 26.00% (Figure 18).

## 4. Comparison between Thai and foreign tourists

Figure 10 foreign tourists had a slightly higher average score of overall opinions than Thai tourists which is at the highest level in all aspects. The Thai and foreign tourists found no significant difference with the overall opinions in using the DSS ( $p > .05$ ). The assessment results on Information Quality is the highest score among the other three aspects. It is interesting that foreign tourists rated score ( $\bar{x} = 4.83$ ) much higher score than Thai tourist score ( $\bar{x} = 4.31$ ) in the aspect of Information quality.

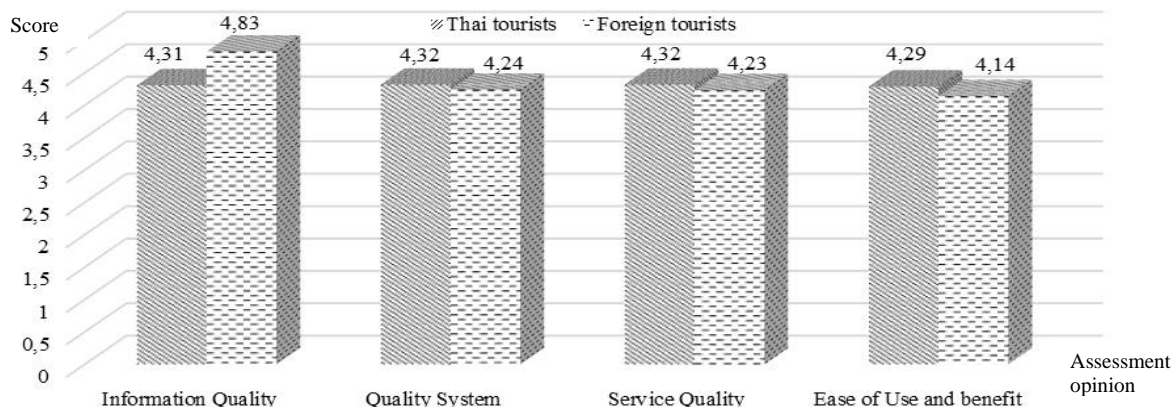


Figure 10. Overall Assessment Opinions on the DSS



The comparison in using the DSS found satisfaction scores for all items of Thai tourists using One-Sample Test (2-tails) for foreigners were significantly higher than 4 points at the .001 level. The results calculated using independent sample t-test found for most items that Thai and foreign tourists had no different satisfaction ( $p < .001$ ) with statistical significance at the .001 level. The efficiency and benefits and ease of use results of the DSS are as follows.

### 1. Efficiency of the DSS

#### 1.1. Information Quality

From Table 3, the results found that foreign tourists ( $\bar{x} = 4.62$ ) had a slightly higher mean overall content evaluation score than Thai tourists ( $\bar{x} = 4.29$ ), at the highest level. Thai and foreign tourists had the highest level of content satisfaction in all items. The comparison of content evaluation in using the DSS using t-test found that the content evaluation between Thai and foreign tourists was statistically significant at the .001 level.

Table 3. Content

No	Topics	Thai		Foreigner	
		Average	S.D.	Average	S.D.
1	The content presented is easy to understand and up to date.	4.32	.617	4.54	.436
2	The illustrations are clear and related to the content presented.	4.30	.681	4.61	.436
3	The videos are clear in both of picture and sound and related to the content presented.	4.26	.743	4.70	.472
<b>Total</b>		<b>4.29</b>	<b>.60</b>	<b>4.62</b>	<b>.347</b>

#### 1.2. Quality of System

From Table 4, the results found that foreign tourists ( $\bar{x} = 4.60$ ) had a slightly higher mean overall visual design evaluation score than Thai tourists ( $\bar{x} = 4.37$ ), at the highest level. Thai and foreign tourists had the highest level of visual design satisfaction in all items. Table 5 shows the results found that Thai tourists ( $\bar{x} = 4.30$ ) had a slightly higher mean overall quality system evaluation score than foreign tourists ( $\bar{x} = 4.15$ ). Table 6 shows the results found that Thai tourists ( $\bar{x} = 4.29$ ) had a slightly higher mean overall usability test evaluation score than foreign tourists ( $\bar{x} = 4.26$ ), at the highest level.

Table 4. Visual Design

No	Topics	Thai		Foreigner	
		Average	S.D.	Average	S.D.
1	The size, type and color of the text are easy to read on mobile phones.	4.31	.678	4.48	.482
2	The application can display information in a variety of appropriate formats.	4.40	.680	4.67	.438
3	The technology used in application development is suitable.	4.39	.668	4.67	.463
<b>Total</b>		<b>4.37</b>	<b>.586</b>	<b>4.60</b>	<b>.398</b>

Table 5. Accuracy of the DSS

No	Topics	Thai		Foreigner	
		Average	S.D.	Average	S.D.
1	The DSS can navigate to various locations accurately and precisely.	4.29	.667	4.09	.303
2	The DSS can display various information accurately and reduce searching time.	4.32	.656	4.14	.410
3	The DSS can work according to various functions accurately and precisely.	4.31	.656	4.24	.484
<b>Total</b>		<b>4.30</b>	<b>.596</b>	<b>4.15</b>	<b>.300</b>

Table 6. Usability of the DSS

No	Topics	Thai		Foreign	
		Average	S.D.	Average	S.D.
1	Using the DSS is easy and fast.	4.30	.539	4.26	.494
2	There are enough buttons and menus for navigation.	4.33	.525	4.28	.561
3	The results from the DSS are accurate and complete as required.	4.24	.545	4.25	.539
<b>Total</b>		<b>4.29</b>	<b>.536</b>	<b>4.26</b>	<b>.531</b>

#### 1.3. Quality of service

Table 7 shows the results found that Thai tourists ( $\bar{x} = 4.26$ ) had a slightly higher mean overall quality of service evaluation score than foreign tourists ( $\bar{x} = 4.21$ ), at the highest level. In addition, Thai and foreign tourists had a statistically significant difference in their opinions with the quality of service at the .001 level.

Table 7. Quality of service

No	Topics	Thai		Foreigner	
		Average	S.D.	Average	S.D.
1	Accessing information in the DSS is accurate and fast.	4.18	.691	4.03	.380
2	The use of the DSS can be accessed at any time.	4.27	.704	4.22	.397
3	Accessing the DSS is error-free.	4.31	.691	4.37	.467
<b>Total</b>		<b>4.24</b>	<b>4.26</b>	<b>.612</b>	<b>4.21</b>

Table 8 shows the results found that foreign tourists ( $\bar{x} = 4.53$ ) had a higher mean overall knowledge evaluation score than Thai tourists ( $\bar{x} = 4.24$ ), at the highest level. In addition, Thai and foreign tourists had a statistically significant difference in their opinions with the quality of service at the .001 level.

Table 8. Knowledge for soaking in hot springs

No	Topics	Thai		Foreigner	
		Average	S.D.	Average	S.D.
1	The DSS contains a variety of useful measurement data to make it reliable.	4.25	.494	4.68	.489
2	The DSS provides clear bathing practice information, which makes you feel safe and confident in hot bathing.	4.26	.473	4.68	.533
3	The DSS has health information about the treatment of diseases that make you want to revisit.	4.22	.433	4.23	.486
<b>Total</b>		<b>4.24</b>	<b>.467</b>	<b>4.53</b>	<b>.503</b>

## 2. Ease of Use and Benefit of the DSS

### 2.1. Perceive Ease of Use

Table 9 shows the results found that foreign tourists ( $\bar{x} = 4.36$ ) had a slightly higher mean overall knowledge evaluation score than Thai tourists ( $\bar{x} = 4.35$ ), at the highest level. Table 10 shows the results found that foreign tourists ( $\bar{x} = 4.32$ ) had a higher mean overall ease of use of the DSS evaluation score than Thai tourists ( $\bar{x} = 4.22$ ).

Table 9. Navigation

No	Topics	Thai		Foreigner	
		Average	S.D.	Average	S.D.
1	Users know what page they are in the application.	4.33	.652	4.43	.431
2	Users can exit the DSS whenever they want.	4.38	.663	4.27	.443
3	Buttons and menus are designed to be easy for users to understand and operate.	4.35	.673	4.48	.464
<b>Total</b>		<b>Total</b>	<b>4.35</b>	<b>.580</b>	<b>4.36</b>

Table 10. Ease of Use

No	Topics	Thai		Foreigner	
		Average	S.D.	Average	S.D.
1	The DSS has no problem with linking.	4.30	.652	4.20	.370
2	The DSS has no problems with various errors	4.32	.672	4.36	.440
3	The DSS has no problem with program code.	4.35	.649	4.48	.465
<b>Total</b>		<b>Total</b>	<b>4.32</b>	<b>.585</b>	<b>4.22</b>

### 2.2. Perceived Benefits

Table 11 shows the results found that Thai tourists ( $\bar{x} = 4.32$ ) had a higher mean overall perceived usefulness evaluation score than foreign tourists ( $\bar{x} = 4.22$ ), at the highest level. In addition, Thai and foreign tourists had a statistically significant difference in their opinions with the quality of service at the .05 level. Table 12 shows the results found that Thai tourists ( $\bar{x} = 4.34$ ) had a higher mean overall perceived usefulness evaluation score than foreign tourists ( $\bar{x} = 4.28$ ), at the highest level.

Table 11. Functionality of the DSS

No	Topics	Thai		Foreigner	
		Average	S.D.	Average	S.D.
1	The functionality of the DSS helps to raise interest in the awareness of various hot springs.	4.30	.644	4.13	.343
2	The functionality of the DSS helps in persuading the user to travel to different hot springs.	4.31	.665	4.22	.420
3	Diversified information (e.g., content information, video information) in the application increases the attraction of visiting the hot springs.	4.34	.664	4.32	.483
<b>Total</b>		<b>4.32</b>	<b>.585</b>	<b>4.22</b>	<b>.327</b>

Table 12. Functionality of the DSS

No	Topics	Thai		Foreigner	
		Average	S.D.	Average	S.D.
1	Health information on hot spring baths is appropriate.	4.31	.654	4.19	.337
2	Health information on hot spring baths is sufficient.	4.36	.629	4.26	.441
3	You gain more knowledge about health information on hot spring baths after using the DSS.	4.34	.669	4.38	.444
<b>Total</b>		<b>4.34</b>	<b>.568</b>	<b>4.28</b>	<b>.323</b>

Some of the opinions from the open-ended questions of Thai tourists towards the DSS are:

Participant 5: "The color scheme of the application is very attractive to use as it is the same color scheme."

Participant 17: "More graphics should be added to make the DSS look more attractive."

Participant 29: "There should be more pictures and service of the hot springs."

The opinions of foreign tourists towards the DSS are as follows:

Participant 13: "It is a good application suitable for use because it can be easily portable."

Participant 25: "It should also add English subtitles to the video."

Participant 2: "It should add more tourist attractions in the future."

## DISCUSSION

### 1. Research Question 1

Both Thai and foreigner tourists require information about distance, history/ highlight of hot springs, nearby attractions information, budget to spent, restaurant information, hotel, accommodation information, café information and fuel station information. This supports findings of Rakphakdi et al. (2017) and Phorncharoen and Phorncharoen (2018). The DSS adds more information which is specific and necessary for hot spring tourism than other studies that only bring general information about tourism. Most Thai tourists (56.67%) suggested multimedia narration technology with audio options and read narration on demand, whereas most foreign tourists (53.33%) require text-only narration technology and 46.47% because travelling in outdoor areas might cause noise. Therefore, text narration technology might be more appropriate than audio option. Thai tourists' requirements on travel technology are similar to Angkananon et al. (2019). Problems encountered by Thai tourists and foreigners are similar: no information about the differences of minerals in each pond, unknown appropriate time to soak in each hot spring's pond, and unknown the temperature of the hot water. This is consistent with Pereira and Russo (2018).

### 2. Research Question 2

Results showed that designing the DSS for Hot Springs using an agile approach improved processes and tools to run faster and more efficiently consistent with Pereira and Russo (2018), which used a thought model to integrate with the Agile Concept in software development. This research is also applying the theory of eight rules of thumb for screen design (Shneiderman, 2005) and Ten Usability Heuristics (Nielsen, 1994). There are main important functions of the DSS : distance calculation function; fuel calculation function; accommodation cost calculation function; restaurants and cafes cost calculation; souvenir shopping cost calculation; total cost calculation; and hot spring potential evaluation functions. This is consistent with the research of Rakphakdi et al. (2017); Trakulmaykee et al. (2023); Wongamonwit and Chinavaro (2021); Chormuan et al. (2014); and Chowkoksung and Snae (2011). Finding the appropriate MPG value for a car model is new research. The researchers also had developed an additional new function to assess the satisfaction of the hot springs visited which appears on the information page of each hot spring.

### 3. Research Question 3

Users' evaluating the efficiency of the DSS using the two principles (Delone and McLean, 2003; Davis, 1989) can reflect the assessment of design and usability in each aspect well. This can be seen from the overall assessment opinions on the DSS that found that foreign tourists had a slightly higher average score of overall opinions than Thai tourists which is at the highest level in all aspects. The Thai and foreign tourists found no significant difference with the overall opinions in using the DSS ( $p > .05$ ). This was in line with Trakulmaykee et al. (2023) who used similar user evaluation measurements in users' evaluation of the Technology. The results of the satisfaction assessment of the tourists in terms of design and usability were at the highest level. The good application will help increase the number of tourists and affect the income of local communities to increase. In addition, the measure of users' evaluation is consistent with Angkananon et al. (2019), who assessed user satisfaction in the following areas: 1) accessibility of technology for people; 2) user interface design; 3) application navigation; and 4) usability.

In addition, the results on the interest in visiting the Hot springs in Surat Thani after using the DSS found that 95.25% of Thai tourists and 96.75% foreign tourists want to visit the hot springs in Surat Thani. It is because they feel confident after knowing information about the hot springs, budget calculations, hot springs routes, and pictures and videos of attractions. Tourists think that the hot springs in Surat Thani are interesting and beautiful places that can help them to relax. It is a high possibility that the DSS could increase the number of tourists and income for the community nearby in the future. It is associated with Kim et al. (2021) who stated that when customers are satisfied with the technology to receive information quality and service quality, it will affect their behavioral loyalties and attitudinal loyalties.

## CONCLUSION

The DSS for Tourism at Hot Springs in Surat Thani was developed for Thai and foreign tourists who know English to travel to the seven Hot Springs in Surat Thani. The DSS was designed and developed based on both Thai and tourists' requirements. The DSS was available on the Android and IOS platform in both Thai and English languages. It could calculate the estimation of distance, fuel cost, MPG value, accommodation cost, restaurants and cafes cost, souvenir shopping cost, and total cost. The calculation of MPG value for a car model is a new contribution that can found in this research. There also is an evaluation function of the potential of the hot springs. The DSS was tested by the software development experts throughout the development period using the agile method. The DSS worked correctly and properly in all functions. Both Thai and foreign tourists have a positive view on the use of the DSS. It confirms that the design and development of the DSS meets the requirements of the users. The DSS provides convenience to travelers by offering features all in one place. In addition, the DSS provides personalized travel recommendations of hot springs' routes and

itineraries based on user preferences. It also plays a vital role in making travel planning easier to enhance travel experience and promote the success of the community tourism business.

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## IMPACT OF DIGITAL TOOLS ON THE INTEREST IN VISITING HERITAGE OBJECTS IN TOURISM

Jaroslava GBUROVÁ\*

University of Ss. Cyril and Methodius, Institute of Management, Trnava, Slovakia, e-mail: jaroslava.gburova@ucm.sk

Michal LUKÁČ

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

Daniela MATUŠÍKOVÁ

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

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**Abstract:** Heritage objects play an important role not only for the development of tourism but also for the knowledge of humanity. This contribution is focused on the perception of the importance of applying modern digital tools to heritage objects. The aim of the paper is to find out and analytically evaluate whether the implementation of modern digital tools motivates to a more significant visit of heritage objects. Based on a sample of respondents from the Slovak Republic, it finds out whether the implementation affects their interest in visiting the mentioned heritage objects as part of the development potential of tourism. The research objective was implemented through questionnaire research methods. The obtained data were verified by selected statistical methods. The research results point to certain differences in the perception of their importance as a tool to support their visitors' rate. The main difference was found in the case the gender of respondents. There was found out, that women pay more attention on the level of digital tools implementation when deciding about visiting them.

**Keywords:** tourism, digital tools, heritage object, visitors' interest, digital experience, cultural heritage, technologies, visitors' rate, pandemic

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### INTRODUCTION

The world is constantly changing and adapting to current trends. The same applies to digitalization, which are encountered today and are used in various industries. The aforementioned modern phenomenon also affected the field of tourism. Especially during the pandemic period. The digital transformation of society and the trend towards a highly technological environment has not avoided the tourism industry either. Businesses of its services have started to apply more and more digital innovations, one of which is virtual reality, which has become a popular tool of selected businesses, especially during the pandemic period. This period inspired tourism developers to create new tools which help to participate in tourism and reach more effective experience.

Today's technology is able to unite the whole world. We can "travel" to places we would never go in real life. We can talk, discuss, learn and exchange culture with people from the other side of the Earth. However, easy access creates the problem of a huge amount of information that no human being is able to process; at least in real time. We live in the era of big data and culture. Technology is a means of communication and the spread of culture. Cultural organizations must define their presence in this world, and people should be able to "survive" in this world without losing their roots. Therefore, we need to reevaluate the position of technology in culture, especially if it is a massive current expressed through big data (Pouloupoulos and Wallace, 2022). Within the current context of tourism, it is necessary to consider how the COVID-19 pandemic could affect the acceptance of alternative ways of developing pandemic and post-pandemic tourism. Within this perspective, it is important to deal not only with alternative forms of tourism as consequences of alternative consumer lifestyles, but also with all alternative ways of organizing and conducting business in tourism (Vujičić et al. 2022). During the pandemic, the heritage objects were among the first who started using digital tools, and at least providing their services to virtual tourism participants in a limited form at that time. They were thinking about new ways and approaches to provide tourists with what they could not visit due to the mandatory isolation. It was the time in which digital tools proved to be an interesting alternative to how to offer the experience.

### LITERATURE REVIEW

#### Theoretical background

Cultural heritage is an integral part and at the same time a subset of cultural policy. It represents the irreplaceable wealth of the state, material or non-material type (Beel and Wallace, 2020). Cultural heritage is an expression of ways of life developed

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\* Corresponding author

by a community and passed down from generation to generation (Šenková et al., 2020), including habits, customs, places, objects, artistic expressions and values. The preservation of cultural heritage is currently a very important aspect of our lives. Thanks to such a link, we learn about our ancestors, production methods and their ways of life. They provide means for documentation, restoration and presentation of cultural heritage objects (Skublewska-Paszkowska et al., 2022).

Not everyone has the opportunity to encounter cultural heritage for various reasons (health, social, economic, political, etc.) and therefore it is important to find ways to make cultural heritage accessible to the largest possible audience. Here, new modern technologies represent a huge potential. Their implementation in the services of heritage objects brings many positives, how to make heritage objects more accessible and at the same time more attractive. As many authors as Cecotti; Baglioni and others state, virtual heritage can represent cultural heritage in realistic virtual environments where the public can immerse and or interact with these artifacts (Cecotti, 2022; Baglioni et al., 2021). The rapid development of digital technologies enables an increasingly faithful reflection of this area of life. Rich cultural heritage, both tangible and intangible, can be preserved for future generations thanks to the use of advanced digital technologies (Skublewska-Paszkowska et al., 2022). However, authenticity should be preserved where possible, especially in the context of preserving intangible cultural heritage, there is also a contested history that often plays a significant role in local heritage and tourism (Bec et al., 2019; Zhu, 2015). Technological development brings new ways of interactive communication in the field of multimedia applications of cultural heritage. Virtual and augmented reality technologies facilitate access and increase the value and public awareness of cultural and natural heritage (Russa et al., 2015; Bruno et al., 2020). Evaluating user experience is a complex process that involves evaluating the ease of use and effectiveness of media as well as the entertainment they provide (Okanovic et al., 2022; Nastišin et al., 2022).

The use of digital tools to engage the local community in the protection and promotion of cultural heritage values is gaining increasing attention (Liang et al., 2021; Jeffrey et al., 2020). Digital technologies can improve preservation and conservation techniques, enrich archives with interactive media, map heritage using a geographic information system, expand participatory experiences, support communication between stakeholders, and deepen understanding of cultural connection (Miles et al., 2016; Popple, 2015). Digital and social media are considered to be one of the most important mediators (Štefko et al., 2023) to support the two-way cooperation between authorities and citizens (Falco and Kleinhans, 2019; Hronec et al., 2022). The development of heritage objects in connection with modern technologies is definitely in favor of the development of tourism itself. Technologies can increase the level of attractiveness and make historical values more interesting and valuable. As the authors Law et al. (2014) and Koo et al. (2015) mention, the progress from traditional tourism to the foundations of innovation and technological orientation of the entire industry was ensured by the widespread adoption of information and communication technologies in the tourism industry. Naturally, this development continues with the prevalent adoption of social media by tourists and travel agencies (Abou-Shouk and Hewedi, 2016), recognizing technology as an infrastructure in tourism that will include various intelligent computing technologies that integrate hardware, software and network knowledge with the aim of optimizing business processes and business performance (Gonçalves, 2022), as well as registering the mobility of tourist information and tourism consumers (Berešková and Svetlíková, 2022).

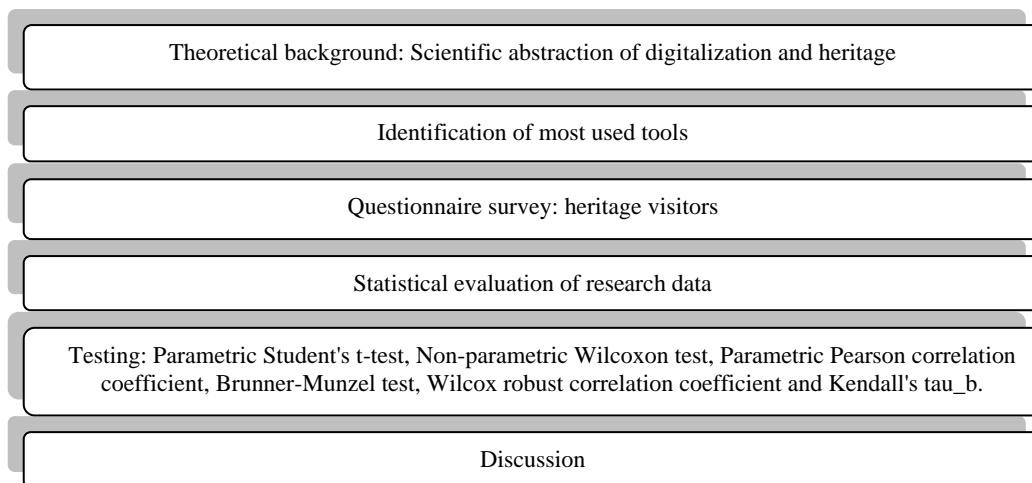


Figure 1. Scheme of methodology steps (Source: Own processing)

The role of cultural heritage itself has been challenged with the argument that in disseminating cultural heritage the audience should not passively receive information but should play an active role in promoting culture and research like other media. Regarding the virtual user experience, it has been proven that the use of virtual tools to enhance the exhibition does not affect the user experience in any way (Jin and Liu, 2022; Pierdicca et al., 2015). The truth is quite the opposite. New research has shown that using technology to reshape the way audiences explore cultural heritage can increase overall satisfaction levels (Choi and Kim, 2017). Virtual reality technology is a new visual derivative of traditional art media, a new visual phenomenon in the context of digital media. The main goal of virtual heritage is to represent cultural heritage in realistic virtual environments where the public can immerse and/or interact with these artefacts. Virtual heritage directly includes computer graphics and/or multimedia content, i.e. 3D objects, 2D images, sounds, music (Cecotti, 2022; Dey et al., 2022; Mollik et al., 2024; Garvin, 2018). The impact and effects of digital technologies on visitors is an issue that

requires further discussion. While digital technologies continue to create new opportunities and possibilities for heritage display, they could also negatively impact heritage communication and interfere with the visitor experience if not carefully developed and applied (Guss, 2020; Boudreau et al., 2022). Consequently, it is important to gain a holistic understanding of visitors' reception, experience and expectation of digital interpretation and presentation in order to improve the design of digital display at heritage sites and to develop lasting relationships between visitors and monuments (Liu, 2020). Technology is a tool that tourism companies and customers can collectively use for value co-creation. With the help of modern technologies customers share insightful information with their family, friends and peers and such words are taken as a suggestion. Tourism companies can use customers as major brand protagonists, provided they are fully satisfied with the services (George, 2023; Agrawal and Rahman, 2015). The development of the digital era facilitates faster and easier access for people to the information they need and which is also very important in the field of tourism. Moreover, in this digital age, technology also brings many benefits from various fields such as politics, economy, socio-culture, defense or security, information technology and many others. However, it is undeniable that every application brings challenges in every business area (Anisa and Tihin, 2023). For this reason, the aim of the study was to find out through research questions:

RQ1 Are digital tools important in heritage objects services/offer?

RQ2 Do the tourists search for digital tools when visiting heritage objects?

## MATERIALS AND METHODS

The aim of the paper is to find out and analytically evaluate whether the implementation of modern digital tools motivates to a more significant visit of heritage objects. The main aim of the research was to statistically evaluate the relation between the visiting of heritage objects and the extent of their possession of modern digital elements.

For the purpose of the research as well as for this study, several research methods were used:

- Questionnaire – aimed at determining the interest in visiting heritage objects in connection with the application of digital tools to support their visitors rate in the Slovak Republic on the basis of selected sociodemographic characteristics and other factors that influence the visitors rate of heritage objects in Slovakia as well as abroad. The research sample consisted of participants in the tourism industry who visit or are willing to visit heritage objects in the Slovak Republic in the future. In total 226 respondents participated in the research.

- To verify the research hypotheses, the following methods were used: Parametric Student's t-test, Non-parametric Wilcoxon test, Parametric Pearson correlation coefficient, Brunner-Munzel test, Wilcoxon's robust correlation coefficient and Kendall's tau\_b.

Questionnaire method was used as a primary data collection, in order to fulfil the research objective.

**H0:** We assume that there are statistically significant differences in the interest in visiting heritage objects and the extent of their possession of modern digital elements in view of the selected characteristics of the respondents.

**H1:** We assume that there are statistically significant differences in the interest in visiting heritage objects and the extent of their possession of modern digital tools with regard to the gender of the respondents.

**H2:** We assume that there are statistically significant differences in the interest in visiting heritage objects and the extent of their possession of modern digital tools in relation to the age of the respondents.

In order to verify the established hypotheses, after processing the responses of the respondents in Excel, the coded data were subsequently processed in the statistical programs R-project and IBM SPSS. Data collection took place electronically in the period from May to October 2023. The questionnaire was anonymous and contained 28 questions. The questionnaire research was performed at the sample of 226 respondents (n=226). In total 550 respondents were addressed, but only 226 questionnaires were valid for further evaluation. The research sample was founded on purposive sampling.

## RESULTS AND DISCUSSION

### Research sample description

The demographic statistics of the surveyed respondents are shown in Table 1. As Table 1 shows, 67.70% of the surveyed respondents were men while 32.30% were women. 50% of the surveyed respondents were between the age of 16 and 24. Likewise, 50% of the respondents were between the age of 25 and 63. A total of 226 respondents with an average age of 27 made up the research sample. The lowest age was 16 and the highest was 63. The median value was 24.50.

Table 1. Demographic statistics for 226 respondents (Source: Own processing)

Criterion	Factor	Frequency	Percentage
Gender	Female	153	67.70%
	Male	73	32.30%
Age	16-24	113	50%
	25-63	113	50%
Education	Basic	4	1.77%
	secondary	109	48.23%
	secondary education without high school diploma	6	2.65%
	university education I. degree	47	20.80%
	university education II. degree	54	23.89%
	university education III. degree	6	2.65%

Mode – the most common age value is 22 and the standard deviation is 7.389. The largest share of the research sample was 48.23% of respondents with secondary education with a high school diploma. Respondents with basic education had

the smallest share in the research sample, 1.77%. The same share, i.e. 2.65% were respondents with high school education without high school diploma and university level III. degree. 20.80% of the respondents had completed the I. degree of university education and the II. degree of university education. degree 23.89% of respondents.

### Reliability of the constructs

The visitation of heritage objects in the Slovak Republic has its specifics also from the point of view of the gender. Analyzing this issue from this point of view can bring us interesting findings about the preferences, motivations and patterns of visits of individual genders. Men and women may have different interests and priorities when visiting heritage objects. Men may be more inclined to visit technical and military monuments, such as castles, fortresses or museums with a military theme. On the other hand, women may prefer visiting cultural and artistic monuments, such as museums, galleries or historic houses. In addition, there may be other factors that influence the visitation of heritage objects in terms of gender. For example, social expectations, stereotypes and gender norms can influence what types of monuments men and women visit. Cultural factors, such as upbringing and media influence, can also influence what activities are considered appropriate for each gender. It is important to know that these general trends may not apply to every individual and there are large individual differences between people. But... there is a question related to the digital tools. The first question investigated the interest of respondents in heritage objects according to the species collected. The most popular types can be seen in Figure 2 below.

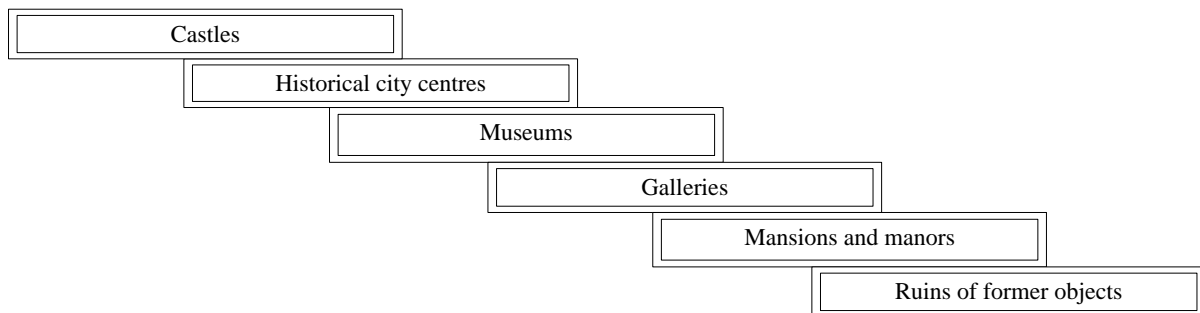


Figure 2. Most popular heritage objects (Source: Own processing)

While all the respondents of the research sample mentioned that they visit heritage objects, the aim of the second question was to find out whether they agree with the statement that the application of digital tools to heritage objects has the potential to increase their attractiveness and interest on the part of potential visitors. The results of the research conducted on the mentioned question (Table 2) show that a significant majority of respondents agree that modern digital tools can have the potential to reach a larger audience and be more attractive.

Table 2. Interest of the implementation of digital tools in heritage objects (Source: Own processing)

	Frequency	Cumulative Frequency	Relative frequency %	Cumulative relative frequency %
disagree	1	1	0,44 %	0,44 %
rather disagree	2	3	0,88 %	1,32 %
Nor agree nor disagree	9	12	3,92 %	5,30%
rather agree	56	68	24,78	30,08%
agree	158	226	69,92%	100%

For the evaluation of stated hypothesis, the other questions were used. The first one, in relation to hypothesis 1 was: Is your interest in visiting heritage objects influenced by the extent of implemented modern digital tools in it?

The aim of the research hypothesis H1 was to find out whether there are statistically significant differences in the interest in visiting heritage objects and the extent of their possession of modern digital tools with regard to the gender of the respondents. Three methods of triangulation were used to verify H1 - there will be used: the parametric t-test with greater power, the non-parametric Wilcoxon test with less power and the Brunner-Munzel test, which is suitable for variables with multiple equal values. Since there are no outliers in the statistical set, there is no need to use robust t-tests, which work with truncated group means, thereby eliminating the effect of skewness on the result of testing differences between two independent samples. As part of the operationalization, statistical hypotheses were formulated. The statistical null hypothesis for the t-test H0 assumes that the group means of men and women are equal. The alternative statistical hypothesis Ha states that the group means are not equal. The statistical hypothesis H0 for the nonparametric Wilcoxon test assumes that the mean ranks will be equal. The alternative statistical hypothesis Ha states that the mean ranks are not equal. We test at the usual test significance level of  $\alpha = 0.05$ . The test results are shown in the following tables.

The p-value in the t-test for two independent samples, as shown in Table 3, is 0.0353, which is lower than the predetermined significance level of the  $\alpha = 0.05$  test. Therefore, it is possible to reject the statistical null hypothesis.

Table 3. Parametric Student's t-test – H1 testing (Source: Own processing)

Parametric Student's t-test
data: SKOREnasp by Tot2gender t = - 2.1176 df = 224 p-value = 0.03531; alternative hypothesis: true difference in means is not equal to 0 95 percent confidence interval: -2.8219860 -0.1014629; sample estimates: mean in group 1 = 14.47945 mean in group 2 = 15.94118

Based on the results processed in Table 5, the p-value of the non-parametric Wilcoxon test is 0.0366, which is lower than the chosen significance level of the alpha test = 0.05. For this reason, it is possible to reject the statistical null hypothesis.

The p-value of the Brunner-Munzel test, the results of which are presented in Table 4, is 0.0300, indicating a lower value than the chosen level of significance of the alpha test = 0.05. For this reason, it is possible to reject the statistical null hypothesis. Descriptive statistics of SKOREnasp by gender are processed in Table 5.

Table 4. Non-parametric Wilcoxon test – H1 testing (Source: Own processing)

Nonparametric Wilcoxon test	
<b>data:</b> women and men; W = 6543.5; p-value = 0.03665; <b>alternative hypothesis:</b> true location shift is not equal to 0	

Table 5 Robust Brunner–Munzel rank order test- H1 testing (Source: Own processing)

Parametric Student t-test	
<b>Stest. stat</b> [1] -2.188087; <b>Sphat</b> [1] 0.4141373; <b>Sdhat</b> [1] 0.1717253; <b>Ss.e.</b> [1] 0.03924097; <b>Sp.value;</b> [1] 0.03003018	

Table 6. Descriptive statistics- SKOREnasp – gender (Source: Own processing)

Gender	Group average	Standard deviation	Group median	Frequency
Men	14.48	4.503	14.32	73
Women	15.94	5.010	15.92	153
Total	15.47	4.890	15.28	226

The difference in group averages by gender is 1.43, the standard deviations of the group averages are not large, their triples do not exceed the value of the arithmetic average. The difference in group medians is slightly larger (1.61).

The p-values of the parametric t-test and the two non-parametric tests are quite similar, the triangulation contributing to greater confidence in our overall conclusion. The p-values of the three tests used are much lower than the established level of significance of the test alpha = 0.05, therefore the statistical null hypothesis can be rejected. The difference between the group averages of men and women is statistically significant. Women have a larger group average (15.47), and their group median is also larger (15.28). Based on the results obtained, H1 was confirmed.

Analyzing the investigated issue from the point of view of the gender can provide us with interesting insights into how genders perceive and visit cultural heritage. The finding that there are statistically significant differences in the visitation of heritage objects in connection with the level of implementation of modern digital tools in the Slovak Republic in terms of the gender of the surveyed respondents is an important result. This research underlines the diversity on the basis of which decisions are made and the preferences of men and women within the framework of visits to heritage objects. Differences in attendance between men and women indicate the need for a differentiated approach in the planning and management of cultural projects and tourist attractions. It is very important to be aware of these differences and take them into account when creating marketing strategies, presenting monuments and offering programs to reach a wide spectrum of visitors.

In the second hypothesis, the effort was to focus on age as an important variable. In general, younger generations, such as millennials and Generation Z, may tend to seek interactive and multimedia experiences when visiting heritage objects. For these groups of visitors, interactive exhibitions, digital interpretations or an activating program that enable them to obtain information and experiences from monuments through modern technologies can be attractive. Middle generations such as Generation X and Baby Boomers may be interested in deeper historical context and authentic experiences. For them, well-prepared tours with a professional guide who will provide them with detailed information about the history and culture of the given places can be important. Older generations, such as the silent generations and older Baby Boomers, may be interested in preserving and protecting cultural heritage for future generations. For this group of visitors, activities related to the protection and enhancement of monuments are important, such as the volunteer program, maintenance of historical gardens or support of local cultural events.

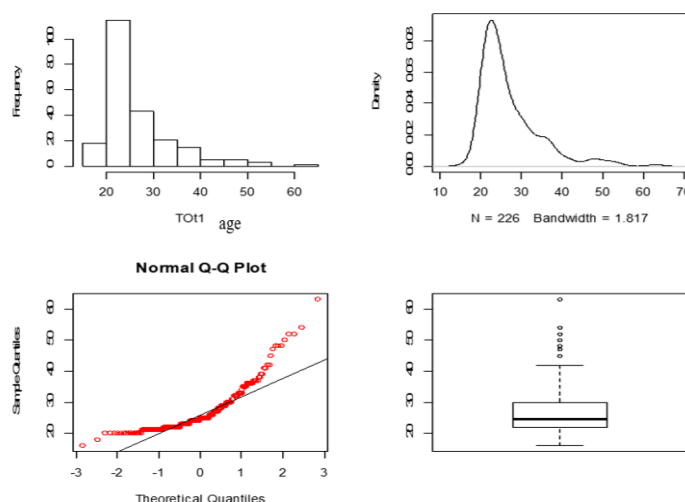


Figure 3. Distribution of the independent variable with a proportional scale – TOt1 Age (Source: Own processing)



On the basis of the above-mentioned knowledge, within the research hypothesis H2, we focused on finding out whether there are statistically significant differences in the interest in visiting heritage objects and the extent of their possession of modern digital tools in relation to the age of the respondents.

The results processed in the histogram and density graph show a significant bias towards higher values. The Q-Q normality plot also indicates a highly skewed distribution. A large number of outliers can be read from the box plot. In this case, however, it is not about whether the distribution is normal, we are mainly interested in outliers and linearity, or non-linearity of mutual relations between two correlated variables. A total of 10 outliers were identified in the statistical set (47, 63, 45, 54, 48, 52, 52, 48, 48, 50), with values 52 and 48 being repeated.

Outliers are of great importance except for group comparisons of means, where they distort the arithmetic mean for correlation and regression analysis as well. Even one significantly outlier value can distort the result of the analysis. For this reason, Figure 4 is analyzed more closely as first to find out whether it is a linear or non-linear dependence.

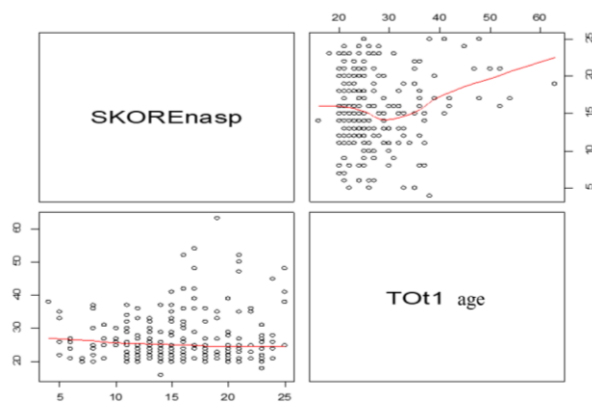


Figure 4. Scatter diagram (Source: Own processing)

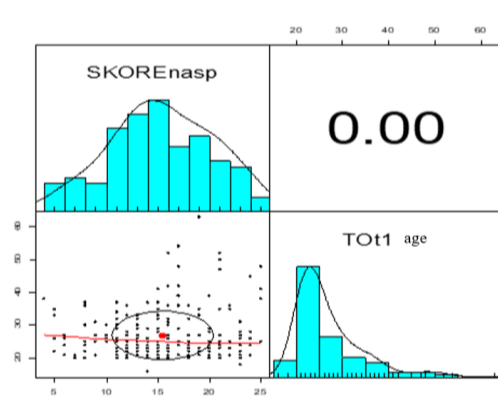


Figure 5. Spearman's correlation coefficient rho

Local non-linearity can be seen in Figure 5. The progress of a slightly decreasing linear regression curve is shown in Figure 3, which is important information for regression analysis (direction of dependence). Correlation analysis was used to verify H2. Considering the result of exploratory data analysis and a large number of outliers, both parametric and non-parametric correlation tests were used. Parametric Pearson's correlation coefficient  $r$  and Spearman's rank correlation coefficient  $\rho$ . Kendall's tau\_b and Wilcoxon's robust correlation coefficient were also used. Data were tested at a significance level of  $\alpha = 0.05$ . The test results are shown in Table 7.

Table 7. Results of hypothesis H2 testing (Source: Own processing)

Correlation between the visitation of heritage objects with digital tools in the Slovak Republic and the age of the respondents				
Variables	Correlation	Spearman	Pearson	Kendall tau_b
SKOREnasp – visiting of heritage objects in the Slovak Republic	Tot1 Age			
	correlation coefficient	0.001	0.107	-0.002
	Statistical significance	0.994	0.109	0.960
N – number of cases		226	226,00	226

Table 8. Wilcoxon's robust correlation coefficient – H2 testing (Source: Own processing)

Wilcoxon robust correlation coefficient
Scor [1] -0.07660171; Stest [1] -1.149848; Sp.value [1] 0.2514327; Sn [1] 226

The parametric Pearson correlation coefficient  $r$  has a value of 0.107, which is the lower limit of low correlation,  $p$  value 0.109 ( $N = 226$ ). If the statistical null hypothesis was rejected, an error of 10.9% would be committed, while the chosen significance level of the test is only 5%. Non-parametric weaker Spearman's  $\rho$  and Kendall's tau\_b have correlation coefficients below 0.1, both  $p$  values are above 0.9, ( $N = 226$ ). If we rejected the statistical null hypothesis, we would commit an error of 99.4%, or 96%. In the following Table 8 we present the results of the Wilcoxon robust correlation coefficient.

The given correlation coefficient is considered to be very accurate. The value of the correlation coefficient of the polychoric correlation is -0.0766, which is also a trivial correlation with a  $p$ -value of 0.251 for  $N = 226$ . According to the  $p$ -values of all four correlation coefficients used, there was no reason to reject the statistical null hypothesis. The visualized results of the correlation analysis can be seen in Figure 4, within Spearman's correlation coefficient.

On the diagonal are histograms of correlated variables. Above the diagonal is the value of Spearman's correlation coefficient  $\rho = 0.00$ . Below the diagonal is a scatterplot with a local regression line that does not pass through the outliers and is slightly decreasing, indicating a negative correlation. Two of the four applied correlation coefficients are negative - Kendall's tau\_b and Wilcoxon's pbcor. The  $p$ -values of all four correlation coefficients used are higher than the established significance level of the  $\alpha = 0.05$  test. Therefore, the statistical null hypothesis should not be rejected. It is evident that the use of several methods of verification of the research hypothesis makes sense, because it allows to assess the result of the analysis better, especially in cases where the  $p$ -value of the tests largely depends on the size of the research sample, as is the case with correlation analysis. Based on the results obtained, H2 was not confirmed.

## CONCLUSIONS

As the pandemic began to fade, travel gradually resumed in the countries. Therefore, tourism is more open to new ideas and ways of learning how to be more efficient. One way to be more efficient is an implementation of digital tool into the operation of heritage object and their services.

The interest of the study was to find out the differences in the perception of importance based on selected characteristics of the participants of the tourism industry as well as visitors of heritage and objects in connection with the implementation of modern digital tools. The results of the conducted research both confirmed and reversed the differences in the perception of the mentioned phenomenon. Despite the fact that it was expected that the gender of the respondents may not play a role in the differences in interest in modern technologies. It turned out that modern technologies and their tools are not equally attractive to both genders, and therefore to both men and women. The foundation of this finding can be used when creating products of heritage objects for specific segments and types of events in them. The result of second hypothesis focused to the age of respondents expected the differences among the age groups. The data evaluation indicates that the visitation of historical monuments under the influence of the implementation of digital tools and their quantities in the Slovak Republic is not significantly influenced by the age of individual respondents. Based on the above result, we can conclude that cultural heritage has a similar value and appeal for different age groups in the Slovak Republic, regardless of the level of innovation with digital tools.

Monuments and historical sites can be interesting and accessible to people of all ages, regardless of age. They perceive this as a central value on which they base their decision-making. The stated result has important implications for policy makers, managers of cultural institutions and tourism organizations. He points out that there is no need to focus exclusively on certain age groups when planning and implementing programs and events to promote visitation and the protection of cultural heritage, and on the other hand, it is necessary to go with the modern digital age, but digital tools are not urgent at the moment. The above findings can serve as a basis for creating inclusive and interesting experiences that appeal not only to men, but also to women and adapt to their individual interests and preferences.

This differentiated approach can help to increase the number of visitors to heritage objects and at the same time to strengthen their value and importance in the eyes of the public.

## Limitations of the study

The limitations of the study provide an opportunity for further research in this issue. In addition to gender and age, other selected characteristics of the respondents can also be monitored (size of the residence where they come from, social status, etc.). Another option for the future is to explore individual cultural and historical objects separately. Here would be an opportunity to find out if there are differences in the perception of the need to implement digital tools in museums, galleries, castles, chateaux and others. Following on from the above, it will be necessary to specify digital tools and their attractiveness in the mentioned objects. All this has the potential to be a starting point for future research.

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## INVESTIGATION OF INFLUENCING GASTRONOMIC TOURISM “LOCAL ISAN SAUSAGE”, KHON KAEN, THAILAND

Thirachaya CHAIGASEM<sup>\*</sup> 

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

Pattera THONGOM 

Ubon Ratchathani Rajabhat University, Faculty of Education, Ubon Ratchathani, Thailand, e-mail: t.pattera@kkumail.com

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**Abstract:** The present study sought to analyze factors influencing gastronomic tourism “Local Isan Sausage” in terms of tourism products and tourists’ needs as crucial aspects for determining tourism strategies in neighborhoods of Mueang Kao Sub-district, Khon Kaen. It examined the characteristics of gastronomic tourism in relation to Isan sausages in Mueang Kao Sub-district, Khon Kaen. The sample of the study included 400 tourists visiting the neighborhoods of Mueang Kao Sub-district, Khon Kaen. The results demonstrated that three factors, namely motivation for gastronomic tourism, the value chain for gastronomic tourism, and the Isan sausage product development, significantly affected the holistic gastronomic tourism development of local Isan sausages. The present study sheds light on the tourists’ needs in relation to gastronomic tourism in the neighborhoods of Mueang Kao Sub-district, Khon Kaen, and shows that the results derived from an analysis of tourists’ responses in questionnaires are reliable. Consequently, it offers suggestions for the improvement or adaptation in different aspects, such as Isan sausages, packaging, and distribution, and consistency with the tourists’ needs, enabling the locals to recognize the significance and value creation of the wisdom of local Isan cuisine in their own community.

**Keywords:** gastronomic tourism, Isan sausage, Mueang Kao, Isan local wisdom

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### INTRODUCTION

In the context of gastronomic tourism in Thailand, in 2021, the Michelin Guide and the Tourism Authority of Thailand (TAT) jointly signed an agreement to extend their partnership for an additional 5-year period from 2022 to 2026, with the intention to provide support to the restaurant and hospitality industries during and in the aftermath of the COVID-19 pandemic as well as to contribute to the recovery of Thailand’s tourism as the pandemic began to subside (Matichon Online, 2021). This is the Michelin Guide’s determination to promote perception and in turn sustainable development in those sectors. In respect of gastronomic tourism in the Isan region, many organizations have acknowledged the importance of the identity of Isan cuisine, hence publishing the sixth edition of the Michelin Guide Thailand 2023, spanning Nakhon Ratchasima, Ubon Ratchathani, Udon Thani and Khon Kaen, to drive gastronomic tourism and portray the culture of Isan cuisine with unique identity (Bangkokbiznews, 2022). Among an array of innovative ideas are Turning Local into Lavish by Suthipong Suriya, a renowned Thai food stylist at Life Community Museum Bueng Kan, and Creative Economy Villages both of which have been distinguished with prestigious awards in the institution category from Gourmand World Awards, known as the Oscars of Gastronomy; local cuisine from the museum has received a Gourmand Award as well.

With this in mind, this study recognized the significance of drawing on the identity of Isan cuisine, notably Isan sausages in Khon Kaen, to create values, promoting its recognition, in combination with the longstanding architecture in the neighborhoods of Mueang Kao Sub-district, Khon Kaen. Additionally, the so-called sausages are regarded as the local Isan culinary culture in Khon Kaen. With their diversity and captivating characteristics inherited through generations, this intangible cultural heritage should be conserved to create job opportunities, distribute incomes within the communities, and promote sustainability among small-scale businesses within the communities in Khon Kaen.

### LITERATURE REVIEW

#### 1. Value Chain and Motivation for Gastronomic Tourism, Product Development (4P’s), Motivations of Gastronomy Tourism

Gastronomic tourism is a form of travel activity centered on experiences of cuisine and different activities during traveling. In addition to experiences of creating or cooking traditional local cuisine, this type of tourism may be concerned with other activities, such as exploring local lifestyles, joining food festivals, and attending local cooking classes. Food is derived from the unique history of different regions, along with products/ingredients, social norms, and traditions of those particular regions (ASEAN Tourism Forum, 2019). The processes for food production, consumption, and the food itself are embedded with

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<sup>\*</sup> Corresponding author

social and cultural capital (Berno, 2017). The value chain for gastronomic tourism comprises five activities, namely the production of ingredients, distribution, recipe development, provision of services, and information (UNWTO, 2022).

Tourism marketing involves creating focused interventions, marketing plans, or regulations to cater to the varied requirements and interests of various age groups (Chamboko-Mpotaringa and Tichaawa, 2023). The four Ps of marketing are place (distribution), product, promotion, and price. These are the variables that are most frequently used when creating a marketing mix. McCarthy (1960) states that while creating a marketing strategy and a marketing plan, marketers can fundamentally rely on these four criteria. The Marketing mix 4 P's (product, price, place or distribution, and promotion) are the primary components of the marketing mix, which consists of numerous components that can be tailored to the organization's primary aim. The marketing mix can also increase consumer satisfaction levels (Thabit and Manaf, 2018).

The motivation for gastronomic tourism encompasses pleasurable experiences, curiosity, grounded, self-expression, (Designated Areas for Sustainable Tourism Administration, 2019) and anxiety or health concern (Ellis et al., 2018). In addition, memorable dining experiences encourage visitors to suggest the location and share their own experiences (Frost et al., 2017). Food preferences vary among individuals. A person's eating habits and preferences can be influenced by a variety of factors, including gender, age, and culture. However, preferences can often take precedence over a person's true nutritional needs (Leite-Pereira et al., 2023).

#### 4. Holistic Gastronomy Tourism Development

Gastronomy and tourism comprise an integrated, networked and holistic approach to food and food culture that spans the continuum from production through post-consumption. This includes landscapes, place, agriculture and food production, food traditions, food presentations, hospitality, eating, culture and heritage, lifestyle, destination development, sustainability and importantly, their synergistic relationship between gastronomy as an expression of the culinary arts and creativity, innovation and design. The criteria for ASEAN Gastronomy Tourism Development encompass four pillars: farming systems and organic ingredients, story of food, creative industries and creative culture and sustainable tourism (ASEAN Tourism Forum, 2019).

#### 5. General Background of Isan Sausages

The term ‘sausage’ originates from the Latin word ‘salsus’, which refers to “the preservation of meat with salt” or is derived from the German word ‘wurst’, which translates to “finely ground meat mixed with salt and spices, packed in fillings” (Bureau of Quality and Safety of Food, 2018). Simply put, Isan sausages can be described as a product made of pork, beef, chicken, fat, cooked glutinous or sticky rice, spices, herbs, and flavorings, which are blended, tied into pieces, and undergo fermentation to achieve a sour flavor with microorganisms producing lactic acid and saltiness; they need to be fully cooked before consumption (Thai Industrial Standards Institute, 1994). This form of fermentation is attributed to the transformation of glutinous or sticky rice or certain compounds, such as flour mixed with other ingredients, into monosaccharide which subsequently changes into lactic acid through lactic acid bacteria genera. In fact, *P. cerevisiae* strains are typically prevalent in the initial stage of this process and tend to grow best at temperatures of 37-45°C, while *Lactobacillus* sp. commonly emerges in an air-free state during the subsequent stage of fermentation at which the sausages reach a pH level of 5 or lower, with a moisture content of 51-74%.

### METHODS

**1. Sampling:** The individuals involved with the sustainable development of gastronomic tourism “Local Isan Sausage” in Mueang Kao Sub-district, Mueang District, Khon Kaen, were chosen as the sample for data collection. Specifically, a questionnaire was administered among the tourists traveling to the community in Mueang District, Khon Kaen, chosen through accidental sampling to obtain quantitative data regarding their behaviors and needs. Given the infinite population, the sample size could be determined using Cochran's formula for unknown population size (Cochran, 1953) with a confidence level of 95 percent and a margin of error of 5 percent. Based on the calculation of the sample size, the sample must comprise no fewer than 384 individuals to facilitate the calculation of percentages with a margin of error of less than 5 percent and at a confidence level of 95 percent. Accordingly, the sample was determined to include 400 tourists to facilitate the measurements and data analysis.

**2. Measurements:** In this study, the software Amos Graphics was employed to determine the relationship between structural equation modeling (SEM). The initial step entailed analyzing the reliability of factors and variables prior to exploratory factor analysis (EFA) to classify variables with close factor loading values. Subsequently, the factors and variables were incorporated in the development of a measurement model to measure statistical values and “verify” whether the classification of the variables attained a model fit. They were further employed in the development of a structural model to demonstrate influences between factors and latent variables on other factors derived from collected empirical data. The factors and items of Investigation of Factors Influencing Gastronomic Tourism Local Isan Sausage are listed in Table 1.

**3. Data Analysis:** Regarding the model development, the results of the exploratory factor analysis showed that the fundamental factors were categorized into three groups based on factor loading values as follows: 1) the first group comprising P4, V5 M1 V3 M2, and M3 was named “VM1” (value chain for gastronomic tourism 1 and motivation for gastronomic tourism 1); 2) the second one including P1, P3 V4 P2, and M5 was named “Pro” (the Isan sausage product development), considering that the variables were notably concerned with the development of local Isan sausages; and 3) the final group consisting of V2 V1 and M4 was named “VM2” (value chain for gastronomic tourism 2 and motivation for gastronomic



tourism 2). With the measurement of the confidence level among different factors, the results showed a **Kaiser-Meyer-Olkin (KMO) value of .824 (KMO>0.5) and a p-value of 0.000 (Sig.)**, with the **Cronbach's  $\alpha$**  of .863, as illustrated in Table 2.

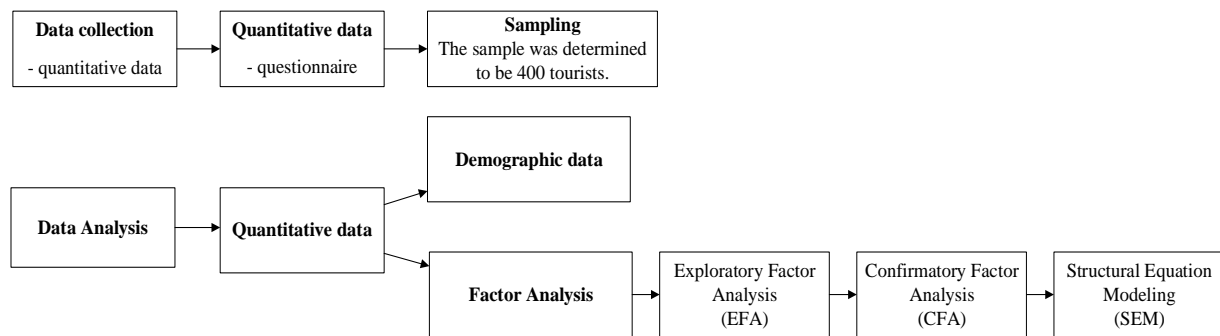


Figure 1. Methodology of Investigation of Influencing Gastronomic Tourism “Local Isan Sausage”, Khon kaen, Thailand

#### 4. Reliability, validity, and common method bias analyses

Considering its reliability for the analysis of the relationship between different factors influencing one another, the software Amos Graphics was utilized in this study to analyze structural equation modeling. Initially, the exploratory factor analysis was conducted to classify variables, as displayed in Table 1. Afterward, statistical measurements were carried out to determine a model fit of those groups of factors and variables. As a result, the model achieved a good fit as shown in Figure 2, with Chi-square = 21.289,  $df = 14$ ,  $p = .0094$  ( $>.05$ ), CMIN/DF = 1.521, GFI = .985, RMSEA = .036 ( $<.08$ ).

Table 1. Factors and Items

Factors	Item
1. Motivations of Gastronomy Tourism	M1 : Pleasurable Experience
	M2 : Curiosity
	M3 : Grounded
	M4 : Self-Expression
	M5 : Anxiety
2. The value chain for gastronomy tourism	V1 : Production of ingredients
	V2 : Distribution
	V3 : Recipe development
	V4 : Provision of services
	V5 : Information
3. product development (4P's)	P1 : Product
	P2 : Price
	P3 : Place
	P4 : Promotions
4. Holistic Gastronomy Tourism Development	GT1 : Farming Systems and Organic Ingredients
	GT2 : Story of Food
	GT3 : Creative Industries and Creative Culture
	GT4 : Sustainable Tourism

Table 2. Exploratory Factor Analysis (EFA) Kaiser-Meyer-Olkin (KMO) = .824 (KMO>0.5), P-value = 0.000 (Sig.)

Topic	Factor			Cronbach's $\alpha$	
	1	2	3		
P4	.913	.115	-.010	.875	.863
V5	.806	.127	.001		
M1	.805	.228	-.099		
V3	.739	.068	.047		
M2	.705	.187	-.068		
M3	.690	.093	.098	.913	
P1	.368	.877	.034		
P3	.008	.863	.014		
V4	.366	.837	.063		
P2	.032	.832	.034		
M5	.647	.669	.033	.712	
V2	-.002	.012	.821		
V1	-.064	.092	.799		
M4	.063	-.003	.764		

**5. A measurement model** is a confirmatory factor analysis (CFA) of the first measurement model to verify that all three groups of the variables, namely motivation for gastronomic tourism, the value chain for gastronomic tourism and the Isan sausage product development, achieved a model fit. The results demonstrated that the model was not fit, so that necessitated refining the model. Considering modification indices (MI), it was shown that certain pairs of the variables in

the model yielded correlated and redundant results. Those producing redundant results were excluded, including V4 V5 M1 M2 M3 M5 and P1. Consequently, the model achieved a good fit, with Chi-square = 21.289, df = 14,  $p = .0094 (>.05)$ , CMIN/DF = 1.521, GFI = .985, RMSEA = .036 (<.08), (Arbuckle, 2011), as depicted in Figure 2.

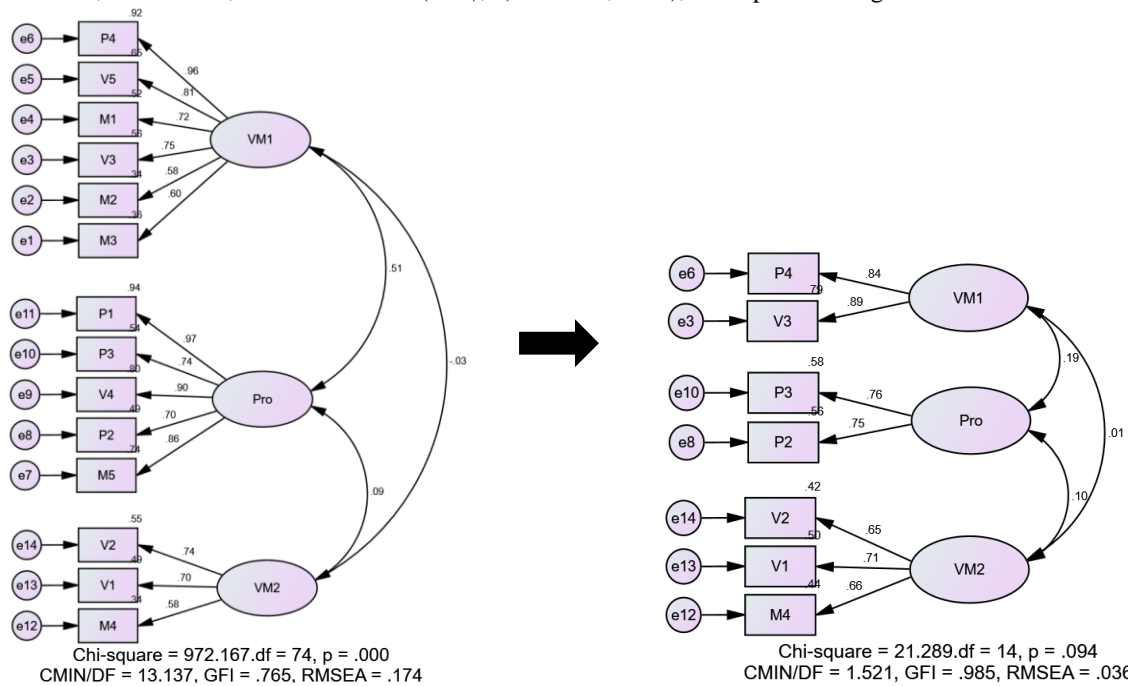


Figure 2. The first measurement model of the development of gastronomic tourism “local Isan sausage”, Mueang Kao Sub-district, Khon Kaen (refined model)

**6. A structural model** serves to illustrate influences between factors or latent variables on other factors derived from empirical data obtained from the sample. Specifically, this model is compared with a conceptual model to determine whether it achieves a model fit. The results indicated that the model attained a good fit, with Chi-square = 9.374, df = 9,  $p = .403 (>.05)$ , CMIN/DF = 1.042, GFI = .992, RMSEA = .010 (<.08), (Arbuckle, 2011), as illustrated in Figure 3.

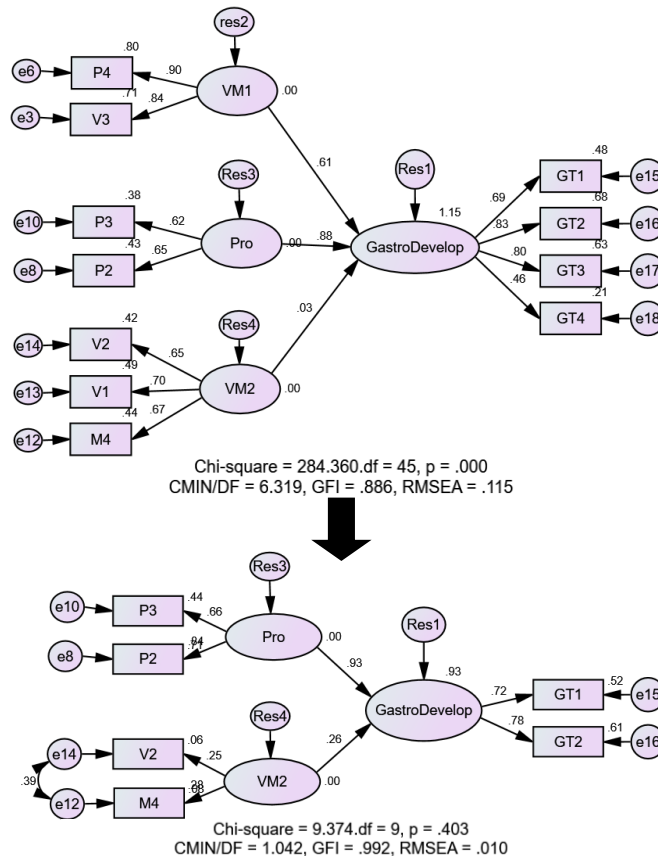


Figure 3. The structural model of the development of gastronomic tourism “local Isan sausage”, Mueang Kao Sub-district, Khon Kaen (refined model)

Table 3. Regression weights and significant values of the structural model of the development of gastronomic tourism “local Isan sausage”, Mueang Kao Sub-district, Khon Kaen\*\*\*  $P < 0.001$

			Estimate	S.E.	C.R.	P	Hypothesis
GastroDevelop	←	Pro	1.000			***	accepted
GastroDevelop	←	VM2	1.000			***	accepted
P2	←	Pro	1.318	.094	14.082	***	accepted
P3	←	Pro	1.000			***	accepted
M4	←	VM2	1.000			***	accepted
V2	←	VM2	1.000			***	accepted
GT1	←	GastroDevelop	1.000			***	accepted
GT2	←	GastroDevelop	.980	.066		***	accepted

In Table 3, it was discovered that all of the factors and variables had reciprocal influences on one another in consistence with the hypothesis at a significance level of 0.05. ( $p < 0.001^{***}$ ).

## RESULTS

As depicted in Table 4, the results found that regarding demographic data of 400 tourists visiting the neighborhoods of Mueang Kao Sub-district, Mueang District, Khon Kaen, the majority of the tourists were female (68.25%), with the rest being male (31.75%), and a good share of them were aged 30-39 years (31.25%) and 40-49 years (29%). In addition, a fair number of the tourists completed a vocational certificate or a high vocational certificate (30.25%), followed by a bachelor's degree (27.5%). Regarding careers, some of them were company employees (27.5%) and government officials (24.5%), with average monthly incomes of 10,001-15,000 baht (28%) and above 20,000 baht (26.75%), respectively, as illustrated in Figure 4.

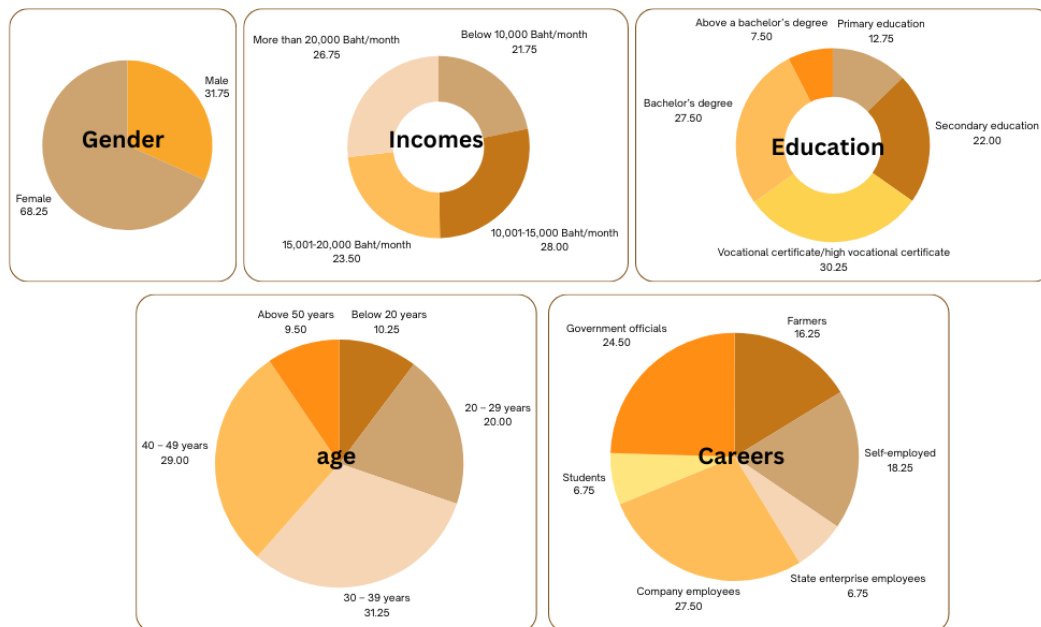


Figure 4. Demographic data of the respondents

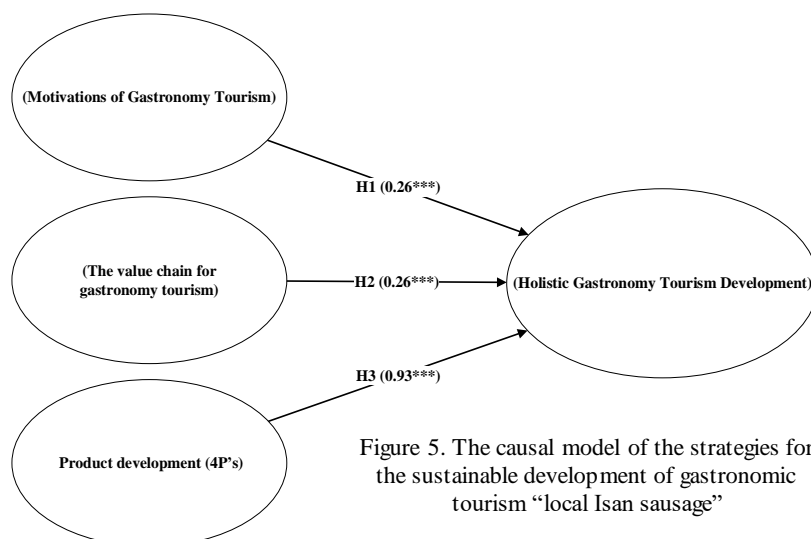


Figure 5. The causal model of the strategies for the sustainable development of gastronomic tourism “local Isan sausage”

Table 4. Demographic data of the respondents

Demographic data of the respondents	Number of the respondents	
	Number	Percentage (%)
<b>1. Gender</b>		
1.1 Male	127	31.75
1.2 Female	273	68.25
<b>Total</b>	<b>400</b>	<b>100</b>
<b>2. Age</b>		
2.1 Below 20 years	41	10.25
2.2 20 – 29 years	80	20
2.3 30 – 39 years	125	31.25
2.4 40 – 49 years	116	29
2.5 Above 50 years	38	9.5
<b>Total</b>	<b>400</b>	<b>100</b>
<b>3. Education</b>		
3.1 Primary education	51	12.75
3.2 Secondary education	88	22
3.3 Vocational certificate/high vocational certificate	121	30.25
3.4 Bachelor's degree	110	27.5
3.5 Above a bachelor's degree	30	7.5
3.6 Etc.	0	0
<b>Total</b>	<b>400</b>	<b>100</b>
<b>4. Careers</b>		
4.1 Farmers	65	16.25
4.2 Self-employed	73	18.25
4.3 State enterprise employees	27	6.75
4.4 Company employees	110	27.5
4.5 Students	27	6.75
4.6 Government officials	98	24.5
4.7 Etc.	0	0
<b>Total</b>	<b>400</b>	<b>100</b>
<b>5. Incomes</b>		
5.1 Below 10,000 Baht/month	87	21.75
5.2 10,001-15,000 Baht/month	112	28.00
5.3 15,001-20,000 Baht/month	94	23.50
5.4 More than 20,000 Baht/month	107	26.75
<b>Total</b>	<b>400</b>	<b>100</b>

In respect of structural equation modeling, the present study examined factors affecting gastronomic tourism “local Isan sausage”. In particular, a structural equation model was developed to describe behaviors of the participants, encompassing motivation for gastronomic tourism, the value chain for gastronomic tourism, and the Isan sausage product development, affecting the holistic development of gastronomic tourism. The analysis yielded the factor loadings which portray the influences of different factors as shown below.

Hypothesis 1: Motivation for gastronomic tourism affected the holistic development of gastronomic tourism, with a factor loading of 0.26 (H1 accepted).

Hypothesis 2: The value chain for gastronomic tourism affected the holistic development of gastronomic tourism, with a factor loading of 0.26 (H2 accepted).

Hypothesis 3: The product development (4P's) affected the holistic development of gastronomic tourism, with a factor loading of 0.93 (H3 accepted).

Based on the analysis of the refined causal model of the strategies for the sustainable development of gastronomic tourism “local Isan sausage”, the results are described below.

1) The factors related to motivation for gastronomic tourism were reduced to only one factor, namely self-expression (M4 = 28). It comprised three indicators as follows: 1) local cuisine could contribute to tourists discovering their culinary preferences; 2) exploring local cuisine could enable them to share their experiences or provide recommendations for others; and 3) local cuisine could portray tourists' eating preferences.

2) Similarly, the factors pertaining to the value chain for gastronomic tourism were reduced to merely one factor, particularly distribution (V2 = 25) with three indicators as follows: 1) there was a need for different distribution systems for Isan sausages; 2) high-quality packaging for the sausages suitable for transportation should be used; and 3) a variety of delivery options were needed, such as self-pickup, home delivery, and shipping to different provinces.

3) The factors in respect of the Isan sausage product development were reduced to two factors, namely price (P2 = 71) and place (P2 = 66). The former comprised three following indicators: 1) the price was reasonable for the product quality; 2) the price remained stable; and 3) clear information of the price was provided. The latter, on the other hand, consisted of five indicators as follows: 1) there were a variety of distribution channels; 2) the location of the store allowed for ease of travel; 3) the store's cleanliness; 4) the operating hours were suitable; and 5) the store was well-decorated.

4) The factors regarding the holistic development of gastronomic tourism were reduced to two factors, namely farming systems and organic ingredients (GT1 = 72), and stories of food (GT2 = 78). In particular, the former featured three indicators: 1) there was a need for the incorporation of safe agricultural products for the Isan sausages production; 2) chemical-free ingredients available in local areas should be utilized to produce the sausages; and 3) healthy and high-quality ingredients should be used to produce the sausages. On the contrary, the latter was composed of four indicators as follows: 1) the culture of eating local cuisine should be shared; 2) sharing the story of the food itself could contribute to creating the value of local cuisine; 3) local cuisine could portray culture and lifestyles of the locals; and 4) the presentation of local cuisine should be given more attention.

## CONCLUSION

The findings of the present study show the important factors for developing the strategies for gastronomic tourism, i.e., local Isan sausages which are viewed as the local wisdom of people in Northeastern Thailand. Regarding motivation for gastronomic tourism, specifically anxiety, the tourists sought relaxation, needed to distance themselves from their typical life, and craved exotic dishes to satisfy their personal culinary experiences. With regard to distribution classified under the value chain for gastronomic tourism, there was a need for various distribution channels, the use of appealing and high-quality packaging, and home delivery to satisfy hectic lifestyles. Additionally, under the Isan sausage product development, the price was reasonable and clearly displayed, while the store was easily accessible by travel, clean, had appropriate operating hours, and was well-decorated. Finally, in terms of the holistic gastronomic tourism development, farming systems, and organic ingredients were deemed crucial; particularly, chemical-free and safe agricultural ingredients with high quality and health benefits produced by farmers in communities should be used to produce Isan sausages, and the tourists gave precedence to the story of food in that culinary culture and the origin of Isan sausages should be shared by the locals.

## Theoretical implications

The findings of this study provided three implications. Regarding motivation for gastronomic tourism, it was discovered that the tourists placed emphasis on self-expression; specifically, local cuisine allows them to recognize their culinary preferences (Prasongthan and Silpsrikul, 2022). As a result, this enables the tourists to become more inclined to explore new dishes, unlike their typical foods, which they have not experienced (Hu et al., 2022). In addition, exploring local cuisine allows them to earn new experiences which can be shared or recommended to their friends or other people (Cavicchi et al., 2022). Additionally, local food can reflect culinary inclinations among tourists. To illustrate, experiencing exotic dishes can portray a person's sense of openness to novelties. The value chain for gastronomic tourism was also found to affect the holistic development of gastronomic tourism. Particularly, the tourists attached importance to distribution channels, different distribution systems, and the use of high-quality packaging (De La Torre et al., 2016), along with a readiness to deliver the products without any damage or contamination during shipping. More importantly, a variety of shipping options were needed for customers or tourists nearby; to exemplify, customers can purchase Isan sausages from the store and are freely allowed to opt for home delivery or self-pickup or order them via food delivery applications with services available in a particular area (Chen et al., 2020). Finally, in relation to the Isan sausage product development, the location of the store should be accessible via Google Maps to enable ease of travel, and at the same time, the store should be clean, elegantly decorated, and operate at appropriate opening and closing hours.

## Limitations and future research

There were several limitations in the present study. In respect of the promotion of gastronomic tourism in the neighborhoods of Mueang Kao Sub-district, Khon Kaen, which could potentially shape the lifestyle of people in the community, the project operators are required to earn acceptance and endorsement from the involved individuals in the community before carrying out any activity and collaborate with relevant organizations on funding for the development of scenery, cleanliness, public utilities and other structures in the neighborhoods of Mueang Kao Sub-district, allowing for cleanliness and safety. Concerning suggestions for further studies, people in the community, organizations, and concerned individuals should be involved in the development of the community of Mueang Kao Sub-district, and future research should examine the appropriate and beneficial type of tourism for these neighborhoods.

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## DETERMINANTS OF CONSUMER' PREFERENCES FOR ROBOT SERVICE HOTEL: AN EXPERIMENT AMONG VIETNAMESE YOUNG TRAVELLERS

Thai Ngoc PHAM<sup>\*</sup> 

Dong Thap University, Faculty of Economics - Law, Dong Thap, Vietnam, e-mail: ptngoc@dthu.edu.vn

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**Abstract:** The study intends to determine prominent antecedents of Vietnamese young travelers' intentions to book robot service hotels during and after the health pandemic. The study aims to leverage the context to uncover the guests' preferences toward a secure option when a health crisis is salient. A quantitative research method was employed to collect qualified data. The extended TAM theory was employed to develop research hypotheses. SPSS and AMOS version 24 were used to analyze data and confirm the research hypotheses. The study found that guests' booking intention toward robot service hotels during the health pandemic played a mediation role in linking the influence of social distancing concerns, subjective threat norms, perceived trust, and consumer cosmopolitanism on their intentions after the health pandemic. The study provides a valuable understanding of the determinants of Vietnamese young travelers' preferences for robot-service hotels. Moreover, the study highlights the significance of situation in deciding guests' intentions, and thus it is strongly recommended that practitioners take context into consideration when sharpening their strategies.

**Keywords:** robot-service hotel, booking intention, social distancing concerns, subjective threat norms, perceived trust, consumer cosmopolitanism

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### INTRODUCTION

The hospitality industry has been well characterized by human interaction for its value creation (Pelit and Katircioglu, 2022). Despite dramatic changes from manual to automation technologies occurring across sectors, hospitality is argued to maintain its extensive reliance on human labor (Choi et al., 2020). A larger number of hotel managers have believed that guests rated their experience with human staffs higher than that with robots because they provided sympathetic care and friendly services in such an industry, which is emotion dominance (Kim et al., 2021). However, forward-thinking experts have postulated that robots will gradually replace some human tasks in exchange for efficiency and consistency, but exactly when and how the replacement has been undertaken still remains questioned. This is because adapting a new technology requires vast investment, while the actual value cannot be achieved unless customers truly desire it (Lee et al., 2021).

In hotels, managers pinpoint that it will likely take substantial time and effort to introduce robot services since guests often feel reluctant to be involved in cognitive activities. Nam et al. (2021) have suggested that context plays a key role in stimulating the acceleration of new technology adoption, and when a user becomes familiar with a platform, he or she will probably access it again. Thus, hotel managers tended to be hesitant to implement automation services because there had been 'a truly perfect chance' for robot labor (Tussyadiah and Park, 2018). Consequently, studies about robot services at this time have focused on finding out how robots should be designed to perform their tasks as humans rather than how their distinctive values are accepted by guests (Tung and Au, 2018; Ivanov and Webster, 2019). In other words, robot services have been implemented in hospitality because they could replace human staff in some specific tasks, not because they provide efficient and reliable services. Optimistic managers have still indicated that there will always be segments that have been seeking values provided by robots (Tung and Au, 2018; Lu et al., 2019).

On March 11, 2020, the World Health Organization (WHO) proclaimed the SARS-CoV-2 coronavirus to be a worldwide health pandemic (Yang et al., 2020). Within a few months of being first reported in 2019, the COVID-19 outbreak spread globally (Wu et al., 2020). Human interaction has been reduced substantially because humans are determined to be the main transmitter, and the existence of COVID-19 seriously influenced all social and economic aspects as well as changed how people live and work (Jiang and Wen, 2020). Closing is just a temporary decision if it lasts for a couple of days, but COVID-19 is regarded as a reality rather than an end point (Pillai et al., 2021). Historical epidemic and pandemic outbreak records have occurred unexpectedly and thus significantly pushed the managers to redefine the hospitality operations to achieve a more sustainable competitive advantage. Hygiene, cleanliness, and safety are the most focal points for the reformulation since they are ranked as pivotal criteria to select a hotel when there is a global health crisis. Robot services are not new, but they are novel solutions to reduce human interaction and increase consistent services (Jung et al., 2023). A growing number of hotels and restaurants employing robots in parallel with employees have been introduced and confirmed their effectiveness on business operations (Tuomi et al., 2021; Zhong et al., 2022). Recent

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\* Corresponding author

empirical studies have found a higher guest preference for service robots during and after COVID-19 (Tuomi et al., 2021; Jung et al., 2023; Leung et al., 2023). Although consumers' adoption of robotics has been promising, little is known about which drives guests' intention to book robot-serviced accommodations during and after the pandemic (Kim et al., 2021; Pizam et al., 2022). It is believed that understanding the determinants of consumers' preferences for robot services will certainly help hotel managers identify psychological facilitators and better adjust their strategic activities (Rasheed et al., 2023).

Vietnam reacted early and strongly to the spread of COVID-19 by imposing social distancing measures and mobility restrictions. The COVID-19 pandemic has made Vietnamese hospitality businesses realize the role of social-psychological factors in deciding consumer preference when concerns for health are salient (Jung et al., 2023). Despite the considerable pressure of a global health crisis on the Vietnamese tourism industry recently, little is known about which factors stand behind preference for robot services (Nguyen et al., 2023). This study intends to identify prominent determinants of guests' booking intentions toward robot-staffed hotels during and after a global pandemic.

Taking COVID-19 as an example of a global health crisis, the study will conduct an experiment to investigate the behavioral intention to book a robot-staffed hotel in the context of disease spread. Leveraging on the extensive theory of technology acceptance (TAM), the authors have proposed that subjective norms, social distancing concerns, perceived risk, and consumer cosmopolitanism would explain guest preferences toward robot-service hotels during a global health crisis. Among those, subjective norms, social distancing concerns, and perceived risk have been categorized as social-psychological factors, while consumer cosmopolitanism has been considered a consumer consumption orientation. Regardless of the unforeseen outbreak of a health pandemic, it would be controlled, and subsequently, this study aims to examine guests's booking intentions toward a robot services hotel even after a global health crisis.

A pandemic in the study will serve as a transformation point in which guests have adopted robot services due to their benefits. The result would help hotel managers predict guests' intentions after the global outbreak has been handled, which would definitely reshape their future automated strategies (Akdin et al., 2023).

## LITERATURE REVIEW

### 1. Human-staffed versus robot-staffed hotel

Hospitality is named after a shared experience between a host and a guest. The industry is representative of the friendly attitudes of service providers who make visitors feel respected, cared for, and welcomed (Kim et al., 2021).

Human-staffed hotel: A hotel is a symbol of the hospitality industry because it mainly builds on human relationships to create values. Hospitality research before 2019 has seen the favorability of human employees in their interactions and problem-solving skills (Kim et al., 2021). Reis and colleagues (2020) have made the prediction that human staff is hardly replaced by robots in such a highly emotional industry, and employees are better at their emotional intelligence. However, human service is vulnerable to quality variation as well as disease sensitivity, and thus human staff is highly susceptible to stable service provision (Choi et al., 2020; Kim et al., 2021).

Robot-staffed hotel: Automation and artificial intelligence are changing the nature of the labor workforce across industries (Raj and Seamans, 2019). The adoption of robot service has brought outstanding benefits such as improving service delivery, reducing labor costs as well as dependence, and significantly raising productivity and efficiency (Kim et al., 2021; Wang et al., 2022). More importantly, employing robots in hotels could achieve heterogeneity and standardization that are often failed by human staff (Belias, 2020). Some authors have also mentioned that the introduction of robot-staffed jobs has served better tech-savvy segments (Wang et al., 2022). However, human employees delivered the highest-quality interactions and gave consumers superior compassionate care and supportive services when unprogrammed problems arose (Shimmura et al., 2020).

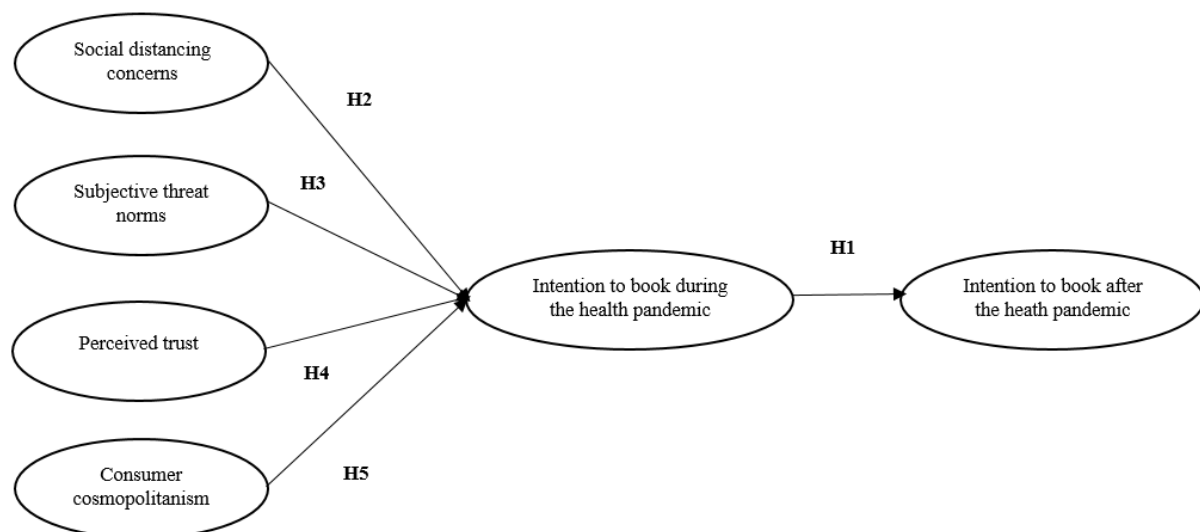


Figure 1. Proposed research model (Adapted from Kim et al., 2021)

### 2. Underlying theory and conceptual model

The extended technology acceptance model (TAM) has been employed to explain the adoption intention toward new

technology and identify prominent antecedents that lead to that behavior in the target consumers. The TAM model was first proposed by Davis (1989) with two main factors: perceived usefulness and perceived ease of use, to determine consumers' behaviors in terms of attitude, intention, and actions. Later, the TAM model was extended to include various perceived values and threats, as well as external variables, to better demonstrate how an advanced application has been accepted and used. Based on the underlying theory and previous research, it is proposed that guests' booking intentions toward robot service hotels after the health pandemic are determined by their booking intentions during the health pandemic. During the crisis, social distancing concerns, subjective threat norms, perceived trust toward robot service hotels, and consumer cosmopolitanism will influence booking intention (Kim et al., 2021). Figure 1 is the proposed research model for the hypothesis.

### 3. Theoretical definitions and hypotheses development

#### 3.1. Guest's booking intention toward Robot Services hotel

Intention is defined as a willingness stored in human memory that will lead to an action at the perfect time (Ajzen, 2012). Intention is argued to be a motivation that will consequently drive behavior. In other words, the higher the intention, the higher the motivation to carry out that intention. However, the relationship will change if there is a longer time between intention and action. Guests' booking intentions refer to their willingness to select a hotel for their stay (Cha, 2020). When consumers successfully adopt a new technology, it is expected that they will keep their decisions as long as they are still satisfied with the selected choice. Kim and colleagues (2021) have provided empirical confirmation for a guest's hotel booking intention, which would influence his or her intention toward robot-staffed hotels even after the pandemic. Thus, it is proposed that:

**H1:** Guest booking intention toward robot service hotels during the health pandemic will positively influence on intention after the health pandemic.

#### 3.2. Social distancing concerns toward the health pandemic

Social distancing is a commonly implemented measure to reduce the spread of a virus when a human is a transmitter of the disease. From the first detection of the coronavirus until it became a global pandemic, social distancing and isolation have been the most responsive strategies of most countries (Anderson et al., 2020). Together with risk communication and cases reported, people have been well aware of the pandemic and its negative consequences on human health during the recent COVID-19. Practicing social distancing and getting vaccinated have both been widely accepted as effective preventative measures (Anderson et al., 2020). It was noticed that people had changed their habits to quickly adopt COVID-19 and were more concerned about human touch during that time (Beck and Hensher, 2020; Maryati, 2020; Maltagliati et al., 2021). A higher concern for social distancing likely would drive people to select alternative solutions for limiting physical experience. Recent empirical studies have found support for social distancing concerns and booking intention toward machine application to minimize human interaction when the pandemic has been salient (Zhang et al., 2020; Kim et al., 2021). Since the global pandemic caused by COVID-19, people have become familiar with social distancing practices and would likely book a robot services hotel during a time when there is a similar global health crisis. Thus, we propose:

**H2:** Social distancing concerns will positively influence on guest booking intention toward robot service hotels during the health pandemic.

#### 3.3. Subjective threat norms

Subjective norms are referred to as normative beliefs about the social expectations of significant people in a given society and will drive an individual to comply with those expectations (Fishbein and Ajzen, 1977; Ajzen, 2012; Cho and Lee, 2015). Consumer psychologists have highlighted the significant role of subjective norms on consumer perceptions and intentions in the context of uncertainty, when consumers are more easily influenced by others when they feel insecure (Gong et al., 2021). Empirical results have also confirmed the positive impact of subjective threat norms on consumer perceived risk and behavior intention to reduce that risk (Kaushik et al., 2015; Polat et al., 2021). Moreover, the level of influence is expected to be more prominent in collectivist cultures than in individualist ones since consumers ranking high in collectivism tend to comply with group norms (Polat et al., 2021). Thus, we propose that:

**H3:** Subjective threat norms will positively influence guest booking intention toward robot service hotels during the health pandemic.

#### 3.4. Perceived trust

Trust can be described as a feeling of assurance and a willingness to rely on someone or something (Roca et al., 2009). Trust is regarded as a dynamic process and has been continuously accumulated over time. Consumer trust has been defined in two ways: (1) as a belief, confidence, attitude, or expectation; and (2) as a behavioral intention in the future (Chen, 2008; Kim et al., 2011). During the time of the global health crisis, where humans are identified as the main transmitters, consumers perceived trust in robot-staffed activities as more preferable and demanding for physical activities such as hotels, restaurants, public places, airlines, hospitals, etc. (Cha, 2020; Pani et al., 2020; Ghafurian et al., 2021). Kim and colleagues (2021) have confirmed the positive relationship between guests' perceived trust and intention to select robot-staffed hotels during the time of COVID-19. Thus, we propose:

**H4:** Perceived trust toward robot-staffed hotels will positively influence guests' booking intention toward robot staffed hotels during the health pandemic.

#### 3.5. Consumer cosmopolitanism

Cosmopolitan consumers hold an orientation that views themselves as world consumers and the world as their marketplace (Prince et al., 2016). They address functional needs and make purchasing decisions based on products that best deliver the desired performance, regardless of cultural differences and social variances (Bartsch et al., 2016). Consumer cosmopolitanism welcomes innovation and respects differences, and thus they express higher levels of new technology acceptance in exchange

for better values. Empirical findings have been found in service industries, particularly among younger segments who often reflect a high level of cosmopolitanism in their consumption habits (Kaushik et al., 2015). Thus, we propose:

**H5:** Consumer cosmopolitanism will positively influence on guest's booking intention toward robot service hotels during the health pandemic.

## MATERIALS AND METHODS

### 1. Data collection

This study has been approached using quantitative research methodology. After hypotheses have been developed from the literature review, a survey will be designed to collect quantitative data. A questionnaire has been comprised of four sections, and participants have been informed to complete several tasks. The first section included short information about a global health pandemic, its mechanism, and related health consequences, together with mobility requirements and restrictions that might be implemented by governments if it had been salient. The second section asked participants to evaluate their levels in terms of: (1) subjective threat norms; (2) consumer cosmopolitanism; and (3) social distancing concerns. The third section first required participants to imagine their next trips and plan to select a hotel. Then, the section included evaluations in terms of: (1) perceived trust toward robot service hotels; (2) booking intention toward robot service hotels during and after the health pandemic. The final section was about demographic information. Back-translation has been employed to establish content equivalence and meaning validation (Koenig and Al Zaben, 2021). Reflective measurement scales were adapted to conceptualize constructs in the study. Each variable in the reflective constructs was measured by the Likert scale, with an anchor from 1 classified as strongly disagreeing to 5 classified as strongly agreeing. For the fourth section, a closed-end system with several options was designed to collect the data. The applied scales were selected and filtered from the pilot test to get the most appropriate ones for the Vietnam context before they were widely distributed. Table 1 provides reflective measurement scales adapted from the questionnaire.

Table 1. Adapted measurement scales

Measurement scale	Authors
<b>Social threat norms</b>	Ajzen (2012)
Most people who are important to me think it is okay for me to engage in untact tourism.	
Most people who are important to me support that I engage in untact tourism.	
Most people who are important to me agree with me about engaging in untact tourism.	
Most people who are important to me understand that I engage in untact tourism.	Kim et al., (2021)
<b>Social distancing concerns</b>	
I keep social distance from others.	
I support social distancing when the health pandemic is salient.	Cha (2020)
Practicing social distancing to reduce the widespread of the health pandemic.	
<b>Perceived trust</b>	
In general, I trust in the robot-staffed hotels.	
I would describe the robot-staffed hotels as reliable.	Pham and Nguyen (2023)
Robots have better hygienic practice.	
Robots cannot transmit diseases to humans.	
<b>Consumer cosmopolitanism</b>	
Care about product's information in its label to evaluate the quality.	Pham and Nguyen (2023)
Depend on perceived performance to evaluate product quality.	
Different brands from different countries will be different so I have to try to find the best suit for my needs/wants.	
Know many products and brands to find which are appropriate.	
Care about the well-being of society.	
Search information before making a decision.	
Don't care about made-in information but brands.	
Prefer to buy products that could be used in many situations.	Cha (2020)
<b>Guest's intention to book robot-staffed hotels during the health pandemic</b>	
Given the opportunity, I would book robot-staffed hotels during the health pandemic.	
I am likely to book robot-staffed hotels during the health pandemic.	
I will book robot-staffed hotels during the health pandemic.	Cha (2020)
<b>Guest's intention to book robot-staffed hotels after the health pandemic</b>	
Given the opportunity, I would book robot-staffed hotels after the health pandemic.	
I am likely to book robot-staffed hotels after the health pandemic.	
I will book robot-staffed hotels after the health pandemic.	

The research was conducted in Ho Chi Minh City, the biggest metropolis of 10 million Vietnamese, where there has been the highest percentage of mobility for their businesses and personal travels. However, in response to the fourth wave of COVID-19, Vietnamese authorities issued social distancing measures and a lockdown from July 9th to September 30th (Hoang et al., 2021). Vietnamese during that time have been significantly affected by the outbreak of COVID-19 and dramatically changed their lifestyles and habits (Doan et al., 2023). So the study asked if a global health crisis would arise again, and COVID-19 was used as a real example for participants to elevate their answers. Vietnamese and Ho Chi Minh City have made the perfect context to conduct an experiment to identify determinants of guests



booking intention toward robot service hotels during and after the health pandemic. A convenient sampling method was employed to approach the main respondents. Participants living in Ho Chi Minh City during the time of lockdown, with ages ranging from 25–40 years old and having experienced mobility, were the main target. It is argued that the selected participants represented an appropriate sample for this research objective.

## 2. Data analysis

First, the research model was assessed to ensure the reliability and validity of the tests through Exploratory Factoring Analysis (EFA) and Confirmatory Factoring Analysis (CFA) tests. Structural Equation Modeling (SEM) was performed as suggested by Babin et al. (2008) to confirm the research hypotheses. The hypotheses will be significant at a p-value lower than 0.001. Descriptive statistics would also be conducted to describe the sample. Harman's Single Factor Test has been employed in CFA to check common method variance. A common method variance appears if all indicators are purposely loaded on one factor, gaining an acceptable model fit (Fuller et al., 2016).

## RESULTS

There were 401 usable cases after 1,200 surveys distributed. Table 2 provides the demographic information of the sample. The six constructs were first checked for internal consistency through Cronbach's Alpha. All have achieved good reliability (all ranged higher than 0.8). The EFA test was employed to test the dimensionality of constructs and exclude unqualified items. The KMO and Bartlett's test (0.901) and the cumulative total variance explained (86.661) satisfied the threshold value. The pattern matrix expressed the dimensionality of constructs as a theoretical expectation. The CFA was conducted to test the reliability in terms of composite reliability and the validity in terms of convergent and discriminant validity. Figure 2 provides the constructs measurement in the research model. The model fit passed the cut-off values: (1)  $C_{min}/df = 1.814$ ; (2)  $CFI = 0.983$ ; (3)  $IFI = 0.983$ ; and (4)  $RMSEA = 0.039$ . Common method variance has not been an issue in the study since the model fit of all indicators under one factor did not gain an acceptable model fit (Fuller et al., 2016). Table 3 shows the construct measurements in which all constructs achieved reliability and validity.

Table 2. Profile of participants in the study

N=401		N	%
Gender	Male	165	41.1
	Female	236	58.9
Age	Less than 35	237	59.1
	From 35 and above	164	40.9
Marital status	Single	216	53.9
	Married	185	46.1
Education level	High school	18	4.5
	College/ University	320	79.8
	Post-graduate	63	15.7
Income	Less than 10 million VND pm.	147	36.7
	From 10 million and above	254	63.3

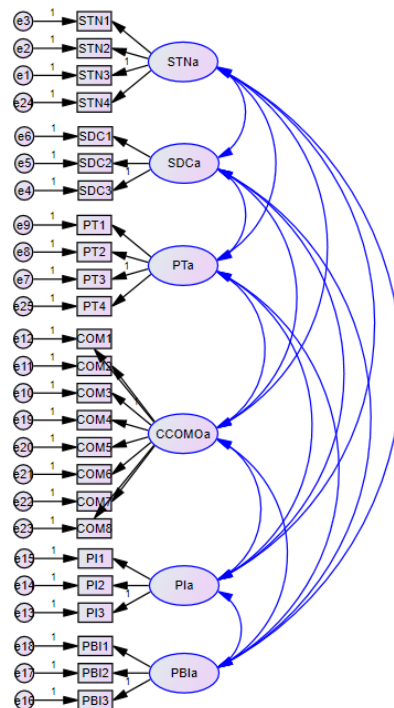


Figure 2. Constructs measurement (From this study analyzed)

Table 3. Construct measurements analyzed by CFA

	CR	AVE	MSV	ASV	STNa	CCOMOa	SDCa	PTa	Bla	PBla
STNa	0.970	0.889	0.185	0.082	0.943					
CCOMOa	0.968	0.792	0.016	0.007	0.022	0.890				
SDCa	0.985	0.957	0.067	0.019	-0.042	-0.056	0.978			
PTa	0.964	0.869	0.168	0.082	0.254	0.008	0.087	0.932		
Bla	0.961	0.891	0.355	0.153	0.399	0.116	0.259	0.410	0.944	
PBla	0.965	0.901	0.355	0.148	0.430	0.125	0.130	0.409	0.596	0.949

All constructs in the research model were satisfied with their psychometric properties in terms of internal consistency, reliability, convergence, and discriminant validity. The research model was analyzed by the SEM test, and the model fit was achieved with the accepted fit by Babin et al., (2008). The model fit of the structural equation modelling passed the threshold values: (1)  $Cmin/df = 2.243$ ; (2)  $CFI = 0.98$ ; (3)  $IFI = 0.98$ ; and (4)  $RMSEA = 0.031$ . Table 4 provides the results of the standardized path estimates and hypothesis testing.

Table 4. Standardized path estimates and hypotheses testing in the study (Note: \*\*\*: p-value &lt; 0.001; ns: non-significant)

Structural paths	Standardized regression weight	p-value	Conclusion at p<0.05
H1: Guest booking intention toward robot service hotels during the health pandemic → positively influence on intention after the health pandemic	0.6	***	Confirmed
H2: Social distancing concerns → positively influence on guest booking intention toward robot service hotels during the health pandemic	0.252	***	Confirmed
H3: Subjective threat norms → positively influence on guest booking intention toward robot service hotels during the health pandemic	0.335	***	Confirmed
H4: Perceived trust toward robot staffed hotels → positively influence on guest's booking intention toward robot staffed hotels during the health pandemic	0.308	***	Confirmed
H5: Consumer cosmopolitanism → positively influence on guest's booking intention toward robot service hotels during the health pandemic	0.123	0.004	Confirmed

The results statistically confirmed five of the seven hypotheses of the research model. Figure 2 shows the results of the research hypotheses. Concerns about social distancing, perceived trust in robot-staffed hotels, subjective threat norms, and consumer cosmopolitanism all influence consumer preferences for robot-staffed hotels. Moreover, the authors also found that consumer preferences for robot-staffed hotels during the outbreak of the health pandemic would subsequently increase their intention to book for robot-staffed hotels after the health pandemic. The study has confirmed the relationship among constructs as expected, and the study has approved the role of consumer preference for robot-staffed hotels during the health pandemic in bridging the influence of subject threat norms, consumer cosmopolitanism, social distancing concerns, and perceived trust toward robot service hotels on guests' booking intentions toward robot-staffed hotels after the health pandemic. Figure 3 depicts the result of research hypotheses.

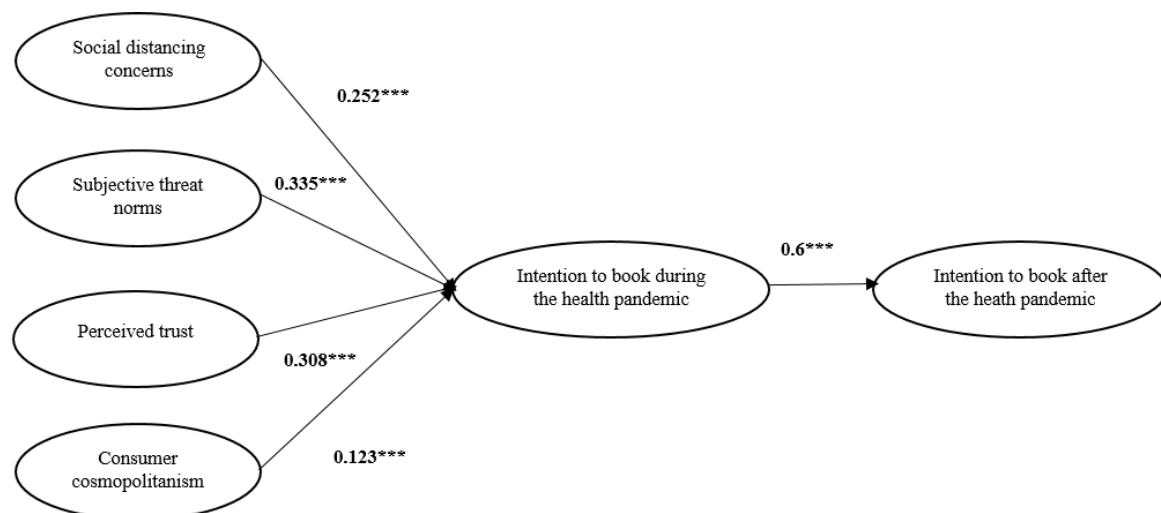


Figure 3. The result of research hypotheses (From this study analyzed)

## DISCUSSION

### 1. Theoretical implications

Theoretically, the study empirically confirmed the validity of the extended TAM theory in times of global health crises. The results have provided logical explanations for the adoption of new technology when a pandemic was salient. The study has been conducted in a specialized context in which the participants imagined they would be in a health crisis like what they had experienced during the COVID-19, which made the study more rational to estimate the relationship among

variables. In line with previous studies that adapted the extended TAM theory, consumer intentions are driven by their perceived trust and risk associated with that option. We found that Vietnamese guests' booking intentions were determined by their social distancing concerns, subjective threat norms, consumer cosmopolitanism, and perceived trust toward robot-staffed hotels because the application of robotics was evaluated as an effective way to reduce the transmission when it was widespread. The findings have highlighted the mediation role of booking intention toward robot service hotels during the health pandemic to explain the influence of subjective threat norms, consumer cosmopolitanism, social distancing concerns, and perceived trust toward robot hotels after the pandemic.

## 2. Managerial implications

Managerially, the study has accentuated drivers of guests' booking intentions toward robot-staffed hotels during and after the health pandemic. Consumer preferences for any new solution will be influenced by the perceived cost and benefits associated with that option. Consequently, to promote a new technology, managers should focus on strategies highlighting the benefits it provides, such as usefulness, trust, convenience, etc. The outbreak of the health pandemic is a reality that our world has to accept, regardless of its adverse consequences. Although any pandemic will always end, no experts or scientists can predict the exact time. Obviously, the longer the health pandemic is salient, the greater the perceived risk and preference for more secure options. Reconstruction hotel operations are urgent in handling and preparing for crises and uncertainties that might happen unexpectedly (Kim et al., 2021). Historical epidemics and pandemic outbreaks causing serious damage to the hospitality industry in the 21st century are listed as: (1) the severe acute respiratory syndrome (SARS) outbreak in 2003; (2) the H1N1 pandemic in 2009; (3) the Middle East respiratory syndrome epidemic (MERS) in 2012; (4) the Ebola virus epidemic in 2014; and (5) the Zika virus epidemic in 2016. Thus, technology-based solutions deserve to be put into consideration because they provide feasible ways to achieve contactless service when the human touch is reduced. Experts have suggested that businesses in the hospitality and tourism industries should invest in technology together with human resources to more responsively cope with the future and ensure the goals of hygiene, cleanliness, and safety. The study further highlights that crisis communication and local restrictions serve as facilitators for consumers' adoption of new technology when that technology helps to reduce risk concerns. Moreover, the findings have indicated that consumer cosmopolitanism would be more receptive to accepting robot-staffed hotels. As a result, it is recommended that companies start their recovery strategy with guests ranking high in their cosmopolitanism in purchasing habits, and the young segment in cities or urban areas tends to express a higher level of cosmopolitanism. Furthermore, the mediation role of booking intention during the health pandemic will lead to booking intention toward robot hotels even after the health pandemic. The global risk crisis in the study has served as a facilitator for the acceptance level toward robot application in life aspects. Regardless of the negative consequences caused by COVID-19, we believe that it has caused a significant change in guests' habits and accelerated robot adoption during the time it was salient, and that would influence guests' selection toward robot hotels in the future. It is strongly suggested that hotels employ robot applications in their operations in order to better confront uncertainties if there is a situation that requires social distancing.

## 3. Limitations and future directions

Aside from scientific and practical findings, the study has suffered from weaknesses. The first limitation derives from the survey convenience sampling method, which may not be representative of the overall target market. Future researchers could improve by employing more representative inquiry methods such as norm sampling and random probability sampling. The second limitation derives from the limited number of samples collected, which might have an influence on empirical results. Thus, it is suggested that future research should increase the samples to enhance the power of estimations. The third limitation derives from the conceptual models. There have been some factors selected to be taken into account in the research models, and thus the overall picture of drivers and consequences has not been included. Future studies should take into consideration other factors serving different roles to examine the relationship between consumer cosmopolitanism in various contexts. The last limitation comes from the context employed to evaluate the participants' answers. The global health pandemic was employed, and robot acceptance was significant because it helped to reduce human touch, but other contexts would lead to different preferences. Future research should take into account a match between context and option in measuring consumers' evaluations.

## CONCLUSION

The study has successfully identified prominent determinants of booking intention toward robot-staffed hotels during and after the health pandemic. Subjective threat norms, perceived trust, social distancing concerns, and cosmopolitanism are antecedents of robot booking intention. Among those, subjective threat norms and perceived trust pose the strongest impacts on guests intentions. The study concludes that when the health pandemic is salient, intention toward a new solution is significantly influenced by social norms about the health crisis and perceived trust toward robot-staffed hotels during the pandemic. It is recommended that context play a decisive role in facilitating consumer adoption of a new technology, and thus managers should take into account the benefits and costs perceived by customers when designing a new service.

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## EVALUATION OF CROSS RIVER NATIONAL PARK AS A CATALYST FOR COMMUNITY LIVELIHOOD SUSTENANCE, NIGERIA

**Cassidy Agbor ETTA** 

Department of Environmental Education, University of Calabar, Calabar, Nigeria, e-mail: cassidyagbor@gmail.com

**Eja Iwara EJA** <sup>\*</sup> 

Department of Tourism, University of Calabar, Calabar, Nigeria, e-mail: ejaiwara43@gmail.com

**Emeka Josephet OWAN** 

Department of Sociology, University of Calabar, Calabar, Nigeria, e-mail: josephemeka34@gmail.com

**Francis Abul UYANG** 

Department of Sociology, University of Calabar, Calabar, Nigeria, e-mail: francisuyang@yahoo.com

**Iyam Mary ARIKPO** 

Department of Vocational Education, University of Calabar, Calabar, Nigeria, e-mail: maryiyam@yahoo.com

**Christian Aloye USHIE** 

Department of Environmental Education, University of Calabar, Calabar, Nigeria, e-mail: Christieushie1@gmail.com

**Dan, Felicia AGBOR-OBUN** 

Department of Human Kinetics and Health Education, University of Calabar, Calabar, Nigeria, e-mail: feliciadan@gmail.com

**Tangban Egbe EBAGU** 

Department of Social Works, University of Calabar, Calabar, e-mail: egbetangban@gmail.com

**Queen Olubukola AYENI** 

Department of Modern Languages and Translation Studies, University of Calabar, Calabar, Nigeria, e-mail: buikyayeni@gmail.com

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**Abstract:** This research focused on evaluation of Cross River National Park as a catalyst for community livelihood sustenance, Nigeria. Interviews and Focus Group Discussions were used to obtained primary data. Reconnaissance survey was conducted for one month in the National park to assess the situation on ground and with the aid of a check-list. The Pearson Product Moment Correlation Coefficient was used to analyzed the data obtained from the study. Results findings shows that the current programs aimed at the development of the park's management were insufficient. To mitigate tensions between the park management and the communities, it is imperative to explore alternative livelihood options, with livestock rearing emerging as a viable avenue. This approach would provide the communities with improved economic opportunities.

**Keywords:** communities livelihood, development, ecosystem, economic opportunities, national park

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### INTRODUCTION

A national park is an officially designated protected region established by a government to conserve and safeguard the natural environment and its distinctive elements, comprising wildlife, flora, scenery, and cultural legacy. Its primary purposes are to offer public enjoyment, facilitate educational activities, and promote scientific research. National parks are universally recognized as invaluable assets for preserving natural landscapes, fostering biodiversity, and offering recreational opportunities to visitors (Weijie, 2023). Nevertheless, National parks, designed primarily for conservation purposes, have the potential to contribute significantly to community livelihoods (Abukari and Mwalyosi, 2020; Mabibibi, 2023). In most countries of the world researches highlights the importance of considering the specific needs and aspirations of local communities while developing sustainable tourism and livelihood initiatives within national parks (Rule et al., 2022; Buhalis et al., 2023). Community engagement and participatory decision-making processes are vital for ensuring that conservation and livelihood goals align effectively, emphasizing local involvement in the management and governance of these protected areas (Armitage et al., 2020). Consequently, Sustainable tourism within

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\* Corresponding author

national parks can contribute to job creation, income generation, and overall economic development in the surrounding communities (Hribar et al., 2023; Sharpley, 2020). Additionally, these parks provide opportunities for small businesses, artisans, and service providers to thrive, promoting local entrepreneurship and economic diversification (Taecharungroj and Prasertsakul, 2023; Felzensztein and Gimmon, 2023; Cho and Kim, 2023; Castanho et al., 2023).

Furthermore, national parks have a broader societal and economic impact by promoting cultural and environmental awareness within communities. Tourism within these parks often includes educational and interpretive programs, enhancing comprehension of the environment, biodiversity, and conservation efforts (Matshusa, 2020). This positive influence on livelihoods is manifested through increased job opportunities and income generation, underscoring the potential benefit of national park development (Agyeman et al., 2019). However, several challenges, such as inadequate infrastructure, limited funding, and policy gaps, persist and hinder the optimal role of national parks as drivers of community livelihood sustainability (Stephenson et al., 2021; Bourgeois et al., 2023; Khuu et al., 2023). Overcoming these challenges necessitates adequate investment and sustainable development initiatives to unlock the full potential of national parks in supporting both conservation efforts and community well-being (Ellwanger et al., 2022; Purwoko et al., 2022). The rapid expansion of tourism can lead to the commercialization of local culture, environmental degradation, and alterations in traditional land use practices (Ma et al., 2021; Baloch et al., 2023). These shifts can threaten the social cohesion of communities and undermine their reliance on traditional livelihood activities. For example, heightened demand for land and resources due to tourism can trigger disputes over land tenure and access, potentially resulting in the displacement of local residents and disruption of their way of life (Zielinski et al., 2020; Cai et al., 2023; Leal Filho et al., 2021).

Consequently, limitations imposed on resource extraction endeavors, such as logging or mining, can have adverse effects on industries that were previously reliant on these activities for employment and income, ultimately resulting in job cuts and a decline in the overall economic prosperity of the community (Mayer, 2022; Lobao et al., 2021). Therefore, the successful implementation of alternative livelihood programs requires acquiring new skills, accessing markets, and establishing infrastructure. In specific circumstances, communities may lack the necessary capacity and resources to effectively engage in these new livelihood activities (Snyman and Bricker, 2021; Newsome et al., 2012). Additionally, most emphasizes has been place on the need to promote a responsible tourism practices that alleviate potential disruptions in livelihoods, preserve ecological integrity, and mitigate conflicts related to natural resource utilization Viñals et al., (2023) and Richardson (2021). However, the effectiveness of alternative livelihood programs is contingent upon the complex interaction of socio-economic and cultural factors (Manda and Mukanda, 2023; Hewitson and Sullivan, 2021; Ndonye, 2022). In numerous communities, deeply ingrained traditional practices and perceptions of resource use, resistant to change, play a significant role in preventing the overexploitation of natural resources (Mekonen, 2020; Ariom et al., 2022).

The establishment of national parks in Nigeria has played a crucial role in safeguarding and conserving the country's diverse and valuable biodiversity. These parks act as vital habitats for a wide variety of plant and animal species, including those that are endangered and exclusive to these areas (Tang and Adesina, 2022). Additionally, these natural sanctuaries draw in both local and international tourists, thereby making substantial contributions to the economies of the regions in which they are located. This contribution is evident through visitor expenditures, the creation of job opportunities, and the enhancement of tourism-related infrastructure within the rural communities surrounding these parks (Ofori et al., 2023; Buhalis et al., 2023). Specifically in Cross River State, the establishment of national parks has yielded significant economic benefits for both the indigenous local communities and the state as a whole.

These parks have become focal points for nature-based tourism, attracting a diverse range of visitors, both domestic and international, seeking to immerse themselves in the natural marvels of the region (Barbosa et al., 2022). Furthermore, the sustainable utilization of forest resources, encompassing non-timber forest products and ventures associated with ecotourism provides viable alternative livelihood avenues for the local population (Lobry de Bruyn et al., 2022). Significantly, the matter of national park development and its repercussions has been thoroughly explored, encompassing both a global and local perspective (Matiku et al., 2021; Horigue et al., 2023; Devkota et al., 2023). Conversely, other studies, exemplified have delved into the potential outcomes of national park development concerning biodiversity loss, while others, have emphasized the broader environmental impacts of such development within a regional framework (Zawilińska et al., 2021; Mercado et al., 2023; Harker et al., 2021).

Turning our attention to the specific case of Cross River State, several studies have shed light on the positive effects of national park development on the host communities (Amalu et al., 2020; Mafiana et al., 2022; Sharifian et al., 2022). Unfortunately, despite the presence of the national parks within their local domains, certain communities that rely entirely on the region's abundant natural ecosystem for their livelihoods still struggle with poverty (Ma et al., 2023; Ibrahim et al., 2023). Moreover, although some studies have examined the socio-economic influence of the Cross River National Park on specific host communities, a comprehensive investigation encompassing all communities residing within the park's boundaries, whose livelihoods have been impacted by its establishment, is still lacking (Okosodo and Ogidi, 2023; Harilal et al., 2021; Pamungkas and Jones, 2021). This research aims to delve into additional communities situated within the confines of the Cross River National Park, who similarly depend on its ecosystem for their livelihood sustenance. Through this study, the objective is to identify specific communities within the National Park area and discern their unique requirements. The key areas of focus encompass the primary occupations prevalent among the host communities in the study region, the secondary occupations practiced by these communities, the necessary developmental initiatives needed for these localities, the effectiveness of current development programs within support zone communities, the tangible benefits communities derive from the Cross River National Park, and the challenges encountered in the execution of development programs.

However, this study will facilitate stakeholders in assessing and pinpointing alternative sustainable livelihood options tailored to the distinct circumstances of these communities. Additionally, it will assist policymakers in identifying particular communities that require special attention, considering their historical limited access to the complete benefits of the national park ecosystem—an essential source of their livelihoods. Moreover, this research aims to enhance community engagement in decision-making processes concerning the challenges linked to the development of the Cross River State National Park within the study region. By shedding light on these aspects, the study is expected to contribute to a more inclusive and well-informed approach to park management, ensuring the well-being of both the local communities and the ecological integrity of the park.

## MATERIALS AND METHODS

The Cross River National Park is situated within the South-South geopolitical zone of Nigeria, sharing a border with the Republic of Cameroon. Geographically, it occupies the region between longitudes 5°05' and 6°20'N and latitudes 8°15' and 9°30'E. Encompassing a total expanse of 4000km<sup>2</sup>, the park comprises two distinct geographical divisions: the Okwangwo Division located in the central senatorial area of the state, and the Oban Division situated in the southern senatorial region. For the purpose of this research, the investigation will be centered on the Oban division of the Cross River National Park. The Oban Division spans the latitude of 8°00'E (S0 25' 0N N 80 35' O" E) within the Akamkpa and Etung Local Government Areas of Cross River State. Encompassing an area of 3000km<sup>2</sup>, this division shares a contiguous boundary with the Kurop National Park in the Republic of Cameroon. The local economy of the support zone communities hinges on the exploitation and utilization of forest resources. Farming, hunting, and gathering, which includes the collection of both forest and non-timber forest products (NTFPs), constitute the primary occupations of the inhabitants. Crops cultivated in the region include cocoa, oil palm, cassava, banana, and plantain. Hunting activities persist throughout the year, with a traditional division of labor along gender lines. Men engage in tasks such as forest clearing, tree felling, and the management of perennial tree crops. Meanwhile, women oversee other crops like cocoyam and cassava, manage water fetching, and share in the collection of fuel wood.

### Method of data collection

The research was carried out within the confines of the Oban division, encompassing a total of thirty villages. From this division, a total of four communities that were close to the National Park enclave were chosen for the study through a random sampling technique process. These selected communities are as follows: Oban, Ubung, Nsan, and Osomba. The rationale behind employing a random sampling technique in the selection of these four communities was to ensure an equitable opportunity for each community to be included in the study. The primary data were collected for the study. Interview and Focus Group discussion was conducted during reconnaissance survey in the various communities for three weeks with the aid of a check-list to evaluate the situation on ground. The Focus Group discussion was conducted with community elders, youth leaders and women leaders who depend solely on the National Park forest ecosystem for livelihood sustenance. Additionally, oral interviews were also conducted with staff of the national park, to gain insights in to the developmental initiatives pursued by park management. All the information obtained from community members and staff of the national park during reconnaissance survey was used for questionnaire design and preparation.

A structured questionnaire was distributed among selected participants within the four communities, maintaining a proportional representation. This serve as the core primary data collection method used for this study. The determination of the sample size followed Yamane's statistical formula, considering the population of the four support zone communities within the study area. This approach ensures a balanced and comprehensive representation for the research endeavor. The Tayo Yamane (1973) was used to determine the sample size and is given as:

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

Where: n = the sample; N = the population of the study; e = Acceptance sampling error at 95% confidence level, e = 0.005;

$$n = \frac{104,959}{1 + 104,959 (0.05)^2} \quad 1 = \frac{104,959}{1 + 104,959 (0.0025)} = \frac{104,959}{263} \quad n = 399$$

A formula adopted by Kathuri and Pals (1993) was used to determine the sample size for each Unit/Department as follows:

$$n_n = \frac{(Nn)}{N} \times n$$

Where, n<sub>n</sub> = The sample size of each unit; N<sub>n</sub> = Population of the unit; N = Total population; n = Total sample size;

Oban	=	$\frac{46515 \times 399}{104595 \times 1}$	=	$\frac{18559485}{104959}$	=	176
Obung	=	$\frac{24,883 \times 399}{104595 \times 1}$	=	$\frac{9928317}{104959}$	=	95
Nsan	=	$\frac{23603 \times 399}{104595 \times 1}$	=	$\frac{9412597}{104959}$	=	90
Osomba	=	$\frac{9958 \times 399}{104595 \times 1}$	=	$\frac{3973242}{104959}$	=	38
<b>Total</b>	=	<b>399</b>				

Table 1. The distribution of the population in the study area (Source: Field survey, 2022)

S/N	Communities	Base population	Projected to 2020	Sample size
1.	Oban	7,817	46,515.2	176
2.	Ubung	972	24,883.2	95
3.	Nsan	922	23,603.2	90
4.	Osomba	389	9,958	38
Total		4,100	104,959	399

Two hypotheses were developed and subjected to testing using the Pearson Product Moment Correlation Coefficient. The first hypothesis postulates that there exists no significant relationship between the secondary occupation and the benefits derived from the development of the National Park within the support zone communities. The second hypothesis posits that there exists no significant relationship between the challenges associated with the development of the national park and the benefits derived from the establishment of the national park in the support zone communities.

## RESULTS AND DISCUSSION

### Socio-demographic Characteristics of the Study Area Communities

The socio-demographic profile of the communities within the study area shows that majority of the respondents were male, comprising 66.2 percent of the sample, while females accounted for 33.8 percent. The data further reveals that the highest percentage of respondents, constituting 28.8 percent, fell within the age range of 39 to 49 years. Additionally, 26.6 percent of the sampled participants also fell within this age group. In terms of educational attainment, it was discovered that 25.6 percent and 23.3 percent of the respondents possessed senior school education and junior school education, respectively. Respondents with tertiary education constituted 14.3 percent of the sample, whereas those with primary education accounted for 17 percent. Analyzing occupational distribution, it becomes evident that 28.32 percent and 22.30 percent of the respondents identified as farmers and traders, respectively, making these the predominant occupations. Fishing emerged as the third most common occupation, with a representation of 18.30 percent. The study also observed that 14.04 percent were artisans, while a smaller portion, specifically 10.02 percent, held formal employment positions (Table 1).

Table 1. Socio-demographic characteristics of communities in the Cross River National Park (Source: Field survey, 2022)

Item	Socio-demographic characteristics	Oban Frequency	Osomba Frequency	Obung Frequency	Nsan Frequency	Total	Percentage
Gender	Male	105	23	65	71	264	66.2
	Female	71	15	30	19	135	33.8
	<b>Total</b>	<b>176</b>	<b>38</b>	<b>95</b>	<b>90</b>	<b>399</b>	<b>100</b>
Age	18-29 years	29	10	28	23	90	22.6
	30-39 years	35	12	38	30	115	28.8
	40-49 years	43	9	17	22	91	22.8
	50-59 years	32	3	5	11	51	12.8
	Above 59 years	37	4	7	4	52	13.0
	<b>Total</b>	<b>176</b>	<b>38</b>	<b>95</b>	<b>90</b>	<b>399</b>	<b>100</b>
Education	No formal Education	23	5	12	10	50	12.5
	Primary Education	31	6	14	17	68	17.0
	Junior Sec. School	40	9	23	21	93	23.3
	Senior Sec. School	47	12	26	23	102	25.6
	Tertiary Education	23	4	16	14	57	14.3
	Others(Specify)	12	2	10	5	29	7.3
	<b>Total</b>	<b>176</b>	<b>38</b>	<b>95</b>	<b>90</b>	<b>399</b>	<b>100</b>
Livelihood activities	Farming	47	11	24	33	115	28.82
	Fishing	32	7	21	13	73	18.20
	Trading	41	10	19	19	89	22.30
	Formal employment	20	3	12	5	40	10.03
	Artisan	23	5	14	14	56	14.04
	Others(Specify)	13	2	5	6	26	6.61
	<b>Total</b>	<b>176</b>	<b>38</b>	<b>95</b>	<b>90</b>	<b>399</b>	<b>100</b>

### Primary Occupations of the Host Communities

The predominant primary occupations within the host communities in the study area indicate that farming and hunting constitute the most prevalent occupations, accounting for 24.81 percent and 19.70 percent of the sampled respondents, respectively. These are followed by timber and non-timber forest product (NTFP) exploitation, representing 11.80 percent of respondents. Notably, the collected data further illustrates that 11.52 percent and 8.02 percent of community members engage in fishing and petty trading as their primary means of sustenance in the area. Additionally, 7.80 percent and 5.51 percent of the respondents are involved in craftwork, mining, and quarrying as their primary occupations within the study locale. Moreover, the acquired data underscores that a smaller segment of the population, comprising 5.30 percent and 4.01 percent, are engaged in livestock rearing and hairdressing as their primary sources of income. Furthermore, a minimal proportion, specifically 1.50 percent, of the sampled respondents pursues other forms of primary occupation within the study area (Table 2).

Table 2. Primary occupation of the host communities in the study area (Source: Field survey, 2023)

S/N	Alternative source of livelihood	Oban Frequency	Osomba Frequency	Obung Frequency	Nsan Frequency	Total	Percentage
1.	Hunting	36	6	17	20	79	19.80
2.	Timber and NTFP exploitation	25	5	8	9	47	11.80
3.	Petty Trading	11	2	12	7	32	8.02
4.	Livestock	9	2	4	6	21	5.30
5.	Farming	37	6	27	29	99	24.81
6.	Fishing	20	5	11	10	46	11.52
7.	Craftwork	15	5	9	2	31	7.80
8.	Mining and querying	12	4	2	3	22	5.51
9.	Hairdressing	9	2	2	3	16	4.01
10.	Others (specify)	2	1	2	1	6	1.50
	Total	176	38	95	90	399	100

### Secondary occupation of the host communities in the study area

The diverse range of secondary occupations pursued by the communities in the study area reveals that business/trading, artisan, tailoring, hairdressing, and related activities emerged as the principal secondary pursuits within the study locale. Again, it was observed that 40 percent and 22.1 percent of respondents within the communities identify as service workers or laborers, with the majority of those sampled indicating involvement in livestock rearing as their secondary occupation. More so, business/trading was ranked as the next most common secondary occupation, representing 21.8 percent of respondents.

Furthermore, hairdressing, artisan, and tailoring encompassed the secondary occupational choices of the communities, accounting for 11.8 percent, 11.3 percent, and 9.8 percent, respectively. Additionally, 5.5 percent and 4 percent of respondents acknowledged engaging in secondary occupations within private companies and as civil servants, respectively, within the study area. However, a smaller portion, constituting 3.7 percent, reported pursuing a secondary occupation in politics, while other miscellaneous occupations accounted for 2.5 percent of the responses within the study region. The aforementioned table collectively outlines the various secondary occupations embraced by the communities in response to the establishment of the Cross River National Park (Table 3).

Table 3. Secondary occupation of the support zone communities in the study area (Source: Field survey, 2022)

S/N	Secondary occupation	Oban Frequency	Osomba Frequency	Obung Frequency	Nsan Frequency	Total	Percentage
1.	Business/Trading	37	5	28	17	87	21.8
2.	Artisan	22	5	11	7	45	11.3
3.	Tailoring	18	4	9	8	39	9.8
4.	Hair dressing	20	5	12	10	47	11.8
5.	Livestock rearing	29	6	18	35	88	22.1
6.	Private Company Employment	12	3	4	3	22	5.5
7.	Student	15	5	6	4	30	7.5
8.	Civil Servant	11	2	2	1	16	4.0
9.	Politician	9	1	3	2	15	3.7
10.	Others (Specify)	3	2	2	3	10	2.5
	Total	176	38	95	90	399	100

Likewise, the findings corresponding to hypothesis 4, positing that no significant relationship exists between secondary occupations and the benefits accrued by the support zone communities from the development of the Cross River National Park, are detailed in Table 4. A closer examination of the outcomes presented in table 6 indicates the presence of a negative correlation value ( $R=0.178$ ;  $P>0.05$ ) at a significant level. This signifies a detrimental association between secondary occupations and the benefits reaped by the support zone communities within the study area. Consequently, the outcome leads to the acceptance of the null hypothesis and the subsequent rejection of the alternative hypothesis.

Table 4. Pearson Product Moment Result correlating Secondary occupation and communities benefits from Cross River National Park (Source: Output Research from SPSS 22.0) Note: ns = not significant ( $P>0.05$ )

Parameter	N	R	p-value
Secondary Occupation	10		
		0.178 <sup>ns</sup>	0.628
Benefit from park	10		

### Development programmes needed by the communities

The imperative development programs essential for the communities within the study area shows that 21.8 percent, 17.5 percent, and 12.8 percent of respondents from various communities concur on the significance of skill acquisition, infrastructural advancement, and rural transportation programs as crucial elements required bolstering the well-being of these communities within the study region. It was also observed that road construction and financial supports are deemed essential



by the communities, garnering respective values of 11.78 percent and 11 percent. However, the data also indicates that health facilities/services, employment opportunities, and educational provisions are identified by 8.5 percent, 7 percent, and 5.3 percent of respondents as vital developmental programs necessary to uplift the communities in the study area (Table 5).

Table 5. Development programmes needed by communities in the study area (Source: Field survey, 2023)

S/N	Most needed support	Oban Frequency	Osomba Frequency	Obung Frequency	Nsan Frequency	Total	Percentage
1.	Financial assistance	16	3	6	19	44	11.0
2.	Infrastructural development	28	9	15	18	70	17.5
3.	Rural transformation programme	25	5	14	7	51	12.8
4.	Health facility/ service	14	3	7	10	34	8.5
5.	Road construction	24	5	13	5	47	11.8
6.	Education	10	1	7	3	21	5.3
7.	Employment	13	3	6	6	28	7.0
8.	Skill acquisition	37	7	23	20	87	21.8
9.	Others (Specify)	9	2	4	2	17	4.3
	Total	176	38	95	90	399	100

### Effectiveness of development programmes in support zone communities

The respondents' evaluation of the development programs within the communities reveals that several programmes were provided by the National park management. Notably, 62.6 percent of respondents acknowledge that the development programs within the communities lack effectiveness, while a lesser proportion of 17.3 percent concur that these programs have proven effective. Furthermore, 6.8 percent of respondents express that the development programs are highly effective, yet 13.3 percent remain uncertain regarding the efficacy of the development initiatives undertaken by the Cross River National Park within the study area. Based on the insights gleaned from the data illustrated in Table 6, it becomes evident that the development programs implemented by the Cross River National Park within the communities of the study area have, on the whole, yielded suboptimal results in terms of their impact and effectiveness (Table 6).

Table 6. Effectiveness of development programmes to host communities in the study area. (Source: Field survey, 2023)

S/N	Effectiveness of development programme	Oban Frequency	Osomba Frequency	Obung Frequency	Nsan Frequency	Total	Percentage
1.	Very Effective	16	2	4	5	27	6.8
2.	Effective	23	26	21	19	69	17.3
3.	Ineffective	108	26	59	57	250	62.6
4.	Unsure	29	4	11	9	53	13.3
	Total	176	38	95	90	399	100

### Communities benefits from Cross River National Park

The advantages extended to the communities through the Cross River National Park indicate that the provision of agricultural products/seedlings and the establishment of rural electrification, constituting notable contributions with respective values of 23.06 percent and 17.29 percent. Furthermore, 14.29 percent and 13.28 percent of respondents recognize the government's role in furnishing boreholes and facilitating road construction, which are recognized as part of the government's obligations to the communities within the study area. The benefits stemming from the Cross River National Park also encompass financial aid, health facilities/services, and employment opportunities, as endorsed by 7.52 percent, 7.77 percent, and 6.77 percent of respondents hailing from these communities. In contrast, education surfaces as the least prevalent benefit, as underscored in Table 7, with a value of 5.51 percent. In summation, the data effectively underscores the multifaceted benefits extended by the government through the Cross River National Park, playing a pivotal role in enhancing the overall quality of life within the study area's communities (Table 7).

Table 7. Communities benefits from Cross River National Park (Source: Field survey, 2023)

S/N	Communities Benefits	Oban Frequency	Osombo Frequency	Obung Frequency	Nsan Frequency	Total	Percentage
1.	Financial assistance	15	2	7	6	30	7.52
2.	Provision of rural electricity	29	7	16	17	69	17.29
3.	Provision of bore holes	24	5	15	13	57	14.29
4.	Health facility /services	14	3	6	8	31	7.77
5.	Road construction	22	6	13	12	53	13.28
6.	Education	12	1	5	4	22	5.51
7.	Employment	15	4	5	3	27	6.77
8.	Agricultural products/seedlings	35	9	22	23	89	22.31
9.	Increase in visitors' arrivals	9	1	3	3	16	4.01
10.	Others (specify)	1	0	3	1	5	1.25
	Total	176	38	95	90	399	100

### Challenges of implementing development programmes

The obstacles encountered in the execution of development programs within the study area, encompass a range of complexities including financial constraints, funds misappropriation, and a lack of cooperation from the host communities. Notably, it was observed that a significant hindrance to effective development program implementation lies in the absence of incentives for the communities, coupled with instances of funds misappropriation, comprising major challenges with values of 22.1 percent and 21.3 percent, respectively. In addition, improper coordination of programs poses a challenge, accounting for 13 percent of the responses within the study area.

Furthermore, Table 8 highlights that 12.8 percent, 9.7 percent, and 7.7 percent of respondents acknowledge poor transportation, a lack of cooperation from the host communities, and inadequate program coordination as additional challenges affecting the successful implementation of development initiatives within the study area. Moreover, a smaller proportion of 5.3 percent and 4.8 percent of respondents concur that limited community commitment and insufficient funding also present challenges to the execution of development programs within the study area (Table 8).

Table 8. Challenges of implementing development programmes in the area (Source: Field survey, 2023)

S/N	Challenges of implementing development programme	Oban Frequency	Osombo Frequency	Obung Frequency	Nsan Frequency	Total	Percentage
1.	Lack of funds	10	3	2	4	19	4.8
2.	Misappropriation of fund	39	8	20	18	85	21.3
3.	Lack of cooperation from host communities	19	3	5	12	39	9.7
4.	Improper programme coordination	20	5	14	13	52	13.0
5.	Insecurity	22	4	13	12	51	12.8
6.	Poor transportation	15	2	10	4	31	7.7
7.	Poor commitment by communities	11	3	5	2	21	5.3
8.	Lack of incentives to communities	33	9	24	22	88	22.1
9.	Others (specify)	7	1	2	3	13	3.3
	Total	176	38	95	90	399	100

Based on the outcomes derived from the hypothesis positing that no substantial relationship exists between the challenges linked to national park development and the benefits derived from the establishment of the park within support zone communities, as presented in Table 9, a discernible pattern emerges.

The analysis showcases that the development arising from the inception of the Cross River National Park demonstrates a positive correlation with both challenges and benefits observed within the park, a phenomenon illuminated by the statistical examination ( $R=0.886$ ;  $p<0.001$ ) elucidated in Table 9. This conveys that challenges and benefits stemming from park development share a coherent trajectory and exhibit a linear relationship between the two variables under investigation. As a result, the null hypothesis is invalidated in favor of the alternative hypothesis, leading to the conclusion that a significant relationship indeed exists between the challenges originating from the national park and the benefits associated with the park's establishment within the support communities.

Table 9: Pearson Product Moment Results correlating benefits derived from the park development and challenges from Cross River National Park (Source: Output Research from SPSS 22.0)

Parameter	N	R	p-value
Benefits	9		
		0.886**	0.0001
Challenges	9		

Note: N= No of observations; \*\* = significant of 1% level; R=Pearson Product Moment Correlation

### Discussion of findings

The establishment of the Cross River State National Park carries significant socio-economic implications for the communities residing within its boundaries, whose livelihoods are intricately intertwined with the park's ecosystem. Research findings highlight that the primary occupations of these host communities have traditionally revolved around activities such as hunting and fishing. This aligns with the empirical studies which similarly found that inhabitants of protected areas often engage in farming, hunting, and lumbering as their primary means of subsistence conducted by (Dawson et al, 2021; Dayer et al., 2020). This notion is further supported by the analysis performed, who examined the occupational profiles of communities within the national park enclave (Singh et al., 2022). Furthermore, the research demonstrates that the establishment of the national park has introduced various alternative avenues for sustaining livelihoods, including skill acquisition, artisanal endeavors, business, and trade. This concept resonates with the works of scholars, who advocate for diversifying livelihood options to mitigate excessive reliance on the park's resources (Tran et al., 2022; Dick et al., 2022). They propose alternative activities like education provision, livestock rearing, and handicraft production as means to alleviate pressure on the national ecosystem. This perspective is further reinforced, who argue that offering local incentives to rural communities within the park's confines can help minimize conflicts (Thomsen et al., 2023; Smith et al., 2021). Additionally, the research findings underscore the importance of essential infrastructure, such as roads, electricity, healthcare facilities, and other services, in ensuring the sustainability of the national park (Christawan et al.,

2023). Scholars including corroborate this viewpoint, emphasizing the necessity of basic social amenities and programs to support community livelihoods, particularly those residing within national park ecosystems (Nsiah, 2020; Pauleit et al., 2021; McGinlay et al., 2023). Moreover, further emphasizes that the strain on the park's ecosystem can be alleviated by introducing alternative livelihood opportunities for communities within its bounds, echoing the empirical discoveries of this research (Naah et al., 2020). Nevertheless, the development of the Cross River State National Park is not without its challenges. Issues such as inadequate transportation networks, lack of cooperation from host communities, and financial mismanagement have been observed. This echoes the observations and is affirmed by the insights, who all concur that difficulties tend to arise in areas where national parks are situated (Mekonen, 2020; Manda and Mukanda, 2023) and (Rule et al., 2022; Armitage et al., 2020). Furthermore, an empirical investigation into the socio-economic implications of national park development, highlight the repercussions of such developments, including fund misappropriation, community hostility, and limited accessibility to communities within the national park ecosystem (Msilu, 2021). Remarkably, these viewpoints closely parallel the challenges delineated in this study regarding the development of the Cross River State National Park.

## CONCLUSION

Upon closer examination of the results obtained from the statistical analyses of the specified hypotheses, it becomes evident that there exists an adverse connection between secondary occupations and the advantages accrued by the support zone communities located within the study area. This outcome subsequently leads to the acceptance of the null hypothesis while concurrently rejecting the alternative hypothesis. Consequently, the findings derived from the statistical analysis of the second hypothesis reveal a favorable correlation between the challenges faced by the communities residing within the confines of the national park enclave and the benefits derived from the same. This analysis conveys that the challenges and benefits arising from the development of the park follow a coherent trajectory, showcasing a linear relationship between the two variables under investigation. Consequently, the null hypothesis is invalidated in favor of the alternative hypothesis, thereby concluding that a meaningful relationship indeed exists between the challenges arising from the national park and the benefits associated with the establishment of the park within the supportive communities.

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## THE ROLE OF MUSIC FESTIVALS IN SHAPING DESTINATION BRANDING AND IMAGE IN TWO HUNGARIAN REGIONAL CENTERS

Dorottya SÜLI\*

University of Szeged, Department of Economic and Social Geography, Szeged, Hungary, e-mail: dorottya.suli@gmail.com

Lajos BOROS

University of Szeged, Department of Economic and Social Geography, Szeged, Hungary, e-mail: borosl@geo.u-szeged.hu

Viktor PÁL

University of Szeged, Department of Economic and Social Geography, Szeged, Hungary, e-mail: pal.viktor@szte.hu

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**Abstract:** Urban marketing with culture-led urban development has a growing importance for contemporary cities. In a global competition, cities must stand out and attract tourism, investment, and cultural activities. Consequently, their image should be constantly improved. City branding provides strategies for enhancing a city's public image – thus, becoming more and more attractive. Events and festivals, like popular music festivals, offer valuable opportunities for promoting cities and boosting tourism. The aim of this research is to explore the potential of music festivals in building city image and integrating it into the broader branding processes. The results are based on semi-structured interviews and a questionnaire survey. The findings support the hypothesis that festivals can significantly raise destination awareness, and shape image, and through them, a wider audience can be reached. Festival uniqueness and appropriate venue choices facilitate seamless integration into the host city's tourism – thus decision-makers should pay attention to this issue and facilitate coordination between stakeholders.

**Keywords:** urban marketing, city branding, destination image, event tourism, music festivals

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### INTRODUCTION

Due to the ever-increasing competition over the past last decades, destinations around the world are required to constantly (re-)define their vision, build their identity and shape their image in order to become more attractive and competitive, and to increase their market position (Metaxas, 2010; Cheniki and Bazi, 2020; Hutabarat, 2022). Furthermore, neoliberal economic policies and globalization have changed the role of branding, which has also become apparent in urban development (Vanolo, 2017; Lucarelli, 2018). This was particularly evident in post-socialist countries where the promotion of tourism has become a common element of local development strategies – thus posing significant challenges to local decision-makers. The cities of post-socialist Central and Eastern Europe had to create a new urban identity as attractive destinations and they have used place marketing and branding to promote themselves as tourist destinations and ensure their competitive position (Light et al., 2020; Ma et al., 2021). These countries or cities have entered the global or regional competition later and with less experience and tradition, thus branding tools are particularly important for them.

Cities pursue specific competition policies to attract potential target markets (Ma et al., 2021; Roth-Zanker, 2001). To this aim, they try to "sell" the place as a specific market product to as many potential target markets as possible, which enhances their competitiveness. In city and destination marketing, and the development of local tourism products, image plays a crucial role in shaping the way target groups relate to them and judge their specific offerings and local products. Since the image of the sites is in the common interest of different stakeholders, the fundamental objective is to position this image, and the product as a whole, for the target groups. Besides attractive services and effective communication, aestheticizing the places is also important to showcase local heritage, economy, and competitiveness (Zukin, 1998; Boro, 2017; Luo et al., 2022). Developing an image of a place attractive for investments (Ulaga et al., 2002; Ma et al., 2021) or that of a cultural and tourism destination (McCann, 2002; Králiková et al., 2020) is a key part of the economic revitalization of places (Metaxas, 2010) – affecting both cities and their surroundings thus strengthening "satellite tourism" (Michalkó et al., 2023).

There are places where history or their representation in literature has provided an opportunity to build an image element that becomes a sellable attraction, but where this is not available, cities build their marketing market on tradition, on the reputation of local customs and values (Glińska et al., 2021). The aim is to create a unique image of the city, made up of a set of non-contradictory elements, through the design process. In shaping the image of a city, it can change the place, but it can also change the socio-cultural environment and the message it is trying to convey (Tömöri, 2017). Among the target groups, tourists are of particular importance for the marketing of the city, because if they have a positive experience when they visit the locality, they can become one of the best marketing tools to shape the image of the city.

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\* Corresponding author

The image of a destination influences the behavior of potential tourists (Fakeye and Crompton, 1991; Baloglu and McCleary, 1999; Castro et al., 2007; Králiková et al., 2020) influences visitors' subjective perceptions, as it affects the destination choice process and determines post-decision behavior, including participation (on-site experience), evaluation (satisfaction) and future behavioral intentions (intention to revisit and willingness to recommend) (Youngsun, 2009; Hashemi et al., 2023). Thus, understanding the decision-making process of tourists is crucial for destinations (Allen, 2010; Dai et al., 2022).

The eventual goal in shaping the image of the territory is to develop a brand of tourism products for cities and to fill it with content (Jóvér et al., 2020; Chan et al., 2021). The brand is both a means for potential tourists to identify and assess the quality of the product and a tool for service providers and local decision-makers to differentiate and position itself in the supply market (Marien, 2012; Ledinek Lozej and Razpotnik Visković, 2022; Logar, 2022).

Creating the image of the destination and developing it into a brand is about building an emotional connection with the consumer, expanding awareness, and demonstrating brand values (Morgan et al., 2011). This process is based on the memories, perceptions and behavior of the potential tourist. The image of the host area plays an important role in building brand loyalty (Figure 1). By becoming more familiar with the image, the potential consumer's knowledge is broadened, and enriched with additional information. Destination branding (which has an impact on satisfaction and trust in the area) builds on this broadened information (Haarhoff and De Klerk, 2019; Fialová and Chromý, 2022). Together, satisfaction and trust create an emotional attachment through destination branding, which manifests in loyalty and then regular returns (Morgan et al., 2011; Kádár and Klaniczay, 2022).

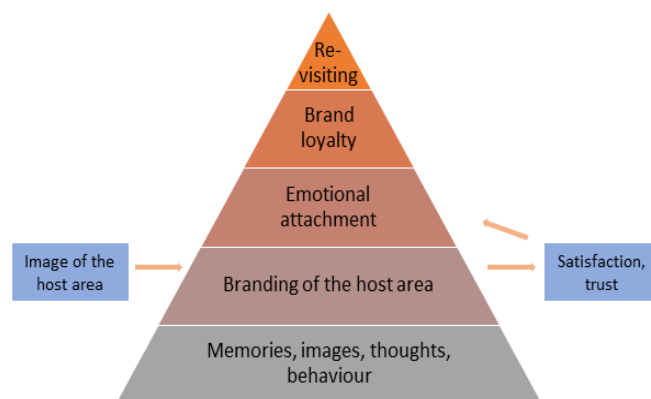


Figure 1. Impact of the branding process on the behavior of tourists arriving in a destination (Source: Own ed. based on Morgan et al., 2011)

Branding represents varied expectations and goals among the actors involved. Economically, the aim is to add value to products, support local production, and promote tourism. Socially, it fosters connections and networks enhancing social capital. Branding enables communication to raise awareness of local values and facilitate place-making processes, so it can have a positive impact on urban development (Ledinek Lozej and Razpotnik Visković, 2022). Branding can be built on several factors; events, such as festivals are among the most important. Events provide a memorable experience that is uniquely linked to the tourist destination (Zetiu and Berte, 2015; Finkel and Platt, 2020), so cities are increasingly using events as a means of promotion. Several cases can be cited where a locality has become known or shaped its image through a festival, such as Avignon (Festival d'Avignon) or Salzburg (Salzburg Festival) (Richards and Leal Londoño, 2022). The importance of festivals for cities can be approached from several angles (e.g. tourism-economic, cultural, social).

This article focuses on music festivals, but it is important to highlight that festivals with different characters can all be beneficial for urban development and branding. There is a reciprocal relationship between localities and festivals, as the setting for the event is provided by the destination's institutions and services, but the festival also shapes the locality, influencing its image and the whole brand (Kundi, 2012; Supriono and Yulianto, 2021). If the cooperation between the event and the destination is close enough, the so-called image transfer occurs, i.e. in an optimal case, the positive experiences associated with the festival become assets for the destination (Oklobdžija, 2015). Thus, the festival can be the "engine" that creates the real reason for a wide range of potential tourists to visit a destination (Derrett, 2012).

Therefore, music festivals play an important role in tourism, and researchers recently have started to pay more and more attention to the strategic importance of these events in the development of destinations (Duarte et al., 2018). One of the roles of music festivals in these new, often culture-oriented urban development strategies is to help make the city an innovative, exciting and creative place to visit (Finkel and Platt, 2020). However, despite the many positive and negative impacts that music festivals have on the economic, physical, political and social environment, research on the economic environment of festivals continues to dominate the tourism literature, while other aspects are often neglected. The most commonly highlighted are the economic and social impacts of the events, such as the number of nights spent, tax payments, temporal employment, which can be estimated for larger festivals. Some studies also have examined the relationships between brand, perceptions, loyalty and destination image in the context of music festivals (Hudson et al., 2015; Debbagh and Azouaoui, 2022). However, for almost all popular music festivals, it is difficult to measure and justify the increase in visibility, reputation and image. Thus, the question arises: whether by linking the image elements of the festival and its host destination (i.e., realizing image transfer) can enhance awareness, and what is its impact on the local tourism processes? The central element of the research was the conscious development of the destination's tourism image, its branding. In this context, we were looking for answers to the following questions: what impact does a popular music festival have on the

image of the destination, and to what extent can it be integrated into the branding process? To what extent is the destination image shaped by the local government or the popular music festival itself?

Based on this, the central element of the research was the conscious development of the destination's tourism image and branding. The aim was to explore the impact of the examined music festival on the image of the destination and its integration into the branding process. However, it is also important for place branding to take into account the images and perceptions that appear in the minds of tourists, which are designed to shape the future of the locality. To this end, our aim was to examine whether the image represented by the locality met the image in the minds of festival tourists. The study is based on the cases of two Hungarian cities (Debrecen, Szeged) and their music festivals.

## MATERIALS AND METHODS

### Study site

In the course of the research, the relationship between the image of two popular music festivals (Szeged Youth Days, Campus Festival) and the image of their host cities as destinations (Szeged, Debrecen) was analysed using a complex methodology (Figure 2). Both cities are regional centers in the Hungarian context, having a versatile tourism offer, with a special emphasis on cultural tourism (Tóth et al., 2020; Vida and Dudás, 2017; Vida, 2022).

One of the events studied is the Szeged Youth Days (SZIN), Szeged's most important and Hungary's first popular music festival, which is held in the area near the river Tisza of Szeged and Erzsébet Liget, one of the most important green area of the town (Kolcsár et al., 2022). The other event under study, the Campus Festival, is held annually in the city of Debrecen, in the main green area of the city, the Nagyerdő (Table 1). Both festivals have similar characteristics in terms of popularity, dates, attendance, programs and age group targeted. The festivals' audiences are mainly young people and students, but both events aim to broaden the age range of the target group (Table 1).

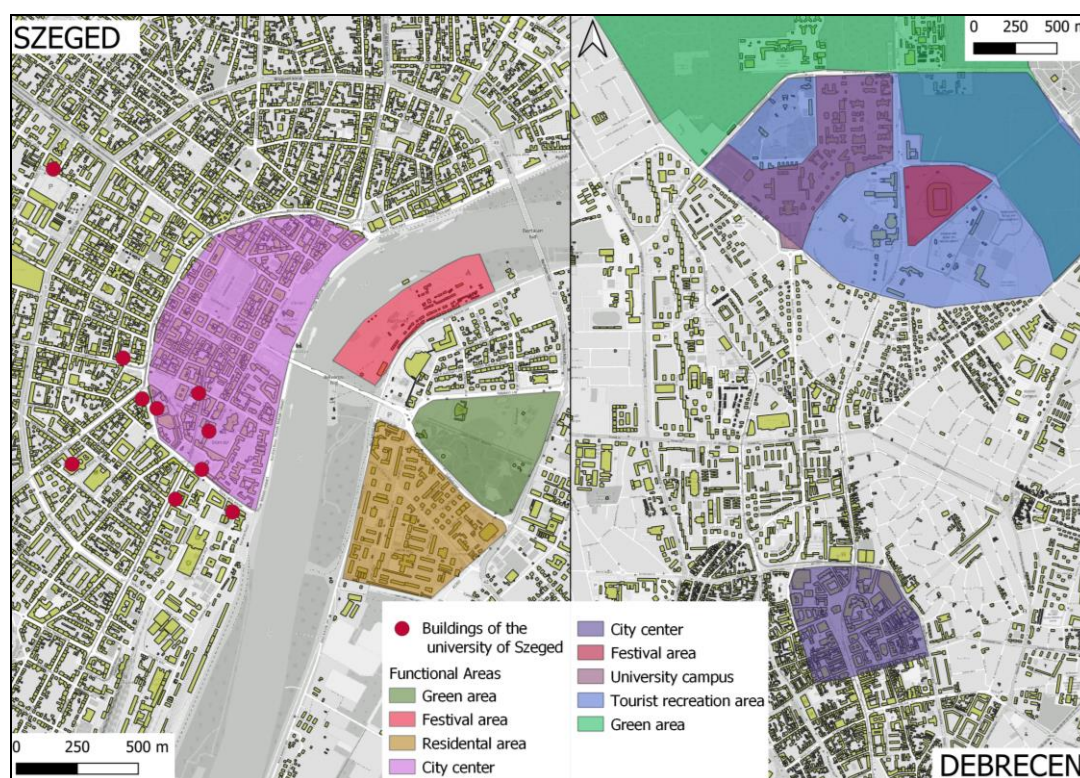


Figure 2. The map of the host cities with the festival locations and surrounding areas (Source: Own editing)

Table 1. Some features of the two festivals (Source: Own editing by [www.szyn.org](http://www.szyn.org); <https://www.campusfesztival.hu>)

	<b>Szeged Youth Days (SZIN)</b>	<b>Campus Festival</b>
<b>City</b>	Szeged (Partfűrdő)	Debrecen (Nagyerdő)
<b>Location of the site</b>	Close to the city center, on the riverbank	Near university campus
<b>First year of organization</b>	1967	2007
<b>Date (2022)</b>	end of summer (August 24 – 27.)	middle of summer (July 20 – 24.)
<b>Number of visitors (2022)</b>	approx. 100 thousand people	approx. 116 thousand people
<b>Organizer</b>	city event management company	university event management company
<b>Main audience</b>	young people, students (18-25 age group)	young people, students (18-25 age group)

### Research tool, sampling and data collection

Analyzing the impact of popular music festivals on the image of cities requires complexity, so we combined qualitative and quantitative methods, consisting of semi-structured interviews and a questionnaire survey. The interviewing process required the identification of key actors in the tourism processes in Szeged and Debrecen who could be potential



interviewees. The interviewees were selected to represent five categories: the actors shaping the image of the municipality: (1) the city management and (2) tourism professionals, (3) festival organizers or marketing professionals, (4) actors involved in the tourism processes in Szeged and Debrecen, such as accommodation and catering, and (5) and the various attractions. We then used the respondents' network of contacts to further expand the range of respondents. Interviews were conducted between September 2020 and June 2021 and a total of 17 interviews were completed. The interview questions covered the touristic image of the cities, the role of the festival in local tourism, and the relation between cities and events. The interviews were audio-recorded and transcribed. The analysis identified themes under which the different opinions were grouped.

To answer further questions of the research, we interviewed festival participants at the Szeged Youth Days and Campus Festival, where both local residents and tourists were accessible. Through random sampling conducted over multiple days at various locations within the festivals, participants of different types were equally likely to be included in the sample. The survey was administered with the assistance of interviewers. For both festivals, questionnaire administration was facilitated by a research association, which had entered into official agreements with the festival organizers for conducting surveys at the events. In Szeged, 618 evaluable questionnaires were filled in for SZIN, while in Debrecen, a total of 300 evaluable questionnaires were filled in for Campus Festival. Different structured questionnaires were used in each case to suit the circumstances of the surveys. At the Szeged Youth Days, participants had the opportunity to complete a longer, more detailed questionnaire, as the partnering research association provided a separate section to their own questionnaire. Conversely, only a few questions were permitted by the research association operating at the Campus Festival, leading to the use of a shorter questionnaire at that event. The questionnaire survey covered a number of issues (e.g. destination awareness hosting the festival, number of visits, duration of participants' stay, participants' motivation, sources of information used by participants, satisfaction of participants with the services, participants' willingness to recommend or return, participants' opinion on the relationship between the festival and the destination image, participants' social media usage habits), but in this study, we focus on the impact of the music festivals on the image and visibility of the host cities.

## RESULTS AND DISCUSSION

### The demand and supply relations of the city's tourism image

In order to understand the role of festivals in shaping the destination image, we first present the tourism image of the city, based on the perceptions of supply and demand side stakeholders. Szeged is considered by the interviewees to be a youthful, vibrant city with a good atmosphere, thanks to the variety of programs and services available. In their opinion, tourism in the city is viewed positively by external stakeholders (Figure 3). The tourism offer is almost unanimously considered to be good, and in their opinion the two main elements of the destination's brand are the Szeged Open-Air Festival (Szabadtéri Játékok) as an event and the Dóm Square with the Church of the Votive as a venue. They believe that "...Szeged's tourism image is still dominated by summer events..." (SZ5, city administration), so Szeged is often perceived as a city of summer festivals, and this image is mainly related to the Szeged Open-Air Festival and the Szeged Youth Days. In addition, the image of Szeged is also significantly linked to sports and the related tourism: the city is well-known for its handball team and national and international events of water sports. Sports contribute to the creating the image of a vibrant, active city.



Figure 3. Tourist image of Szeged (Source: Own editing based on interview survey (2020))

The interviewees agree that "...the city is increasingly aiming to have a coherent image for tourism in Szeged, for the city institutions and companies and there is a very serious initiative and will to do so..." (SZ7, tourism service provider). However, the perception and assessment of "city of sunshine" and "Mediterranean atmosphere" as core concepts of the brand differs between tourism operators. On the one hand, some of the interviewees consider the development of this brand to be a good concept, but believes that it has not yet been achieved. In their opinion, the city has not yet developed a coherent image and the communication of the message is not good, because it is invisible and ineffective "...If I look at the overall picture now, I don't think it's as visible in as many places as it could be. So, I think while there is a concept already, which is the starting point of this whole image, and obviously this city of sunshine and this Mediterranean thing is giving itself, but it is not everywhere... and the truth is that I noticed that if you are not looking for these things, you will not find them." (SZ3, guide). According to the other point of view, the slogan "sunshine city" is not enough to attract tourists, it is not unique and distinctive because "... there are as many sunny days and Mediterranean days in the surrounding cities and countries just like here..." (SZ9, tourism service provider). In the opinion of this group, the different programs are more likely to attract visitors.

During the Szeged Youth Days, we asked festival participants what is the first thing that comes to their minds about Szeged and what associations they attribute to the name of the city. These were used to assess what image elements are associated with Szeged in the visitors' minds and whether there is an overlap with the perception of the tourism supply side.

In both cases, the festival, the Dóm, associations with the university, the city of sunshine slogan, elements related to gastronomy tourism and the zoo are all present, so that elements of the image represented by the city do indeed meet the

image in the minds of festival tourists (Figure 4). On the other hand, the supply side also tries to communicate the cultural tourism side of the city, but its success is less reflected in the respondents' opinions.



Figure 4. Most frequent associations with Szeged among respondents - SZIN festival  
(Source: Own editing based on questionnaire survey; 2021)

In the case of Debrecen, the city's tourism image has been recreated with an emphasis on youthfulness, dynamism and color. Internationality, due to the university's character and connections also affects the tourism image. However, according to the various actors involved in local tourism, defining the image of the city is not easy because it cannot be identified with a specific attraction, *"...the challenge is to give this destination an image since it is a secondary city, a big city where all the modern urban infrastructure and services are present, but there is no main attraction to represent it"* (D1, tourism expert). In addition to the well-known attractions, the local council is keen to introduce new things to the city, in a way that makes it feel that this image is much more colorful and complex than a simple logo or slogan. The key message they aiming to convey is that Debrecen is a place with a rich tourist offer, and it is worth spending several days there.

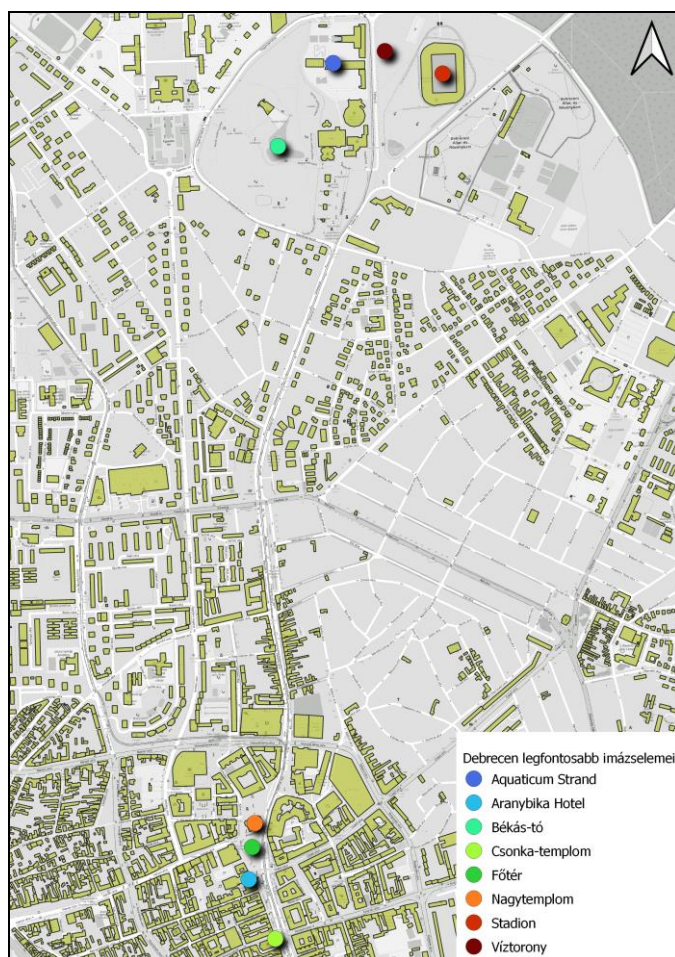


Figure 5. Debrecen's most important image elements (Source: Own editing based on interview survey, 2021)

According to the service providers, the city administration's ambition is also noticeable, but they are also trying to strengthen the "Civis" factor (a civic attitude that is specifically linked to Debrecen in Hungary). Based on the survey data conducted by the city administration, domestic visitors tend to mention the emblematic building of the city, the Great Church, its oldest festival, the Flower Carnival, the university, the city's complex recreational park, the Nagyerdő. However, foreigners are less familiar with the city. At the same time, according to the surveys conducted by the local government, the Campus festival is also mentioned by young people. And if the locals wanted to show Debrecen to the visiting tourist, they would show the main square and the Great Church first. The second most important attraction would be the stadium and the surrounding lake area, where the Campus festival is held. According to some service providers,



this is complemented by the aforementioned Nagyerdő, the Great Church, the Csonka Church, the Flower Carnival, the Golden Bull Hotel, the Békás-tó and its surroundings, the beach and the Water Tower (Figure 5). As they show a high diversity, they reinforce the "city of colour" brand. These attractions are also spatially distinct, with the elements of Debrecen's image belonging to the two territorial poles of the city center and the tourist recreation zone.

The local administration believes that the experience of Hungary in Debrecen is the same as in Budapest, so potential tourists will get a big city experience in this place too. What makes it attractive is that *"within one locality, the tourist can have everything they could possibly want: hiking, swimming, church visits, entertainment"* (D1, tourism expert). In the city it is possible to go to wine-tastings and shopping in a safe environment with much more affordable services. This was confirmed by tourism operators, but they also mentioned, among other things, the Campus festival, which is an attraction and has impact for the city by stimulating tourism and enhancing its image. They believe that *"it is good to visit Debrecen because it offers tourists a cultural value that goes back to the past, but at the same time it has innovation and European standards"* (D6, tourism service provider). Service providers feel that the city administration is trying to convey the message of youthfulness and vibrancy to the target groups, but the older age group is not forgotten neither. They also convey the message that improvements are ongoing and that the area is clean. All interviewees agreed that this established image is the result of organic development over several decades and that the image is becoming richer. To sum up, the variety of programs offered in both cities was highlighted by several interviewees, thus we can conclude that a popular music festival can play a role in the tourism image.

### The relationship between tourism image of cities and music festivals

Highlighting the connection between the festivals and city image raises the question; how exactly music festivals fit into the image of the city. According to the expert interviews conducted with the members of the Szeged city management, Szeged Youth Days do not necessarily have an impact on the tourism of the city, but are more important from the aspect of image *"... it may contribute more to the image of the city, especially among young people, or it may be more important in terms of image building than in terms of concrete tourism revenue..."* (SZ1, city management).

According to the opinions expressed, the event can enhance the vibrant, lively image of the city, and tourism operators also believe that it offers an opportunity to create a younger, fresher image. For the festival organizers, the aim is also to contribute to the formation of the city image, as Szeged, the "city of sunshine", provides an ideal location for the festival and *"...there are many points that are unique to the city, that the festival itself is on the banks of the Tisza..."* (SZ4, festival organization). According to the festival organizers, a unique atmosphere and attraction is that during the festival you can sit on the banks of the Tisza and watch the sun set with the city's landmark buildings in the background: *"...the Szeged Youth Days itself is a decisive event in the life of the city, and thus in the marketing of the city..."* (SZ4, festival organization). This is due to the fact that the festival venue is located almost in the city center. At the same time participation in the local tourism activities is perceived differently by another actors. In their opinion, not many initiatives have been taken so far by festival organizers to involve festival guests in the city's tourism.

In Debrecen, the interviewed tourism expert stressed that the Campus Festival, along with the Flower Carnival, is also actively linked to the city's tourism and both events are among the most important local attractions. According to the festival organizers, the Campus festival is among the top 2 local events in the city because *"...it has definitely grown up alongside the Flower Carnival in the way that it has to fit into the city's two most important tourist event offerings..."* (D2, event management). The organizers also highlighted the significance of tourist experience in relation to city image. If festival goers have memorable and positive experiences, they spread the good word about the festival, thus shaping a positive image of Debrecen. According to some operators, a Campus festival is a gap filling event, increasingly attractive not only to locals but also to domestic and even foreign tourists, thus contributing to the tourist image. *"The experience is that more and more people are visiting from elsewhere. This festival has a very important role in this aspect..."* (D3, tourism service provider). The city government emphasized that *"...there is a huge brand-building potential here..."* (D7, city government) and that this is a central slogan for the students, so they acknowledge that the present circumstances represent an ongoing process, with ample opportunity for further enhancement. The festival organizers also believe that the event has a very strong multiplier effect for other service providers in the tourism sector, *"...the sales of restaurants, accommodation, other related tourism services will increase noticeably during this period..."* (D2, festival organization).

According to the interviews, there is a constant interaction between the different tourism actors, which has an impact on each other in terms of tourism processes. In this regard, the aim should be to encourage tourists not only to stay inside the festival, but also to walk around the area and see the city center. According to various interviewed actors (i.e. the city management, the tourism expert and the festival organization), the coordination between the city and the festival is excellent. The city council also supports the festival and helps with everything the festival needs, and there is also a brand building link between the event and the city through the local TDM office, which was confirmed by the festival organizers. It is therefore a mutually beneficial relationship; the interests of both parties are monitored and this can indirectly help to create image transfer points. It can be concluded that, according to the actors involved in the tourism processes of the cities, festivals are linked to tourism image and play an important role in the tourism of both cities. Thus, local tourism planning and management aims to utilize these opportunities. However, the demand side (i.e. the opinion of the festival tourists) is also an important aspect, so we assessed the reasons why the tourists visited the festival and what they experienced in Szeged during the Szeged Youth Days (SZIN). For visitors to the Campus festival, we examined whether the festival was the main motivation for visiting Debrecen. SZIN visitors came to the festival mainly for the party and friends, but the atmosphere was a very important motivation for them, as mentioned by the respondents (Figure 6).

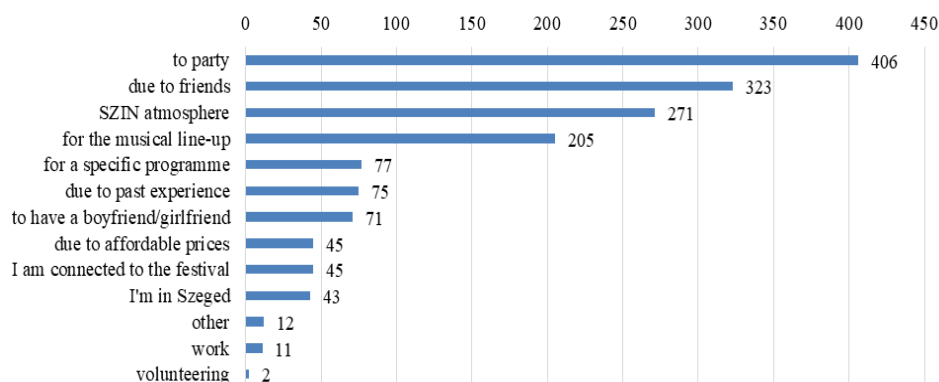


Figure 6. Motivations for attending festivals - SZIN festival (Source: Own editing based on questionnaire survey, 2021)

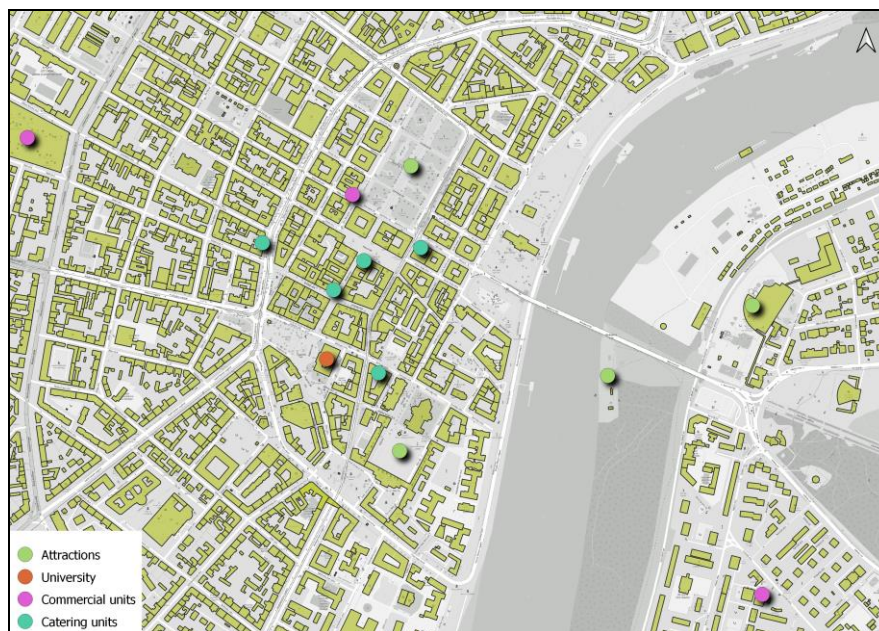


Figure 7. Festival venues visited by respondents of the questionnaire survey - SZIN festival (Source: Own editing based on questionnaire survey, 2021)

In order to investigate whether the festival tourists are involved in the broader local tourism processes outside the festival, we assessed what and how the participants experienced in Szeged through the festival. The responses showed that the majority went outside the festival area, as they explored the city center, many of Szeged's attractions, catering and commercial establishments and the local beach during their stay (Figure 7).

The vast majority of visitors surveyed at Campus came to the city primarily for the festival (65.3%). In addition, 13.3% were local residents and 21.3% came for other reasons. The gender distribution of visitors shows that about the same number of women and men had the festival as their main motivation for visiting the city. In terms of age group, it was mainly 20–25-year-olds who came to the city for this reason, but this is also the main audience for the festival. Most of the respondents (132 participants) had been to Debrecen before (81.1%), of which 70% had been to the city but not to the Campus Festival, and a small number of first-time visitors (Table 2). (Unfortunately, due to the difference between the questionnaires, we do not have this information about SZIN.) Thus, it can be concluded that many of them are familiar with the city and are returning visitors, while those who visited Debrecen for the first time were probably influenced by the event.

Table 2. Awareness of Debrecen among respondents of the questionnaire survey - Campus festival (Source: Based on questionnaire survey, 2022)

	Gender		Age range		
	Female	Male	Below 20	20-25	Above 26
Yes, this is my first visit	11	14	25	5	14
No, I have been to the Campus Festival before	19	13	32	1	17
No, I have been to Debrecen before, but not to the Campus Festival	44	31	75	15	36
	Education level				
	Primary school	High school	Technical secondary school	College/university	
Yes, this is my first visit	5	12	1	7	
No, I have been to the Campus Festival before	2	7	4	19	
No, I have been to Debrecen before, but not to the Campus Festival	10	40	9	16	

These results are also confirmed by the fact that the main motivation for attending the Campus festival, in addition to the music on offer, is also Debrecen as location. Many respondents chose the festival because of the city, but the location of the festival within the city (the tourist recreation area) was also mentioned by a significant number of respondents (Figure 8).

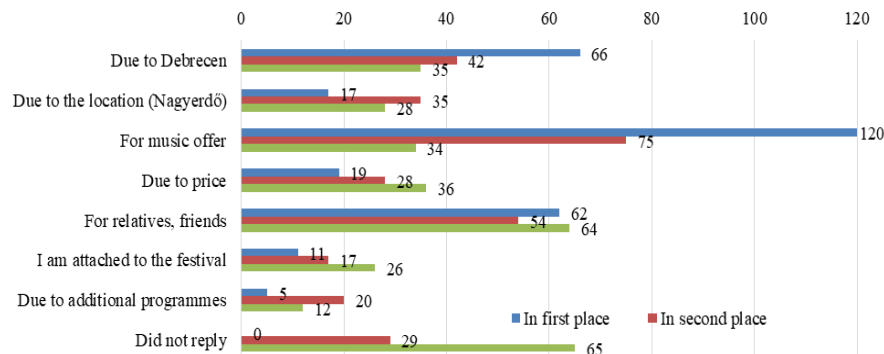


Figure 8. Motivations for attending the Campus Festival (Source: Own editing based on questionnaire survey, 2022)

Thus, it can be concluded that the motivation of festival visitors includes visiting the destination where the event takes place and, in the case of SZIN, getting out of the festival area and exploring the city center area close to the festival. Thus, festivals can indeed be integrated into the tourism processes of cities and the tourism image and brand can be built on the festivals, so we examined how the role of urban image shaping is realized in these study areas.

The results also highlight the importance of location of the venues: the vicinity and accessibility of other attractions facilitate the integration of festivals into local tourism. The interview with a representative of the local government at Szeged also highlighted this aspect: "... the fact that it is located in the city center means that it is an extra service with this waterfront, access to the city, the Tisza, a triple experience and attraction..." (SZ1, city government). In the case of Campus festival, the venue is in Debrecen's prominent tourist site, the Nagyerdő – this the event is a part of the city. According to the interviews, the choice of location may not have been conscious at the beginning of the festival, but now it is important. In addition to the concerts, the festival will also bring together various communities, organizations, companies and town authorities. "...whoever goes through the Campus Festival, whether in the civic village or in the University Square, will get to know Debrecen in its entirety" (D5, tourism service provider). In the case of SZIN, based on all the opinions expressed, the festival could be integrated into Szeged's tourism image and the main point of image transfer could be the Tisza and its surroundings. According to the festival organizers, "...the Tisza is the strongest link between the city and the music festival..." (SZ4, festival organization), as it is a strong emotional factor that gives festival participants a sense of freedom and relaxation. Besides playing a major role in shaping and enhancing the image of Szeged, it can also contribute to the general visibility of the municipality, which was also highlighted by the interviewees "...well, it contributes because obviously the festival is in the news and then it was said that it is in Szeged..." (SZ1, city administration). According to one guide, the event is quite well known nationally, but not so much internationally, except from Serbia, the nearest neighboring country.

However, according to a tourism service provider, "...I am also sure that a lot of foreign tourists and foreign people know Szeged just because of this...I have heard Dutch people coming here, I have heard English, I have heard from even more distant countries..." (SZ9, tourism service provider). The festival organizers consciously use the adjective Szeged and believe that "...Szeged is a well-known city within Hungary, but even if the younger people did not know it, they also took the city to their hearts through the festival. Many people mention the festival when they hear the name of the city..." (SZ8, festival organization). According to the city management and a tourism expert, the festival will create complementary elements (e.g., a festival anthem) that will link the municipality and the festival, and in their opinion, a significant part of the visitors can be a very good tourism marketing activity in itself, if they leave with pleasant memories. The name of the festival is also linked to the city, because if the festival's brand is defined, Szeged is also included in the name – however, some of the interview experts doubt that the festival itself is a strong enough factor for identity building.

In the case of the Campus festival, the organizers also aim to strengthen the image of Debrecen at the festival. According to tourism officials, this will be achieved, and they believe that festival visitors will visit Debrecen to see the city's attractions and enjoy the hospitality. The city management also supports and promotes the festival, their aim is to link the festival and the image of the city: "...the Campus Festival is us, it is Debrecen, and how nice for everyone that it is here" (D1, tourism professional). The survey of demand-side opinions supports these findings, as respondents at the SZIN believe that the festival has helped them to get to know the city better (61%) and that the festival has a strong connection to the city. They believe that the festival and the place in the narrower and broader sense are closely intertwined. In the case of the Campus Festival, respondents' opinions are very close in terms of whether their perception of the city has changed as a result of the festival, with 49.7% saying it is the same for them as before, but 47.3% saying it has improved.

## CONCLUSION

Overall, it can be concluded that the analyzed festivals play a major role in raising awareness of its destination, shaping the image of a place and bringing it to a wider audience. It can be said that both Szeged and Debrecen have a diverse, dynamic and colourful image, with festivals being a prominent feature of their tourism image. However, from a coordination point of view, there are still areas for improvement in the case of Szeged, since a unified, well-defined image is still missing. Furthermore, according to the interview partners, it is not even visible enough to ensure the competitiveness of the municipality in tourism.

The results of Hungarian case studies are in many respects in line with the general global processes outlined in the theoretical chapter, and there are similarities with studies in the surrounding post-socialist countries of Central and Eastern Europe. Hosting culturally significant events can attract media attention, transforming city images and influencing future tourism legacies (Wise et al., 2015). Our results indicate that in many cases, various disparate elements are used to construct the city's brand identity, resulting in often unstable and contradictory representations, stemming from ad hoc branding. This approach has emerged in other post-socialist cities, such as Timișoara (Vesalon and Crețan, 2019). A comparative study between Serbia and Hungary shows consistency in the results, indicating that the local population perceives the positive effects of festivals, and participants believe that festivals contribute to the development of tourism in the region, as well as to the promotion and image of cities (Pavluković et al., 2019). The notion that significant events can turn a city into a popular tourist destination is supported by a study conducted in Romania, examining the impact of the Untold Festival. The findings of this research can be paralleled with Hungarian case studies, as innovative marketing attracts a diverse audience interested in exploring the landmarks and culture of the festival's host locality, while also boosting the region's visibility and economic growth (Cianga, 2020). Similarly to the Hungarian examples, findings from a study in Brasov also support the conclusion that a festival can play a crucial role in a post-socialist city. The results of this research suggest that all relevant stakeholders should be motivated to participate in the rebranding of the festival, providing an opportunity for enhancing placemaking (Jucu, 2020).

Our findings show that festivals in the European post-socialist region have a significant impact on local culture, traditions, and local cultural identity. Complementary programs alongside the concerts, enable tourists to explore nearby destinations, as seen both in Debrecen and Szeged. Innovative marketing campaigns attract diverse audiences, enhancing the region's appeal and offering a unique and comprehensive experience. At the same time, these diverse audiences are characterized by diverse demand and in order to satisfy them a versatile supply is required.

Despite these similarities, there are also differences from both global and Central and Eastern European processes. As the relevant theory and global trends show, for the impact of a festival on the image of a municipality to be successful and to make it competitive or unique in the competition between destinations, the political, environmental, technological, economic and community context of festivals must be considered (Derrett, 2012; Cianga, 2020). Our research reveals the importance of collaboration in branding, and when the festival's brand and the city's brand are linked, based on our results we consider this to be a sign of cooperation. The lack of partnership hinders branding and promotion of tourism. This prevents the development of comprehensive tourism products and integration of festivals into the local cultural economy and place marketing (Wise et al., 2015; Vesalon and Crețan, 2019; Pavluković et al., 2019; Pivac et al., 2019; Cianga, 2020; Jucu, 2020). However, it can also be concluded that most studies focus on the economic and social impact of festivals (Kundi, 2012; Cianga, 2020; Tóth et al., 2022) paying less attention to their effect on a location's image and the wider branding processes. Understanding these aspects is crucial for long-term planning and successful destination marketing.

International experiences show that the biggest challenge for the culture-based economies in Central and Eastern European cities is the lack of cooperation between local/regional decision-makers and actors (Light et al., 2020; Nared and Bole, 2020). Lack of cooperation and collaboration is one of the biggest problems of the Hungarian economy, a typical Central and Eastern European process (Ludvig, 2003; Tóth et al., 2020; Hardi et al., 2021). However, cooperation would be important, such as jointly building or rebuilding the image of the destinations, for example, since local governments in this region face challenges such as unemployment, ethnic tensions, social, health and education provision in a resource-poor environment, among others. These problems require complex solutions with the involvement of actors through vertical and horizontal partnerships (Medarić et al., 2021). In the case of the festivals examined in the research, image building can be achieved due to the uniqueness of the festivals and the fact that the two events offer a complex experience due to the choice of location, thus making them more easily integrated into the tourism process of the locality. This is confirmed by the results of the questionnaire survey, as participants of both festivals also visited the city's other attractions. Thus, both festivals contribute significantly to the image of the respective localities, and can strengthen their youthful, vibrant image. The results show that the importance of geographical location, the features of the venue (the Partfűrdő and the Nagyerdő) and the closeness to the city center or the tourist recreation area can provide a unique attraction and experience for festival visitors, creating a strong bond between the city and the event. In the case of the relationship between Szeged and SZIN, the main point of image transfer could be the Tisza and its surroundings, which is supported by the opinion of the interviewees, and building on this base, the identity point of the festival could be further strengthened. In Debrecen, the festival is already embedded in its environment to such an extent that it automatically promotes tourism in the city and image transfer is achieved. Debrecen and Szeged, as other post-socialist cities are both keen on attracting visitors now to contribute to broader economic development and regeneration. Festivals are suitable for this because a wide audience can be reached through them. Music and cultural events in CEE cities can widely use within broader tourism strategies intended to bring about urban regeneration, they represent a way through which placemaking can be done.

The research offers possible directions for decisionmakers as well. Local governments should facilitate cooperation between the various stakeholders within the broader sphere of cultural tourism and festival-related tourism in particular. With the coordination of the local government a well-defined image should be built and maintained. The research highlights the importance of the location of venues within the cities. Thus, these locations should be kept and the possible conflict with local due to noise or increased traffic should be managed effectively. The principles of cooperation and partnership should be taken into account during the planning and management of festivals and the branding processes.

Like any piece of research this study also has some shortcomings to be highlighted. First, the analysis focuses on two Hungarian cities, thus the generalizability of the results is limited. Furthermore, the time data collections, there is no possibility for longitudinal comparisons. Future research should explore longitudinal changes in images and visitor attitudes, deepening our knowledge on the topic. In addition, other towns and festivals should be also analyzed, strengthening the comparative nature of the research.



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## THE ROLE OF CAVE NAMES IN THE DEVELOPMENT OF TOURISM IN KAZAKHSTAN

**Aigul YEGINBAYEVA** 

L.N. Gumilyev Eurasian National University, Department of Physical and Economical Geography,  
Astana, Kazakhstan, e-mail: aeginbaeva@mail.ru

**Kuat SAPAROV** 

L.N. Gumilyev Eurasian National University, Department of Physical and Economical Geography,  
Astana, Kazakhstan, e-mail: k.sapar67@yandex.ru

**Nazgul ZHENSIK BAYEVA** 

Sarsen Amanzholov East Kazakhstan State University, Department of Ecology and Geography,  
Ust'-Kamenogorsk, Kazakhstan, e-mail: naz\_zanibek@mail.ru

**Akerke NURPEISOVA** 

Shakarim State University, Department of Natural Sciences, Semey, Kazakhstan, e-mail: akerke\_140285@mail.ru

**Zhanna SHAKHANTAYEVA** 

L.N. Gumilyev Eurasian National University, Department of Physical and Economical Geography,  
Astana, Kazakhstan, e-mail: zhanna.shahantaeva@mail.ru

**Yernar KEIKIN** 

L.N. Gumilyev Eurasian National University, Department of Physical and Economical Geography, Astana, Kazakhstan, e-mail: erk-09@mail.ru

**Evren ATIS** 

Kastamonu University, Faculty of Arts and Sciences, Department of Geography, Kastamonu, Turkey, e-mail: evrencografya@gmail.com

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**Abstract:** Geographical names, including speleonyms, which were once not registered in official sources, have been preserved in the form of missing words or errors in the Russian language. Therefore, the task of their collection and systematization is fixed by many resolutions of the government of the Republic of Kazakhstan and other authorized bodies. One of the issues of determining the ways of implementing the project "sacred geography of Kazakhstan" and the direction of research work is aimed at restoring the names of caves. The purpose of the study is to identify the features of the formation of cave names on the territory of Kazakhstan and the geographical prerequisites for their restoration. Research objectives: to determine the role of physical and geographical conditions of Kazakhstan in the formation of speleonyms; to reflect the patterns and areas of cave distribution in Kazakhstan and to analyze the geographical aspects of the formation of speleonyms; analysis of geographical aspects of the formation of speleonyms; determination of the place of speleonyms as tourist and recreational objects; making proposals for the preservation of caves and Speleonyms of Kazakhstan. The object of the study is caves and other underground parts distributed on the territory of Kazakhstan as special objects of the sacred regions of the country, the subject of the study is the conditions and meaning of the formation of the names of these caves, their geographical prerequisites and opportunities for restoration. The caves will be of great interest from a geomorphological, hydrological, bio-speleological, archaeological and paleozoological point of view. In recent years, they are studied as unique natural landscapes. The importance of caves for speleotourism is also difficult to overestimate.

**Keywords:** speleotourism, speleotourists, cave ecology, sightseeing sites, sanctuaries, speleotherapy, Konyr-Aulie cave, Akmeshtit-Aulie cave

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### INTRODUCTION

Cave is a special element within a countryside or scenery referred to as "karst" (Rachmawati and Sunkar, 2013). Caves are large open space situated underground (Barbara et al., 1996) which may have been formed due to underground solution of limestone (Oguamanam and Nwankwo, 2015). They were inhabited by humans in ancient times who then left behind ineradicable marks like cave painting and inscription (Itanyi et al., 2013).

Kazakhstan is located in the central part of Eurasia. The natural and climatic conditions of Kazakhstan are largely determined by its location in the very center of the continent. Almost half of the country's territory is occupied by deserts and semi-deserts, and a quarter of the territory is a steppe zone. High-altitude areas cover about 10%. The highest east of

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\* Corresponding author

the country, Khan Tengri (6995 m), rises in the Tien-Shan mountains in southeastern Kazakhstan. The presence of such high peaks indicates the relatively recent appearance of this mountain system. Indeed, the upward trend towards destruction in the Neogene continues to this day. This is confirmed by tectonic fluctuations (earthquakes) of the earth's crust. On the border between Kazakhstan and China, in the southeast stretches a giant mountain range - Zhetysu Alatau, the peaks of which are covered with glaciers. In the east there is an ancient mountain system - the Altai Mountains.

The land of Kazakhstan occupies vast expanses, therefore it borders on zones that differ greatly in their climatic conditions: in the north – with the West Siberian lowland, in the south – with Central Asia. Under the influence of cold and warm air masses, the sharply continental climate of Kazakhstan has been formed, characterized by hot summers, cold winters, significant seasonal and daily temperature fluctuations and uneven precipitation distribution.

The hydrography of Kazakhstan is represented by numerous rivers and lakes. The number of lakes in Kazakhstan includes the Aral Sea, which in the near future ranks third among the largest lakes in the world. However, due to climate change and human economic activity, the number of waterways replenishing the Aral Sea with water has sharply decreased. The Shu, Sarysu, and Talas rivers no longer reach the sea, and the volumes coming from the Syrdarya and Amudarya have decreased. Among the largest rivers in Kazakhstan, one can single out the Irtysh, Tobol, Yesil, Ural, Syrdarya, Shu, etc. (Vilesov, 2009). By the nature of the earth's surface, the territory of Kazakhstan is divided into two parts: mountainous and low-mountainous territories in the east and south-east of the country and plains occupying the rest of the land. The modern relief of Kazakhstan is the result of a long history of development, in which the climate and tectonic regime have repeatedly changed. In the territory of Kazakhstan, it is impossible to find a landscape that has not been influenced by human activities to some extent. Therefore, one of the main challenges in preserving natural landscapes untouched by human hands is the study of geographical names. It covers a range of social and political issues (Rose-Redwood, 2011) as well as toponymy in a wide range of physical geography (Wendt, 2017).

Caves on the territory of Kazakhstan are unevenly distributed (Figure 1, 2). Many of them are typical for mountainous areas characterized by high tectonic activity, a thick layer and cracks of rocks, a deep section of the earth's surface, creating favorable conditions for the intensive course of karst processes. On the plains, karst forms most often refer to river valleys and areas where tectonic faults are observed, where due to the presence of layers of loose formations and a high degree of fragmentation of carbonate and halogen deposits, a deeper immersion of surface waters into the karst massif occurs, i.e. infiltration. This determines the formation of underground cavities, which sometimes reach significant sizes (Saparov, 2024).

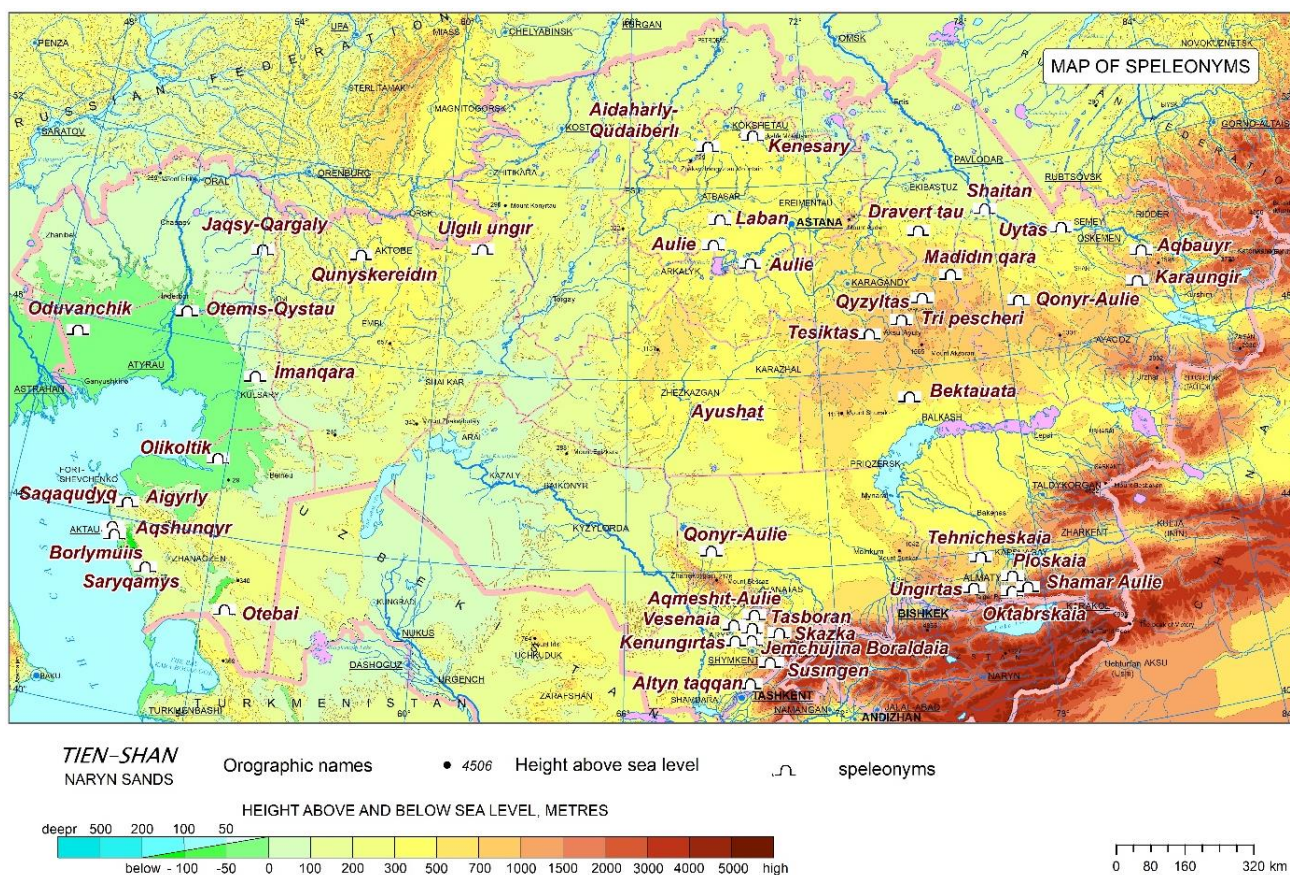


Figure 1. Map of speleonyms of the Republic of Kazakhstan (Source: own study)

## MATERIALS AND METHODS

One of the first works of man, in which his knowledge of caves is systematized, was published by J. Gaffarel in 1654. In his book *The Underworld*, he divided caves into 5 groups: divine, human, animal, natural and artificial. The Jesuit A.



Kircher in his work (1664) stated his opinion about the water cycle on Earth. According to him, seawater seeping into caves (such a phenomenon is actually observed on the Greek island of Kefalia) penetrates into the depths of the Earth, heats up and evaporates from its internal heat and rises to the tops of mountains, where they concentrate and give rise to springs and rivers. In the XVII century, other works on caves were published: I. Valvasor in 1689 described the underground river Shkotsian (Slovenia). By the end of this century, the first descriptions of caves appeared in England, France, and Austria-Hungary.

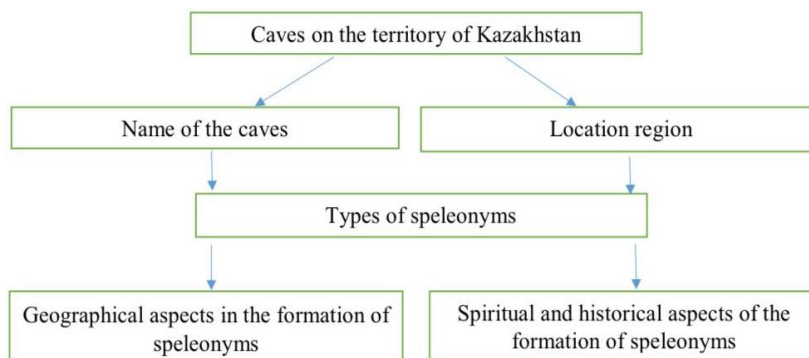


Figure 2. Block diagram of the research methodology from the point of view of the location of caves on the territory of the Republic of Kazakhstan (Source: own study)

The 18<sup>th</sup> century was marked by the beginning of expeditions aimed at exploring remote caves. In May 1748, mathematician I. Nagel led attempts to descend into the Matsocha pit (Moravia), which did not exist at that time. Modern theoretical concepts are summarized in the work of Sisto de la font "Miracles of Nature" (1788). He believed that underground cavities are formed «mainly through mountains spewing torches», and communities in caves are «a kind of underground garden». Back in 1720, V.N. Tatishchev visited the suburb of Kungur, where he showed that the caves are the result of "crushing" (dissolution) and collapse of rocks. In 1732, I. Gmelin explored the Kungur cave and left a drawing of it (Klimchuk et al., 2007). M.V. Lomonosov contributed to the formation of knowledge about the underworld. He proved that caves are the result of physicochemical creation, explaining the formation of "scale" on the walls of caves as the release of calcite from an aqueous solution, offering the Russian equivalents of the latin terms "stalactite" and "stalagmite" ("upper drop" and "lower drop"), explained the movement of air underground and the causes of ice formation in caves. The works of such scientists as I.I. Lepekhin, N.P. Rychkov, P.S. Pallas provide information about numerous caves in the Volga region (Bornukov), in the Urals (Divya, Kapova), in the Caucasus (Failure), in the Crimea (Bolshoy Buzluk), in Altai (Charysh).

In the 19<sup>th</sup> century, cave discoveries and explorations continued in Europe. In the cave of Padriciano (Italy) in 1839, the group of M. Lind sank to a depth of 226 m, and in the Trebich abyss - to a depth of 329 m. Caves are also actively explored in Russia: Kungur in the Urals, Verteba in Ukraine, Kizil-Koba in the Crimea, Gumsкая and Sakinule in the Caucasus, Balagana near Angara, etc. Large caves have been discovered in North America (Friar, Wind, Organ, etc.). Interest in caves is growing among geologists and mineralogists, archaeologists and biologists, hydrologists and meteorologists. The construction of the adjacent parts of the caves (Postojna, Velskaya, Demyanovskaya, Kungurskaya, Mamontova, etc.) begins.

The second half of the 20<sup>th</sup> century was a period of great speleological discoveries. An important role in this was played by the development and improvement of technical means, techniques for overcoming various obstacles, means of communication and life support necessary during multilateral expeditions. Organizational achievements also contributed: more than a hundred countries created speleological unions and associations, in the period from 1953-1997 12 international speleological congresses were held, and in 1965 the International Union of Speleologists was organized (Klimchuk et al., 2007).

The theoretical basis for studying the origin of cave names was the work of such scientists as E.L. Berezovich, S.P. Vasilyeva, G.V. Kolshansky, V.I. Postovalov on toponymy and the linguistic picture of the world (Zhilina, 2011).

In the course of the work, the following *research methods* were used: retrospective analysis - analysis of data from researchers who contributed to the study of speleonyms; geographical image - description of the physical and geographical features of caves and determination of their reflection in speleonyms; historical analysis - discussion of the history of the formation of cave names; cartographic method and GIS - demonstration of the distribution of caves on the land of Kazakhstan and the patterns of their distribution are determined by toponymic areas; linguistic and etymological method - explanation of the formation and meaning of cave names; the statistical method is the processing of quantitative indicators.

## RESULTS AND DISCUSSION

Many people see tourism as travelling, relaxing, getting new experiences and having a good time. However, considering it from a different perspective, tourism can be developed and be related to other things (Koshim et al., 2019). *Speleotourism* means travelling to caves. Along with this term, the term caving is currently used. Caving is an extreme sport that means crossing caves. Depending on the complexity, speleotourism is divided into sightseeing, amateur and sports.

Sports speleotourism involves passing technically difficult caves that require special professional training. The complexity of underground routes is due to the wide variety of terrain in caves (depressions, wells, dumps, narrow crevices, underground rivers and lakes, bottlenecks, siphons), lack of lighting, low humidity (sometimes reaches 100%), a high degree of autonomy during the expedition (the presence of narrow underground camps in the case). In most cases, cave

travel also requires the skills of hiking, rock climbing, scuba diving. Sports speleotourism is usually carried out in combination with scientific research of caves or the creation of a scheme of underground passages. Speleotourism is a type of extreme tourism using various special equipment (scuba gear, carabiner, rope, hook, ladder, personal insurance systems, etc.). The discovery of new speleotouristic routes is accompanied by cave exploration, that is, speleology (Abdullina, 2019).

Sports speleotourism involves crossing technically difficult caves that require special professional training. The complexity of underground routes is explained by the variety of terrain in caves (cavities, wells, embankments, narrow burrows, underground rivers and lakes, bottlenecks, siphons), lack of light, low temperatures with high humidity (sometimes reaching 100%), a high degree of autonomy during the expedition (in the case of narrow underground camps). In most cases, hiking in the cave also requires the skills of hiking, mountaineering, scuba diving. Sports speleotourism is usually carried out in combination with the scientific study of caves or the creation of a scheme of underground passages. Speleotourism is a type of extreme tourism using various special equipment (scuba diving, carabiner, rope, hook, ladder, personal insurance systems, etc.). The discovery of new speleotouristic routes is accompanied by the study of caves, that is, speleology (Saparov, 2023). There are special requirements for the order of speleotourists, their behavior inside the cave, and their attitude to the underground nature. This is due to the special fragility of the cave site, its ecosystem, various fallow formations, mineral and ice crystals. For example, a broken stalactite is restored only after hundreds of years. During the exploration of the caves, numerous mineral formations were destroyed (Abdullin, 2012).

Today, there are several directions in speleotourism: commercial, sports and original. Uncomplicated caves, partially or fully equipped, are used for commercial purposes. Sports routes are built depending on the level of training of the group. Self-guided cave visits are group routes run under the guidance of an enterprising lover of underground nature.

The equipment of caves has been and, it seems, remains one of the most important issues of speleotourism. Unfortunately, vandals, unprofessional tourists, and sometimes even the locals themselves cause damage to both nature and the treasury of the state. Equipment in caves can be broken, partially or completely damaged, or even stolen. As a result of such actions, due to the usual lack of tourist ethics and understanding, the budget of the state suffers and losses significant amount of money. Perhaps that is why the state does not want to invest too much money in exploring caves, building new routes and new equipment. The preservation of the ecology of caves remains one of the priority issues of modern speleology (Kladnik, 2020). There are many cases when a person destroys objects with his own hands. In general, the condition of many caves is deteriorating. Modern paintings and inscriptions appear on the walls, sometimes even inscriptions of different colors, the available shapes are broken, various debris, glass, bottles, etc. are piled up. Thus, despite its socio-humanitarian orientation, tourism is changing the ecology of caves.

The reduction of the consequences of the tourism industry for the environment is regulated at the state and international levels along with the fulfillment of the following conditions: environmental education; limitation of the tourist and recreational load on natural resources; legal regulation; economic regulation; tax regulation, etc (Safarov, 2020).

The main principles of a special type of discipline in the speleological passage of caves should be: careful and effective use of caves; regulation of the consumption of tourist resources based on monitoring the tourist load on the territory of caves; consistency of international cooperation and actions to protect the ecology of caves and the use of these natural objects; reasonableness of nature management; environmental and economic efficiency in the study and passage of caves scientifically based harmonization of interests; compliance with environmental requirements of legislation, etc.

Caves are sightseeing objects of great cognitive value and interest. Colorful lighting can make some parts of the caves even more impressive. The sacred geography of Kazakhstan is of great importance for tourism. Because tourists from all over the world come to see these shrines. And the collection of several thousand tourists to the country will bring income to the world budget. That is why this project is of great importance (Figure 3) (Saparov, 2018).

In many countries of the world, natural caves and mine workings are also used for therapeutic purposes (speleotherapy). Fresh air, in most cases air ionized by radioactive carbon isotopes, stable temperature and other factors make it possible to successfully treat respiratory diseases, arthritis, rheumatism, hypertension, gout and some skin diseases. The prospects for the use of underground thermal karst waters are also expanding widely.



a) Konyr-Aulie (Abay region)

b) Akbaur (East Kazakhstan region)

c) Akmeshit-Aulie (Turkestan region)

Figure 3. Caves with high tourist potential in Kazakhstan (Source: Tlebaldina, 2023)

From this point of view, one of the most promising caves in Kazakhstan is the Konyr–Aulie cave in Eastern Kazakhstan. It has become a place of pilgrimage not only for locals, but also for tourists. Now the cave has been



completely cleaned, and the roof has been cleared of soot, which has been accumulating for a long time (Abdikhalikova, 2020). In previous years, there were cases when people used torches with candles when they entered the cave, leaving behind debris. For tourists, a special structure with a roof was built in front of the entrance to the cave. Wooden ladders and gazebos for relaxing on the road were also installed in front of it and inside the cave of a winding rocky mountain and on the shore of an underground lake (Figure 4). The Konyr-Aulie cave is considered a sacred place where Abai Kunanbayev and Mukhtar Auezov visited. Systematic work is underway in East Kazakhstan under the Rukhani Zhangyru program (Beketova, 2019). It is assumed that when these works are completed, even more people will come to Konyr-Auliye. In recent years, electric lighting has been installed in the cave, which is based on a diesel-electric engine that generates electricity.



Figure 4. Attempts to equip the Konyr-Aulie cave as a tourist object (Source: Tlebalina, 2023)

Although today the cave has become a place of pilgrimage, the entrance to the cave has its own order, people who enter the cave and the lake must enter with good will, do not say bad words, women enter with their heads covered – all this should be explained to visitors. However, on the other hand, neither guides nor tourists ask to build a good highway here: according to their calculations, it is not easy to get to the sanctuary, both tourists and pilgrims need to overcome obstacles and consciously think about the true meaning of life, the values of life (Berdenov, 2021). At the same time, this region is in dynamic development. A hotel, cafe and other facilities are being built next to the cave.

Conditions have been created here for tourists and pilgrims who come both in groups and in person. However, sometimes haste in such cases can lead to irreversible mistakes. The need to improve such places and protect them from vandals and other "lovers of antiquity" is inevitable, but it must be done with the participation of specialists. Thus, Abai's inscription on the cave wall was erased with his own hands, as the domes and walls of the cave were roughly cleaned with sandpaper. M. Auezov wrote about this in his novel, which is called "The Path of Abay". At the same time, a large burial complex located near the entrance to the cave, covering the time period from the Bronze Age to the Dzungarian invasion, may also be destroyed. To do this, it is necessary to carefully study the cave and its surroundings with the participation of specialists speleologists, archaeologists, divers, etc., who provide reliable information about the history of these places. Not everyone has the opportunity to come here, so it can be demonstrated with the help of modern technology. To do this, you can make a video with a full story or take panoramic pictures and post them on the internet.

The cave of Akmeshit-Aulie has also become one of the most famous speleological monuments. After tour operators were able to accept Chinese tourists on an ADS visa, it turned out that most of the inhabitants of the Middle Kingdom choose the Turkestan region as a tourist destination. During the work with focus groups, during the month of the Expo, 19 groups from China visited this cave, which is more than 1,000 people, and this is only the data of one tour operator. Every year, 70 thousand tourists visit the Akmeshit-Aulie cave. Tiles and ladders were built for tourists on the way to the cave.

The sports development of the Aulie cave began by local speleologists in 1965 (Korablev, 2020). It is interesting to come here in May, when the real summer begins here. According to preliminary data from the nature conservation center, about 100,000 people descend into the cave every year. Many of them are Kazakhstanis. Residents of Russia, Uzbekistan, and Kyrgyzstan are also interested. Paths are marked in the cave, trestles for pilgrims are installed.

Ustyurt also has many unique karst formations. However, they do not have fully equipped highways, respectively, there is no service either. Traffic in all directions was carried out only on numerous dirt roads. Safe driving is possible only in a car that does not specifically choose the road (Yeginbayeva et al., 2016). A traveler walking along the roads of Ustyurt can only rely on himself, he cannot wait for any help. There are only 2-3 routes available for tourists leading to the most accessible sites in Ustyurt. The rest are Terra Incognita for discoverers and explorers. It will be difficult to get here.

Despite the large number of resources for speleotourism, that is, caves, it is difficult to find developed centers of speleotourism in Kazakhstan. However, the development of this industry would be of great economic importance. This direction will allow you to discover and explore unexplored caves, as well as create new jobs. Speleotourism, which is a branch of sports tourism, increases the demand for young people with extreme inclinations (Suiundukov, 2010).

In addition, the location of the Karatau Mountains along the "Great Silk Road" can become the basis for the development of tourism. We have the opportunity to develop speleotourism in Kazygurt and strengthen competition by

creating highly effective advertising of caves in Kazakhstan, creating geographical maps, photographs of good places, videos related to legends, chronicles, creating booklets and brochures, and shows. At the same time, the era of nomads, the revival of culture, the continuity of traditions, customs, and the increased interest of foreign tourists.

The caves are of great educational and tourist importance. Therefore, they need to be studied and promoted (Suiundukov, 2010). Thus, there are both positive and negative sides of the use of caves in Kazakhstan as tourist sites, which can be shown using SWOT analysis (Table 1).

Table 1. SWOT analysis of the use of speleonyms as tourist and recreational facilities in Kazakhstan

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>- the presence of many different caves;</li> <li>- most caves are accessible;</li> <li>- a large number of sacred caves can become the basis for the development of pilgrimage tourism;</li> <li>- the presence of caves of varying complexity for sports tourism;</li> <li>- the presence of flood lakes in caves;</li> <li>- provision of state support within the framework of tourism development programs "Sacred Geography of Kazakhstan", "Rukhani Zhangyru", etc.</li> </ul>	<ul style="list-style-type: none"> <li>- most of the caves are poorly explored;</li> <li>- limited anthropogenic load of caves has not been established;</li> <li>- fewer speleologists and specialists in the field of speleotourism;</li> <li>- insufficient development of the tourist infrastructure.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>- the ability to coordinate several types of tourism due to the fact that the caves are located in a picturesque mountainous area;</li> <li>- the possibility of obtaining additional income;</li> <li>- creation of additional jobs;</li> <li>- improvement of cave sites and development of tourism infrastructure;</li> <li>- strengthening the interest of foreign tourists.</li> </ul>	<ul style="list-style-type: none"> <li>- threat of environmental damage;</li> <li>- loss of the unique natural appearance of the caves;</li> <li>- unjustifiability of material and financial investments allocated by the state.</li> </ul>

The current task is to create a Kazakhstan tourism brand, imitating what is there, advertising the beauty of picturesque places. In addition, we must develop domestic tourism, while maintaining existing types of tourist services.

*Speleology* is a young field of study, to which new research objects are constantly being added and which is still developing. Therefore, all caves of a certain territory (karst region, district, etc.) are combined into two unequal groups: known (small part) and newly discovered (most) caves. The names of the former should be preserved in some way, because they are a product of the centuries - old history of the local population; when you give names to the latter, they should be carefully studied, considered and named in compliance with the laws of toponymy.

In most cases, there is a certain geographical, historical or linguistic significance of the existing names of caves, since they are associated with a certain object, historical event or are created by tracing paper from the languages of the peoples who lived here earlier (Kondybai, 2008). Long-known caves will have several names. It is worth collecting literary data on the names of famous caves and talking with local residents. This is because they can know useful information to get through the cave or to restore the features of its use. For example, if they contain the words "holy", "sacred", "mosque", it can be assumed that they were used in ancient times as a place of worship, a place to achieve spirituality.

In the 1960s and 1990s, speleologists from Kazakhstan and the former USSR discovered many new caves. Therefore, after analyzing their names, the following preliminary conclusions can be drawn.

Objects discovered in the early stages of exploring a new area are usually encrypted (letters denote an organization or group, numbers denote length, depth, or sequence of numbers), and numbers usually denote the depth of a well or the length of a cave. Later, the numbers began to repeat themselves, and from 1965 they switched to a different numbering. The first cadastral number is rectangular (the sides are equal to minutes of latitude and longitude), the second one indicates the number of caves inside it. Encrypted names do not make any sense and therefore they necessarily give names to those who stand out (large, beautiful, complex), usually this happens spontaneously, sometimes after discussion and making an appropriate decision. The nomination is guided by various positions (Tables 2, 3), (Figure 2):

- by the old name (usually - its translation);
- with the name of the object near the cave (speleonyms Boraldai, Ulyshur, Tuyuksu, Tuttybulak, Beshoky, Utemis-Kystau);
- depending on the location and number of entrances (speleonyms Biraulyzdy, Oymakauyz, Ushauyz, Ushauyzdy);
- depending on the unusual objects at the entrance ("Katyreki agashi" cave name);
- according to the morphology of the cavity (Palatka, Shatyr, Ploskaya, Tuyyk, Grebnevoy karst massif, Akshankyr, Beluy Proval);
- depending on the microclimate characteristics (Karabauyr);
- depending on the characteristics of formations (Tuzbayyr, Kyzyltas, Aktas, Glinyanaya, Borlymuys, Ashchysai);
- depending on the water content (Susingen);
- according to the acoustic features (Symphony);
- depending on the names of living animals, their bone remains or traces of life (Aigyryly, Zhulandy, Botamoynak);
- by the time of opening (Oktyabrskaya, Vesenniyaya);
- depending on the group's affiliation to the territory;
- depending on the nature of the event (Sluchainaya, Mechta, Skazka);
- as measurements are taken (Kenungirtas, Aypungir, Uytas);

- memorial: in honor of famous geologists, geographers, karst scientists; in honor of great military commanders; cave explorers; cave discoverers; in honor of the fallen speleologists (Dravert, Kurmangazy, Cave of Kuniskerey, Kenesary, Kenenbai, Leninskaya, Nazugum);
- the rest: incomprehensible names; consonant names; abbreviations that are not decrypted.

Table 2. Geographical aspects of the formation of speleonyms

№	Reflection of geographical features in speleonyms	Speleonyms
1	Named speleonyms depending on the types of rocks	Aktas, Akshunkur (Akshukur), Borlymuys, Glinyanaya, Kyzyltas, Tuzbayyr
2	Speleonyms depending on the types of underground cavities	Akshunkur (Akshukur), Belyi Proval, Karaungir (2), Sakakuduk, Tesiktas (2), Ungirtas (2)
3	Names due to their morphometric characteristics	Alipungir, Balaoyyk (Balauyik, Balayuk, Balayek, Buly-Oyyk.), Bir auyzy, Kenungirtas, Ushauyz, Ush auyzdy, Shatyr
4	Speleonyms named due to their morphological features	Oymakauz, Olykoltyk, Palatka (Bolshaya Palatka, Kamennaya Palatka), Ploskaya, Tuyuk, Uytas
5	Speleonyms due to orographic features	Besshoky 1-4 (Bish-Choho), Grebnevoy karst massif, Kenestobe, Karalytobe, Karamaya, Korgansay
6	Speleonyms due to their meteorological characteristics	Akbaur, Karabaur, Tasboran
7	Speleonyms due to hydrological features	Susingen, Tuyuksu
8	Phytospeleonyms	Aktogai, Bestogai, Boralдай karst massif, Zhingyldy
9	Zoospeleonyms	Aigyrlы, Ayushat, Botamoynak, Zhulandy, Kepter-Uya

At the same time, with the addition of the term "ungir" (cave), names are formed (Ungirtas, Alipungir, Zhaltyrungir, Ungir, Zhetyungir, Kosungir, Kenungirtas, Kielyungir, Karaungir, Suluungir, Ulgili ungir). Speleonyms formed by this term form a single lexical-semantic group and, therefore, reflect the specifics of mountain landscapes (Konkashbayev, 1951).

Table 3. Spiritual and historical aspects of the formation of speleonyms

№	Type of speleonym	Definition	Examples
1	Agiospeleonym	The names of caves in the meaning of "holy", "sacred"	Akmeshit-Aulie (Aydahar cave), Akmolda, Aulie (2), Atabek ungir (Aulie-Tas, Aulie-Ata, Amangeldy), Bektauata, Duana-Khoja, Zhylagan-Ata, Imankara, Katirenki Aulie, Kieli ungir, Kishi Aulie, Karlygash-Ata, Konyr-Aulie (3) (Aulietas), Kyzyl Aulie, Malyoshak, Omarata, Plachusaya, Sopybay Aulie, Shakpak-Aulie, Shamar Aulie, Shanyrak Aulie
2	Anthropospeleonym	Cave names related to the human name	Kenenbai, Kenesary, Cave of Kuniskerey, Kurmangazy, Leninskaya, Makpal, Madi's black cave, Nazugum, Utebay, Utemis-Kystau (Utelis-Kotau), Sagyndyk
3	Mythological speleonym	Cave names related to legend stories	Aydaharly-Kudaiberli, Shaitan
4	Chronospeleonym	Speleonyms indicating the time when the name was given	Vesennyaya, Oktyabrskaya
5	Metaphorical speleonym	Cave names that are put in a figurative sense, comparing them with certain objects	Akbaur, Bosaga, Kuvshin mountain cave, Karagan-bosaga, Karachek, Karkara, Syrly

It is obvious that the laws of toponymy are respected in all countries. However, returning to the names of the caves, they should be stored and used correctly, just like the caves themselves. Because this is our history, our linguistic monument. And history, as we all know, in general, cave speleology is a young field of science, both in the world and in the country, and given that it began to develop only from the second half of the twentieth century, data on caves are currently only beginning to accumulate in the complex (Niyazova, 2022). And although the collection of data about the caves themselves is available to science, it is currently very difficult to determine and study the names of caves, that is, the origin, etymology, and form of word formation of speleonyms. This is because knowledge about the names of caves in the Kazakh land has been passed down from generation to generation mainly orally. As a result, a lot of data was lost. Since their recovery depends on the human factor, there are neither real nor evidence-based possibilities.

Secondly, in our opinion, many caves in Kazakhstan have not yet been discovered. Therefore, we believe that as Kazakhstan's speleology develops, it is possible to start naming newly emerged or already existing caves and competently nominate them, taking into account toponymy and linguistic patterns.

## CONCLUSION

Nowadays, people reveal many aspects of nature and creation, forming a new view of nature. The development of science and technology gives the human child many opportunities and significantly expands the boundaries of human consciousness. This also applies to caves, which are unique natural complexes full of many mysteries and, consequently, various mystical, mythological characteristics. Of course, caves have been known to man since their appearance, they were hidden. However, since they have no information about their origin, structure and creation, they were interpreted religiously or mystically. Now it is necessary to conduct a scientific study of information about caves, it becomes possible to reveal their

significance, and the search for ecological ways to use caves for the benefit of mankind is underway. One of these actions is the results of the proposed scientific work. In the course of the research work, the following conclusions were made:

1. Caves are unique objects that occupy the highest public, mineralogical, paleontological, zoological, botanical, archaeological, medical and cultural historical and recreational areas.

According to the current global trend in relation, caves are considered as a special type of coordinated natural resources with high scientific and cultural significance, requiring a special approach to protection and use. Conducted an etymological analysis of speleonyms, distributed on the territory of Kazakhstan, the Kazakh people on the protection of their priests. It is represented by a number of speleonyms, which meet the words "aulie", "ata", "khoja", "kieli", "zheti", "mola".

2. The science of caves is one of the relatively new ones for Kazakhstan. Even the features of the names of the caves have been little studied. However, recently new caves of interest have appeared in Kazakhstan. Currently, there are about 140 caves in Kazakhstan. However, it is obvious that this indicator will still change and replenish. Therefore, the nomination process must be carried out with literacy and thoroughness if newly discovered caves are being restored or the name is assigned anew. It is necessary to take appropriate measures to preserve these unique natural complexes in their original form for future generations.

3. Nature management in karst territories strongly depends on karst-speleological research and scientific justification. In most developed countries, modern world experience shows that all economic activities in areas with developed karst should be planned and implemented only with a clear forecast of direct and reverse impacts in the karst-object system. In this case, the information about the caves becomes crucial. The scientific significance of the caves of Kazakhstan is confirmed by speleological research over the past 30 years. They played an important role in solving a number of major problems of the regional hydrogeological and engineering geology of Kazakhstan and in the development of a number of new areas of theoretical karst and speleology. However, this has not been fully realized, as innovative global research in the field of paleoclimatic reconstruction, hydrogeology and karst speleogenesis is emerging.

4. Despite the fact that the development of tourism for Kazakhstan is one of the priorities, especially in specially protected areas, caves are currently underutilized as tourist and excursion facilities and there are contradictions in the use of caves. Despite the high potential of Kazakhstan, only a few caves are used for tourist purposes. In another row, attempts are being made to conduct excursions. On the one hand, the priority of tourism development involves the use of these unique but very sensitive ecosystems. Therefore, environmental management should be carried out not only by commercial structures, tourist routes should be drawn up with the participation of speleologists.

5. The presented research paper summarizes and examines 134 names of caves out of 140 caves in Kazakhstan. Certain patterns in the formation of these speleonyms have been revealed: most caves are named for orographic and morphological features (shape, size, number, depth, presence of specific orographic forms). They occupy 19,8% (24 names) of the total number of speleonyms considered; some of the caves are hagionyms, that is, names associated with giving caves a sacred character. They occupy 19 % (23 names) of the total number of speleonyms considered; in third place are anthroponyms (12 % - 12 names) and speleonyms of a mythological nature (8 % - 10 names); other speleonyms include names related to the types of forming rocks, names of a metaphorical nature, zoo - and phytospeleonyms, chronospeleonyms, meteorological and hydrological, romantic speleonyms related to events.

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## WATER RESILIENCE UNDER CLIMATE CHANGE IN AZERBAIJAN

Rashail ISMAYILOV 

Azerbaijan State Water Resources Agency, Baku Engineering University, Khirdalan, Baku, Azerbaijan, e-mail: raismayilov1@beu.edu.az

Firuz SULEYMANOV 

Department of Geographical and Historical Studies, University of Eastern Finland, Joensuu, Finland, e-mail: firuzsul@uef.fi

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**Abstract:** Water resilience under climate change in Azerbaijan is increasingly vital as rising temperatures and erratic precipitation patterns strain water resources. Addressing these challenges requires a comprehensive strategy that integrates adaptive water management practices and stakeholder collaboration to ensure sustainable water access and mitigate the impacts of climate variability. The aim of this article is to analyze the challenges posed by climate change on water resources in Azerbaijan and propose strategies to enhance water resilience. The paper discusses how effective are existing water conservation policy in Azerbaijan, are and what effective solutions can be proposed to enhance water resilience in the face of scarcity under climate change. The research employs both quantitative and qualitative methodologies to comprehensively address various dimensions of water scarcity. Quantitative methods, including hydrological modelling and statistical assessments, enable an exploration of the tangible aspects of water availability and distribution, aiding in our understanding of the physical dynamics involved. In terms of ensuring water resilience in Azerbaijan during the analysis of changes in the volume of water taken from natural water sources was observed a decrease in the volume of water taken from surface water sources, an increase in the volume of water taken from groundwater sources. If the amount of extracting from water sources continues at the current rate, it is projected to reach 13.8 km<sup>3</sup> in 2030, 14.8 km<sup>3</sup> in 2040, and 15.8 km<sup>3</sup> in 2050 in Azerbaijan.

**Keywords:** water resilience, climate change, water management, water scarcity, water, SDG 6: Clean water and sanitation, Azerbaijan

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### INTRODUCTION

Under the conditions of population growth and development of the economy all over the world, the usage of water resources has increased rapidly and water provision has worsened sharply in most regions and countries. As a result of climate change and global warming, a tendency to decrease available water resources is observed. Aggravation of water problems directly affects food supply and ecological safety in certain regions. Water difficulties are growing more serious (Rockström et al., 2014). In major groundwater-dependent regions, the resource is being drained (Döll et al., 2012); pollution of water continues to deteriorate; more rivers are being depleted, and more river basins are closing (Falkenmark and Molden, 2008). Humans are an integral component of the natural system, and the water supply for human needs is inextricably linked to dynamic changes in the earth's biophysical processes (Falkenmark and Folke, 2010; Pahl-Wostl et al., 2012). Sakal (2022) investigates shared water resources in the South Caucasus and the impact of Turkey on them. Ahmadov et al. (2021) discuss government investments to improve of irrigation network and main infrastructure matters of climate change adaptation in Azerbaijani agriculture. Rovshan Abbasov describes and analyzes water resources in Azerbaijan from various lenses (Abbasov and Mahmudov, 2009a; 2009b; 2012).

Campana et al. (2012) discuss hydropolitics in the Kura-Aras river basin. Hasanova and Imanov (2010) highlight flood issues in governance in Azerbaijan. Barabadze (2003) investigates water governance in South Caucasus. The existing literature on water issues and the nexus with climate change in Azerbaijan is noticeably short, indicating a major gap in understanding and solving the country's particular concerns. The complicated dynamics of the Azerbaijani setting, characterized by distinct geographical, climatic, and socioeconomic elements, necessitate a targeted examination that the present body of research does not give. This study seeks to address that hole by diving into the nuances of water resilience in Azerbaijan in the face of climate change. It aims to close the literature gap by integrating current information, including international frameworks, and providing context-specific insights into the vulnerabilities and adaptive capacity of water systems.

Azerbaijan, a country at the crossroads of Europe and Asia, is facing a rising issue that crosses geographical borders: water shortage. The complex interaction of climatic, hydrological, and human variables has put a significant strain on the country's water supplies. Rapid urbanization, agricultural needs, and industrial growth put further strain on the fragile equilibrium, making water sources even more vulnerable. This water scarcity situation has far-reaching repercussions, hurting not just agricultural production and food security, but also threatening ecosystems and biodiversity. At present, water has become one of the decisive factors for the sustainable development of the Azerbaijan Republic (Imanov et al., 2015). As Azerbaijan navigates this complicated hydrological terrain, understanding the underlying causes and creating

\* Corresponding author

adaptive methods is critical for long-term water resource management. In addition to the natural and human elements that contribute to Azerbaijan's water shortage, the geopolitical backdrop complicates matters further. The country has multiple transboundary rivers with neighbouring countries, and water management is frequently impacted by regional dynamics and collaboration. As global demand for water resources rises, effective collaboration becomes increasingly important for long-term water management. Furthermore, the Caspian Sea, an important water source for Azerbaijan, confronts environmental deterioration and variable water levels, limiting the country's availability of freshwater. The socioeconomic consequences of water shortage are severe, with rural areas and disadvantaged groups frequently suffering the burden of limited water supply.

In light of climate change, Azerbaijan's water landscape is changing, posing new challenges to water resilience. Rising temperatures and shifting precipitation regimes are substantial dangers to the country's water supplies. Irregular precipitation patterns, worsened by climate change, have caused fluctuations in water availability, affecting both surface water bodies and subsurface aquifers. Changes in hydrological cycles and precipitation patterns cause more frequent and long-lasting droughts, worsening water shortage concerns. Furthermore, the reliance on conventional water supplies is under strain, affecting both urban and rural areas. To address these issues, there is an increasing demand for comprehensive water management systems that include climate resilience measures. This involves adopting sustainable water practices, building resilient infrastructure, and enacting rules that encourage water saving. By increasing water resilience, Azerbaijan can better manage the effects of climate change on its water resources, guaranteeing a sustainable and secure water future for its people. The paper examines Azerbaijan's water management systems' adaptive ability and resilience in the face of rising shortage issues using Resilience Theory as a framework. The study highlights the need for resilience in dealing with changes to water availability and quality. The study dives into the complex interaction of social, ecological, and institutional aspects, examining how these elements influence water management systems' ability to absorb shocks, adapt to changing conditions, and retain functionality. Through this resilience lens, the research strives not only to identify vulnerabilities but also to suggest strategies and policy recommendations that strengthen Azerbaijan's water sector's adaptive ability, assuring its resilience in the face of an unpredictable hydrologic future.

## RESILIENCE THEORY AND MIXED METHODS

Resilience in theory and practice throughout any field indicates a move toward more integrative ways to deal with the Anthropocene's more complex and unpredictable environment (Saikia and Jiménez, 2023). Over time, research on this idea has grown considerably, as has the desire for practical resilience assistance in a variety of sectors, including ecological management, adaptation to climate change, development, and catastrophe risk reduction (Sellberg et al., 2018). Adaptive governance has been clearly stated in the literature as the appropriate strategy to manage uncertainty and complexity in social-ecological systems, particularly water networks (Akamani, 2016; Berkes, 2017). Cumming (2011) shows that proactive governance of complicated structures such as river basins necessitates the inclusion of social, ecological, and economic factors in issue formulation and resolution. According to Rockström et al. (2014), the control of water resources is central to larger attempts to attain sustainability and socio-ecological resilience.

Resilience theory is important in the context of water shortage and forecasting, as it provides a useful framework for understanding and managing the issues connected with changing hydrological circumstances. In the context of water shortage, resilience theory highlights systems' ability to absorb shocks, adapt to changing conditions, and retain functionality. In the context of limited water supplies and rising demand, recognizing the resilience of water management systems is critical. Resilience theory enables the identification of vulnerabilities in these systems and gives insights into their adaptive ability, assisting stakeholders in developing strategies to improve resilience and guarantee sustainable water usage.

As discussed in the study, resilience theory emerges as a useful lens for analyzing and addressing the complex difficulties of water shortage in Azerbaijan. This theoretical approach is especially significant in light of the region's dynamic and varied water security situation. Resilience theory enables a comprehensive assessment of how Azerbaijan's water management systems react to disturbances, adapt to changing conditions, and recover from stressors. By highlighting the interconnection of social, ecological, and institutional factors, resilience theory allows for a more comprehensive understanding of the water sector's vulnerabilities. The adaptive capability of Azerbaijan's water systems, which is critical for negotiating the intricacies of climatic variability and anthropogenic stresses, becomes a focus point. Within this framework, the research aims not only to identify vulnerabilities but also to offer methods and policies that improve the water sector's adaptive ability, increasing resilience and assuring the long-term management of water resources in the face of uncertainty.

Peter Gleick's ideas, particularly those about water resilience and climate change, provide a useful framework for understanding and managing water issues in Azerbaijan (Gleick, 1993; 1996; 2009; 2014). Gleick calls for a holistic strategy that considers both the quantity and quality of water resources, recognizing the intricate linkages between climate trends and hydrological processes. This approach is consistent with the complex and changing water dynamics of Azerbaijan, where climate change is impacting precipitation patterns, river flows, and total water availability. Gleick's emphasis on studying the effects of climate change on water supplies is especially relevant in Azerbaijan, where changing climatic conditions threaten both urban and rural water systems. In a country where water shortage is becoming a major problem, comprehensive solutions that balance conflicting needs, such as agriculture, industry, and home consumption, are essential. Gleick's paradigm encourages the creation of adaptive solutions that take into account the interconnection of different water users, with the goal of achieving long-term sustainability.

Gleick's work frequently focuses on the physical and environmental components of water, but greater attention may be placed on the social factors. Integrating social scientific approaches might improve our knowledge of the human aspects of water consumption, governance, and equity. Water concerns sometimes necessitate transdisciplinary methods.

Gleick's work might benefit from more collaboration with specialists from many fields, such as ecology, economics, sociology, and political science, to address the complex and interwoven nature of water issues.

Elinor Ostrom's seminal work (1994) on common-pool resource management provides a significant theoretical framework that is directly applicable to the setting of water resilience in Azerbaijan under climate change. Ostrom's (1990) focus on the need for local government and community involvement is consistent with the need for inclusive and participatory ways to tackle water issues. In Azerbaijan, where water resources are inextricably related to rural populations' lives, Ostrom's theories promote the formation of community-based water management projects. Ostrom's principles also emphasize the significance of adaptive governance, which enables communities to customize their reactions to changing climatological conditions (Dietz et al., 2003). This is consistent with the dynamic nature of water resilience under climate change, in which flexibility and responsiveness are critical. Ostrom's research was done in contexts that were either steady or slowly changing. Her concept may require additional investigation into its relevance and adaptability to quickly changing situations, such as those caused by climate change. The role of gender in resource management is an important consideration that Ostrom's theory does not directly address. Investigating how gender dynamics impact collective action and resource governance might lead to a more complete understanding. The research approach used in the paper is carefully designed to match the study's intricacies. A combination of quantitative and qualitative research approaches is used to represent the multiple aspects of water shortage. Quantitative analysis, such as hydrological modelling and statistical evaluations, helps us understand the physical elements of water availability and distribution.

These approaches are useful in determining the effects of climate change on precipitation patterns, river flows, and aquifer levels. Qualitative approaches, such as observations, provide insights into the socioeconomic and institutional issues that influence water management. This dual method enables a comprehensive interpretation of data, allowing for a more nuanced understanding of the interactions between environmental, geopolitical, and sociological phenomena. The integrated character of the approaches used in this study is critical for informing policy recommendations, encouraging sustainable practices, and strengthening Azerbaijan's water resilience in the face of a changing hydrological landscape.

### Unraveling the Intricacies of Water Scarcity

Water scarcity and inadequate water supply and sanitation services adversely affect food security and human well-being in many countries around the world. Drought leads to hunger and poor living conditions in many poor countries. It is no coincidence that 6 of the 17 goals of sustainable development are dedicated to clean water and sanitation<sup>1</sup>. It is noted that by 2050, one in four people living in the countries of the world will be exposed to a chronic or recurring shortage of fresh water. Taking into account all these risks, one of the important factors is the assessment of the priority directions of ensuring water security in Azerbaijan. Taking into account all these risks, one of the significant factors is the assessment of the priority directions of ensuring water security in Azerbaijan. The convergence of population expansion and economic development, notably in agricultural operations, has greatly increased Azerbaijan's need for water, resulting in an alarming rise in water shortage. As the population grows and urbanizes, the need for water for household, industrial, and agricultural reasons increases. Agriculture, a cornerstone of Azerbaijan's economy, is critical in this circumstance. Economic development frequently leads to industrial expansion, which increases water use. The combination of these causes puts enormous strain on water resources, resulting in over-extraction from rivers and aquifers, depletion of water tables, and degradation of water quality (Ahmadzadeh and Hashimov, 2006). The lack of water resources, global climate change and the decrease of water resources coming from neighboring countries, on the other hand, the rapid growth of the population, the development of agriculture, and the increase in the demand for water as a result of the expansion of agricultural areas, irrigation and drinking water supply networks, require the implementation of measures to ensure the water security of the republic (Imanov and Alakbarov, 2017; İsmayılov, 2017).

The State Commission established by the Decree of the President of the Republic of Azerbaijan dated April 15, 2020, operates in order to ensure the efficient use of water resources, improve water management and coordinate activities in this area<sup>2</sup>. Currently, the average annual water deficit in Azerbaijan is 3.7 km<sup>3</sup>, and in low-water years it is 4.75 km<sup>3</sup> (Ahmadzadeh and Hashimov, 2006). If we take into account the forced release of water from rivers for environmental, energy and other purposes, the quantitative indicators of water shortage will have an unimaginable value. So that 60-70% of the water taken from Azerbaijan's water sources is used for irrigation purposes, 20-25% for production needs, and the rest is used for domestic water supply (Ahmadzadeh, 2003; Imanov and Alakbarov, 2017; İsmayılov, 2017).

The military conflict between Armenia and Azerbaijan has had serious and negative consequences for water resilience in Azerbaijan, aggravating an already difficult situation in the area. The fighting, notably in the Nagorno-Karabakh area, has affected water infrastructure, resulting in damage to reservoirs, canals, and other critical water-related assets. This physical degradation has had a direct influence on the availability and distribution of water resources, limiting the country's capacity to manage water properly. The water resources in Karabakh, comprising rivers, lakes, and groundwater, are estimated to be over 780 million cubic meters, accounting for around 20% of Azerbaijan's local water resources (Ahmadi et al., 2022). Furthermore, the environmental consequences of the war, including as pollution and ecosystem deterioration, put further strain on water quality, posing threats to both human and ecological health. The conflict has also hampered collaboration on transboundary water management in the South Caucasus. The region's shared water resources require coordinated and cooperative methods, yet political conflicts have hampered effective collaboration between Armenia and

<sup>1</sup> Water <https://www.worldbank.org/en/topic/water/overview> (accessed on 24 January 2024)

<sup>2</sup> Su ehtiyatlarından səmərəli istifadənin təmin edilməsi ilə bağlı tədbirlər haqqında Azərbaycan Respublikası Prezidentinin Sərəncamı <https://president.az/az/articles/view/36558> (accessed on 24 January 2024)

Azerbaijan. As the violence continues, the prospects for comprehensive transboundary water management remain bleak, exacerbating difficulties in addressing water resilience and sustainability in the South Caucasus. Resolving the armed conflict and encouraging regional collaboration are critical precondition for establishing effective and inclusive policies to improve water resilience and solve the complex water-related concerns in Azerbaijan and the wider South Caucasus area.

Table 1. Water resources with 4 subdivisions, water resources km<sup>3</sup>, water withdrawals with km<sup>3</sup> and finally total amount of them (Ismayilov, 2021)

Water resources		Water resources, km <sup>3</sup>	Water withdrawals from sources, km <sup>3</sup>
Surface water	Local water resources	10.6	10.2
	Transboundary	20.3	
Groundwater		4.38	1.40
Total		35.3	11.6

The highest number of water resources is transboundary and the major water withdrawals from surface water (Table 1). While the local river water resources are on average 10.6 km<sup>3</sup>, in recent years 11.5 km<sup>3</sup> of water is used annually. Unfortunately, approximately 70% (20.3 km<sup>3</sup>) of our river water resources are formed in the territory of neighboring countries and enter the territory of Azerbaijan through transboundary rivers (Rustamov and Gashgay, 1989). As a whole, the Republic of Azerbaijan is considered a country with limited water resources. The amount of water per person is 3253 m<sup>3</sup>/year. If we consider only local water resources, then this figure will be equal to 1051 m<sup>3</sup>/year (Ismayilov, 2021). According to the forecast of the World Resources Institute, in 2025, Azerbaijan will be among the countries with the lowest local water resources per person (972 m<sup>3</sup>/year). According to the researchers conducted in recent years, annual flow of transboundary and local rivers has decreased. Over the last 20 years, the annual flow at the closing section (Salyan) of the Kura River, that is not only the largest transboundary river in Azerbaijan, but also in the entire South Caucasus region, has decreased by 10-15% and thus has comprised an approximate half of naturalized flow (425 m<sup>3</sup>/s). Decrease in the amount of 325 m<sup>3</sup>/s in the basin of the Kura River, 100 m<sup>3</sup>/s in the basin of the trans-boundary Aras River, the main branch of the Kura River has been registered. 138 - various sized reservoirs were built in Azerbaijan for efficient use of water resources and 21599.0 mln.m<sup>3</sup> water is stored in them. Takhtakorpu (268 mln.m<sup>3</sup>), Shamkirchay (164 mln.m<sup>3</sup>) and Tovuzchay (20 mln. m<sup>3</sup>) were put into operation in 2013, 2014 and 2015 respectively (Imanov, 2016).

### The Aggravation of Water Scarcity by Climate Change

The nexus between water resilience and climate change underscores the critical interplay between environmental dynamics and societal well-being. As climate change intensifies, altering precipitation patterns, increasing the frequency of extreme weather events, and accelerating sea-level rise, water resources face unprecedented stress. Water resilience, therefore, becomes paramount in safeguarding communities, ecosystems, and economies against the impacts of climate variability. Resilient water systems are characterized by their capacity to adapt to changing conditions, efficiently manage water resources, and mitigate risks associated with water scarcity, flooding, and degradation. Achieving water resilience amidst climate change requires a holistic approach that integrates sustainable water management practices, robust infrastructure investments, ecosystem conservation efforts, and stakeholder engagement.

In Azerbaijan, climate change can impact water resources through altered precipitation patterns, changing temperatures, and shifting hydrological cycles. Changes in precipitation may affect the availability of water, impacting agriculture and ecosystems. Rising temperatures can lead to increased evaporation, potentially reducing water availability. Sustainable water management strategies and adaptation measures are crucial to address these challenges in the context of climate change. Azerbaijan's climate is highly varied, with different areas of the country containing examples of nine of the world's eleven climate zones. This includes semi-arid zones in the center and east of the country (including the capital, Baku), temperate zones in the north, continental zones in the west, cold and tundra zones, meaning that there are marked variations in average annual temperature and precipitation in different regions. In general, more mountainous parts of Azerbaijan receive higher levels of precipitation and lower average temperatures than the central lowlands and Caspian Sea coast, where the climate is drier and hotter. Azerbaijan experiences hot summers (especially in lowland areas) and moderate winters. Average temperatures for the latest climatology, 1991–2020, ranged between approximately 24°C in the summer months of July and August, and –1°C to 1°C during the winter (December to February).

The average monthly temperatures vary significantly between different regions and altitudes across Azerbaijan (Huseynov and Huseynov, 2022). Average temperatures in Baku and other parts of the east and southeast reach approximately 27°C during the hottest months of July and August, while temperatures during these months remain between 15°C and 20°C in parts of the mountainous north and west. Similarly, during the winter (December to February) temperatures in Baku average between 3°C and 4°C, whereas in western and northern areas average monthly temperatures fall to between –5°C and –10°C<sup>3</sup>. In the report of the US Central Intelligence Agency on climate change, the name of Azerbaijan was mentioned among the 39 countries that will suffer the most from climate change.

Given the predictions that the air temperature will increase by 2-3°C, both surface and groundwater are expected to decrease by 15% over the next 50 years. Precipitation is highest in May and June months in the northern and western areas of Azerbaijan, where it can exceed 100 mm per month in places. On the other hand, precipitation in Baku remains

<sup>3</sup> Ministry of Ecology and Natural Resources (2015). Republic of Azerbaijan. Third National Communication to the UNFCCC on Climate Change. <https://unfccc.int/sites/default/files/resource/azenc3.pdf> (accessed on 22 January 2024)

below 25 mm per month on average for much of the year (from January to September) and averages only 33 mm in the wettest months of October and November (Safarov et al., 2020; Huseynov and Huseynov, 2022).

Average rainfall in Azerbaijan follows a bimodal distribution throughout the months of the year, with average levels above 40 millimeters (mm) per month from April to June, and again in October (Figure 1).

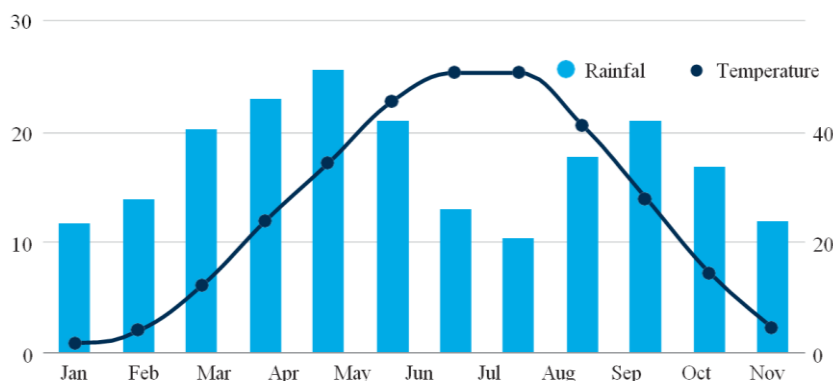


Figure 1. Average monthly temperature between 0 and 40 from January to November and rainfall between 0 and 30 mm in Azerbaijan (1991–2020)<sup>4</sup>

The decrease in the amount of precipitation in the country is 7% in the lowland areas consisting mainly of plains, 8% in the middle highlands at a height of 1500-2000 meters, and 11% in the area of the middle highlands with a height of 1500-2000 m. Compared to 1961-1990, the temperature indicators in 1991-2020 have changed by 0.80°C in the country. At the same time, the main increase is 0.9-1.00°C, being in the upper parts of the lowlands (500-1000 m) and in the upper parts of the middle highlands (1500-2000 m). In plain zones, this indicator is 0.80°C. Thus, during this period, the amount of precipitation decreased by 7% in the 0-500 m altitude area where the plateau, lowland and coastal plains are located. The amount of precipitation decreased by 9% in the lowland zone of 500-1000 meters (Huseynov and Huseynov, 2022). A further decrease in precipitation is around 10% in the 1000-1500 m zone of the highlands. Although the decrease in precipitation occurred less in the higher parts of the lowlands, this fluctuation was 13% in the lower parts of the middle highlands.

During a detailed study of climate changes, if we look at the trend of multi-year average temperature and precipitation for every 10 years, it can be seen that the amount of precipitation across the country has a decreasing trend, and the temperature has an increasing trend. During the years 1961-2020, the average annual temperature of the Republic of Azerbaijan has increased. Also, during this period, more precipitation fell on the territory of the country in 1961-1970 (Safarov et al., 2020). During this period, as less precipitation fell in 1991-2020, the dry areas in the area expanded. Over the past 30 years, precipitation has been steadily decreasing. If we look at the pictures, it is possible to see that the amount of precipitation decreases with the temperature (Figure 2).

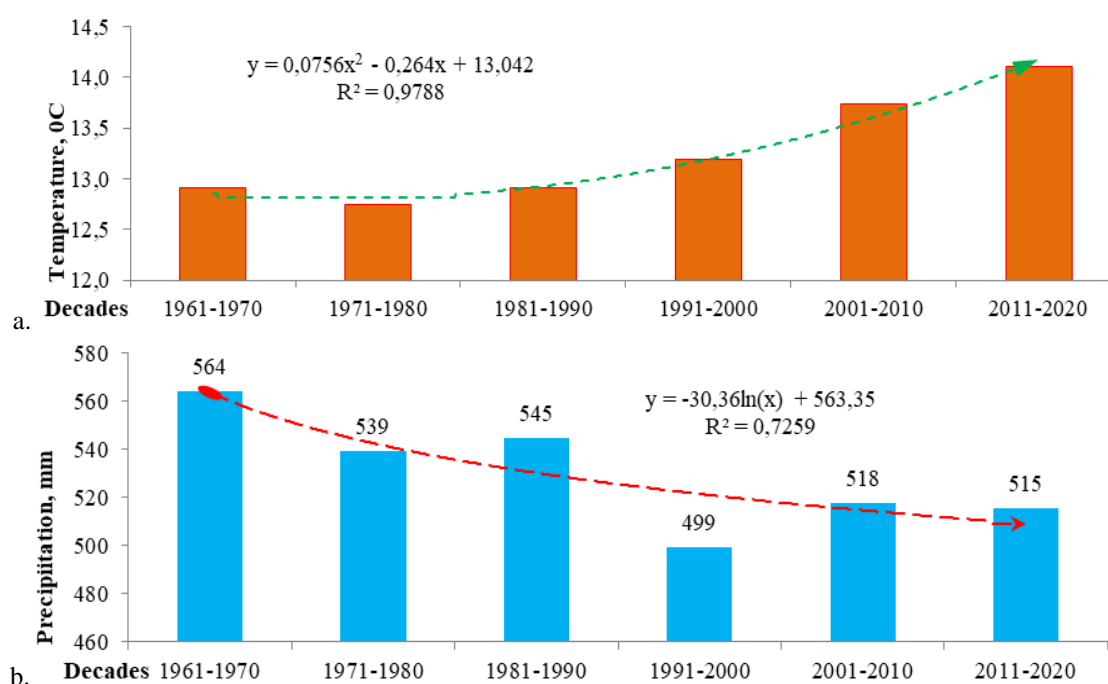


Figure 2. Average annual variation of temperature from 12.5 °C to 14.5 °C (a) and precipitation from 460 mm till 580 mm (b) in decades from 1960 till 2020<sup>5</sup>

<sup>4</sup> Ministry of Ecology and Natural Resources, the Republic of Azerbaijan <https://eco.gov.az/>

<sup>5</sup> Ibid



The research conducted using the precipitation and temperature observation data in the territory of Azerbaijan shows that the average annual temperature increased by 0.80C in 1961-2020 compared to 1881-1961. This indicator was 0.80C in 1991-2020 compared to 1961-1990. The amount of precipitation decreased throughout the period. Precipitation fell 7% less in 1891-1960 and 1991-2020 (Safarov et al., 2020; Huseynov and Huseynov, 2022). The increase in temperature is one of the main reasons for the decrease in precipitation. The change in the amount of precipitation is also related to the change in the characteristics of the air masses penetrating the regions as a result of the effects of global climate changes on the general circulation. If the climate regime continues to change at this rate, the size of the area where the semi-desert and arid climates exist will increase. A sharp increase in air temperature at the beginning of summer will lead to the melting of glaciers and acceleration of processes such as flooding, and the desertification process will begin to grow.

Climate change can significantly impact water resources in the Republic of Azerbaijan. Shifts in precipitation patterns may lead to changes in water availability, affecting rivers and reservoirs crucial for agriculture and domestic use. Increased temperatures may contribute to evaporation, potentially reducing water storage. Changes in glacier melt could impact river flow, influencing hydroelectric power generation. Additionally, altered weather patterns may increase the risk of extreme events like floods or droughts, posing challenges for water management and infrastructure. Adaptation strategies are crucial to mitigate these effects and ensure sustainable water resources in the Republic of Azerbaijan.

Implementing a comprehensive strategy that combines these measures can help Azerbaijan adapt to the challenges posed by climate change on its water resources. To mitigate the impact of climate change on water resources in Azerbaijan, consider implementing sustainable water management practices, enhancing water efficiency, promoting afforestation to protect watersheds, and investing in climate-resilient infrastructure. Collaborate with local communities, engage in climate research, and adopt policies that address both adaptation and mitigation strategies.

### **Water resilience assessment and water withdrawal projections**

The downstream portion of the Kura-Aras River Basin in Azerbaijan is one of the most susceptible, with a combination of natural and human variables increasing its sensitivity to negative consequences. First, climate change has caused shifts in precipitation patterns and rising temperatures, affecting the river basin's hydrological dynamics. The downstream areas, which are on the receiving end, experience the combined consequences of diminished water supply and increasing frequency of extreme weather events such as droughts and floods. Furthermore, upstream agricultural and industrial activities contaminate water supplies, increasing the vulnerability of downstream ecosystems and populations. The cumulative impact of these stresses on water quality and quantity endangers the delicate balance of the downstream region's ecosystems, reducing biodiversity, agricultural production, and the general resilience of populations who rely on the Kura-Aras River. Given these issues, assessing and managing downstream vulnerabilities is critical for developing effective adaptation strategies and sustainable water management practices that will maintain the Kura-Aras River Basin's long-term resilience.

Rural regions downstream of the Kura-Aras River Basin are particularly vulnerable owing to a combination of physical, socioeconomic, and environmental reasons. To begin, many rural populations in these regions rely largely on agriculture as their major source of income. Changes in water availability and quality have a direct influence on agricultural output, posing a substantial risk to these people's economic well-being. Rural regions frequently lack the infrastructure and resources required to adapt and deal with the effects of climate change. Limited access to technology, knowledge, and financial resources impedes their capacity to implement resilient water management methods. Furthermore, rural communities may have fewer opportunities for income diversification, making them more vulnerable to swings in agricultural production induced by changes in water supply. Women in rural regions carry a disproportionate weight of vulnerability, especially in the face of water shortages and climate change. Tasked with home obligations, women frequently find themselves on the front lines of water collection, a task that grows increasingly difficult when water supplies decline or become polluted in the downstream part of the Kura-Aras River Basin in Azerbaijan. The resulting physical strain and safety concerns reduce their time for other productive pursuits or personal growth, continuing a cycle of restricted options. Women in agriculture-dependent communities are immediately exposed to the effects of shifting water availability, which affects both food security and economic stability for their families.

On the other hand, the Azerbaijani government has taken a diversified strategy to address water shortage concerns and improve water resilience, notably in the downstream section of the Kura-Aras river basin. The government aspires to enhance water resource management by implementing and enhancing water-related legislation and policies that prioritize sustainability and quality preservation. Significant expenditures in water infrastructure, including as reservoir building and repair, water delivery systems, and irrigation networks, help to improve the efficiency and reliability of water distribution in both rural and urban regions. Recognizing agriculture's importance to the economy, the government strongly supports climate-resilient agricultural methods, including as drought-resistant crops and efficient irrigation systems. Community involvement efforts encourage local citizens to participate in sustainable water practices, which improves the resilience of both rural and urban settings. The government also encourages research and innovation to better understand the unique effects of climate change on water resources, hence accelerating the development of personalized solutions.

Collaboration with international organizations and adjacent states, such as Turkey, improves the efficacy of water management techniques. Investments in water-efficient technology across multiple industries indicate the government's commitment to optimizing water consumption and boosting overall water efficiency. In order to increase the efficiency of water resources management, the Azerbaijan State Water Resources Agency ensuring activities in the field of extraction, processing, transportation and supply of water in the Republic of Azerbaijan, operation of state-owned reclamation and irrigation systems, drinking water supply, stormwater and wastewater processing and discharge systems, as well as

organization of services in this field, balanced water management implementation of regular control of the technical condition of the facilities, except for the main and auxiliary equipment that ensures their maintenance and protection of surface and groundwater resources, water and water management facilities, hydraulic structures (marine hydraulic structures located in the section of the Caspian Sea (lake) belonging to the Republic of Azerbaijan) in the Republic of Azerbaijan is a central executive authority that implements a unified state policy and regulation in the areas of water supply system monitoring. One of the main activities of the agency is to ensure the integrated management of water resources in the Republic of Azerbaijan. Depending on the water source and the type of water intake, all projects are implemented by modern standards and water treatment requirements. Suitable conditions are being established to ensure the achievement of fundamental changes in the water supply system of Azerbaijan via the provision of integrated water resources management.

Increasing water withdrawal from sources in Azerbaijan should be approached with caution to avoid negative environmental impacts. It's important to consider sustainable water management practices, including efficient irrigation methods, water conservation, and monitoring of water quality. Balancing increased demand with responsible usage is key to ensuring long-term water availability. Several factors can influence changes in water withdrawal from sources in the Republic of Azerbaijan. These may include population growth, agricultural demands, industrial activities, climate variations, and water management policies. Understanding and managing these factors are crucial for sustainable water resource usage and ensuring adequate water availability for various sectors in the country. Using the state water use accounting information (2000-2022), the amount of water withdrawal from water sources was analyzed by sector. Thus, during this period, the amount of water withdrawal from water sources varied from 9.91 to 13.03 km<sup>3</sup>. The highest amount of water withdrawn from water sources was in 2022, and the lowest amount was in 2002 (Figure 3). In general, an average of 11.6 km<sup>3</sup> of water was withdrawn from natural water sources in the last 22 years. During this period, an increase of 2.20 km<sup>3</sup> (11.4%) was observed in the volume of water withdrawal from water sources.

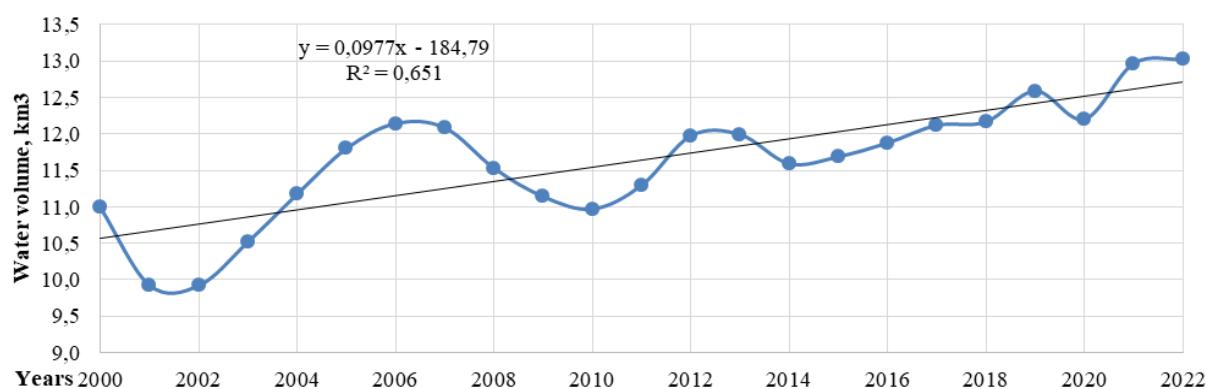


Figure 3. Changes in the volume of water withdrawal between 9.5 and 13.5 from sources every 2 years from 2000 till 2022 in Azerbaijan<sup>6</sup>

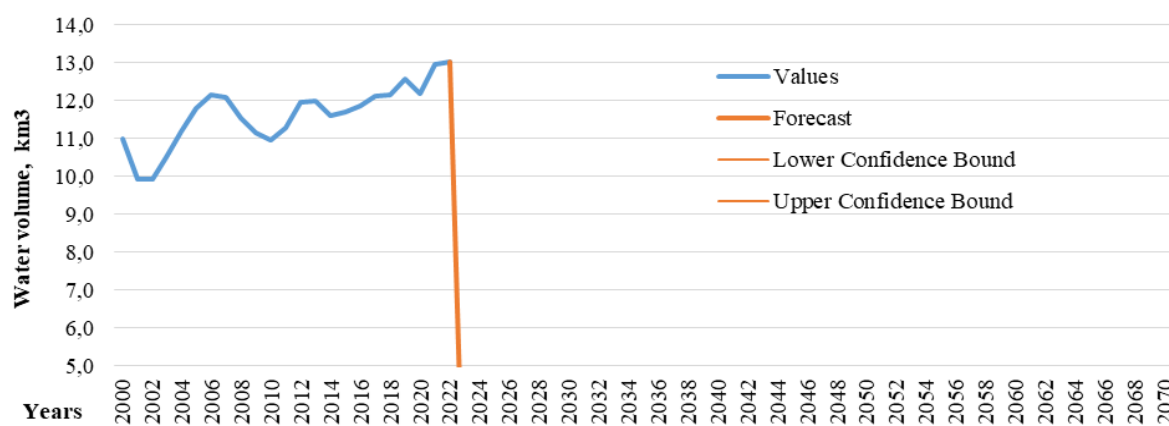


Figure 4. Shows predictions change in 3 paths between 5 km<sup>3</sup> and 30 km<sup>3</sup> in the volume of water withdrawal from water sources every 3 years from 2000 to 2069<sup>7</sup>

If the volume of withdrawal from water sources continues at this rate, it is predicted to be 13.8 km<sup>3</sup> in 2030, 14.8 km<sup>3</sup> in 2040, and 15.8 km<sup>3</sup> in 2050 (Figure 4). Predicting changes in water withdrawal volume in Azerbaijan requires considering various factors like population growth, industrial development, and climate patterns. Analyzing these can help anticipate potential impacts on water resources, allowing for informed resource management and conservation strategies. Future water withdrawal scenarios must be taken into account when implementing water management measures (Table 2). Lower confidence bound and upper confidence bound future water withdrawal must be taken into account during the implementation of the projects. This is very important for ensuring water security in the Republic of Azerbaijan against the background of climate changes. The analysis was carried out separately for both the amount of water withdrawn from

<sup>6</sup> (State Statistics Committee of the Republic of Azerbaijan <https://www.stat.gov.az/?lang=en>)

<sup>7</sup> Ibid

surface water sources and the amount of water withdrawn from groundwater sources. No major change was observed in the amount of water withdrawal from surface water sources during the multi-year period (Figure 3). During this period, an average of  $0.28 \text{ km}^3$  of water was withdrawal from surface water sources.

Table 2. Future water withdrawal in 3 scenarios between 6.4 and 27.9 every 5 years from 2025 till 2070<sup>8</sup>

Years	Forecast	Lower Confidence Bound	Upper Confidence Bound
2025	13.3	10.5	16.2
2030	13.8	9.2	18.4
2035	14.3	8.5	20.1
2040	14.8	8.0	21.6
2045	15.3	7.5	23.0
2050	15.8	7.2	24.3
2055	16.2	7.0	25.5
2060	16.7	6.7	26.7
2065	17.2	6.6	27.9
2070	17.7	6.4	29.0

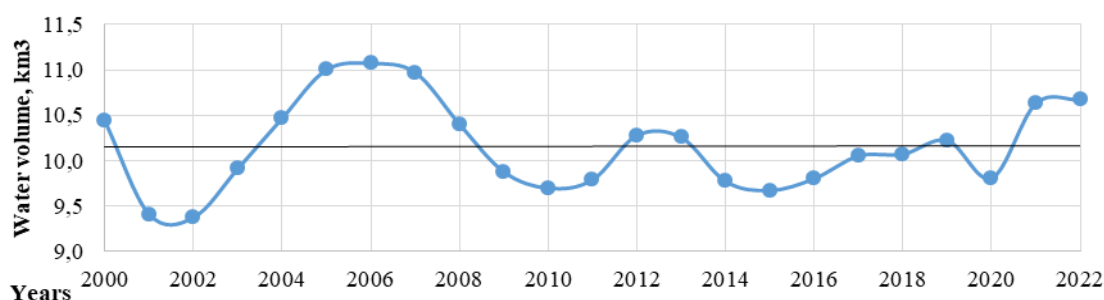


Figure 5. Changes in the volume of water withdrawal from surface water sources between 9.2 and  $11.2 \text{ km}^3$  in every 2 years from 2000 till 2022<sup>9</sup>

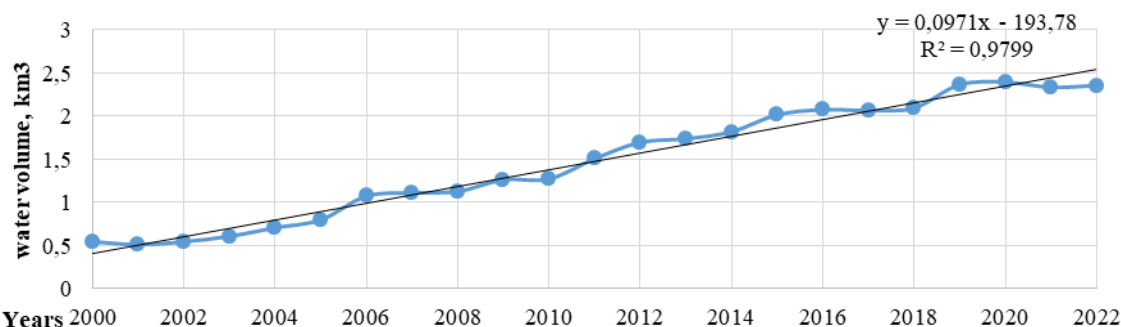


Figure 6. Changes in the volume of water withdrawal from groundwater sources between  $0 \text{ km}^3$  and  $3 \text{ km}^3$  in every 2 years from 2000 till 2022<sup>10</sup>

The same analysis was performed for the volume of water withdrawn from groundwater sources. During the analysis, a significant increase in the amount of withdrawn from groundwater sources was observed during the multi-year period (Figure 4). During the average multi-year period, a decrease of  $2.55 \text{ km}^3$  was observed in the volume of water withdrawal from groundwater sources. Increasing water withdrawal from groundwater sources can have several impacts on water management. Firstly, it can lead to the depletion of aquifers, reducing the availability of groundwater for future use. This poses a significant challenge for sustainable water management, as groundwater often serves as a crucial resource for agriculture, industry, and domestic purposes. Excessive withdrawal may also lead to land subsidence, where the land surface sinks due to the emptying of underground water reservoirs. This can result in damage to infrastructure and ecosystems. Furthermore, over-extraction can cause saltwater intrusion in coastal areas, jeopardizing freshwater supplies. To manage water resources effectively, it's crucial to implement sustainable practices, monitor groundwater levels, and regulate extraction to avoid long-term environmental and socio-economic consequences. During the analysis of water withdrawal by sources, the increase in the use of groundwater sources suggests that it will cause certain problems in the ecosystem of the area in the future. Future groundwater withdrawal scenarios must be taken into account when implementing water management measures too (Table 3). Lower confidence bound and upper confidence bound future groundwater water withdrawal must be taken into account during the implementation of the projects. This is very important for ensuring water security in the Republic of Azerbaijan. As it is known, the confirmed groundwater reserve of Azerbaijan is  $4.38 \text{ km}^3$ .

## CONCLUSION AND RECOMMENDATIONS

This scientific investigation throws light on the severe difficulties that Azerbaijan faces in terms of water shortage such as a result of climate change. The complex combination of rising temperatures, fluctuating precipitation patterns, and developing hydrological cycles poses a significant danger to the country's water supplies. The intricate balance between supply and demand is exacerbated by outdated water management techniques that must be reconsidered immediately. In

<sup>8</sup>Ibid; <sup>9</sup>Ibid; <sup>10</sup>Ibid, <sup>11</sup>Ibid

this light, the last call to action is consistent with the need to transcend traditional paradigms. The discovered weaknesses in conventional water supplies, together with increased demand from other sectors, highlight the importance of tackling water shortage concerns comprehensively. The possible consequences go beyond only resource availability, as emerging risks to water resilience affect ecological stability, agricultural output, and local livelihoods. The findings underline the crucial need for quick and focused actions, stressing the adoption of adaptive measures, sustainable water management practices, and robust infrastructure development. Recognizing these problems and taking proactive actions can help Azerbaijan strengthen its water resilience, assuring a sustainable and secure water future in the face of climate change.

Table 3. Future groundwater water withdrawal in 3 scenarios between 2.66 km<sup>3</sup> and 4.81 km<sup>3</sup> in every 5 years from 2025 till 2040<sup>11</sup>

Years	Forecast	Lower Confidence Bound	Upper Confidence Bound
2025	2.66	2.36	2.95
2030	3.14	2.67	3.61
2035	3.62	3.02	4.22
2040	4.11	3.40	4.81

Water resilience in Azerbaijan faces challenges due to water scarcity. Factors such as climate change, inefficient water management, and population growth contribute to this issue. Evaluating current water usage patterns, promoting sustainable agriculture practices, and investing in water infrastructure can be vital steps toward ensuring water security in the Republic of Azerbaijan. International collaboration and innovative technologies may also play a role in addressing this complex issue. In order to ensure the water resilience of Azerbaijan, it is considered appropriate to prevent the pollution of water resources, to use water rationally and sustainably, to eliminate existing problems in the field of wastewater management, to strengthen cooperation, and carry out educational activities among the population. Against the background of climate change, it is proposed to take the following measures to ensure the water security of the Republic of Azerbaijan:

- **Assessment of Water Resources and Infrastructures:** Evaluate the current status of water resources in Azerbaijan, considering surface water, groundwater, and their distribution across regions; examine the balance between water demand and supply, including agricultural, industrial, and domestic usage, identifying any existing gaps; assess the condition and capacity of water-related infrastructure such as dams, reservoirs, and distribution systems to identify vulnerabilities; identify potential risks to water security and develop strategies to enhance resilience, considering both short-term and long-term scenarios; analyze the potential impact of climate change on water availability and patterns, considering historical data and future projections.
- **Diversification of Water Resources:** Implement initiatives to diversify water sources, minimizing reliance on one source and increasing resilience to shifting climatic patterns.
- **Water Recycling and Reuse:** Promote water recycling and reuse across a variety of sectors, including industry and agriculture, to reduce the total demand for freshwater supplies.
- **Awareness and Community Engagement:** Develop and implement programs to educate the public on water resilience, sustainable usage practices, and the importance of preserving water resources; involve local communities in the analysis to gather insights on water usage patterns, challenges faced, and potential solutions.
- **Cross-Border Considerations:** Evaluate transboundary water issues, particularly if Azerbaijan shares water resources with neighbouring countries, and propose collaborative strategies.
- **Technological Solutions and Early Warning Systems:** Explore innovative technologies for water conservation, purification, and efficient distribution, considering global best practices; establish or enhance monitoring systems to track water availability, quality, and usage, and develop early warning systems for potential crises.
- **International Collaboration and Investment:** Foster collaboration with international organizations and neighbouring countries to share knowledge, resources, and best practices in addressing water resilience issues; Upgrade and invest in water infrastructure to provide effective water storage, delivery, and treatment while accounting for changing climate conditions.
- **Policy Recommendations:** Compile a set of comprehensive policy recommendations based on the analysis to guide decision-makers in enhancing water resilience in Azerbaijan. In order to ensure water resilience under climate change, it is considered appropriate to minimize the pollution of water sources and improve protection, to effectively use water resources to meet the needs of current and future generations, to assess the needs of global water problems at the national level, to determine solutions, and to expand relations with international organizations.

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## DOES THE GENERATION INFLUENCE DOMESTIC LEISURE TOURISM PRACTICES? THE CASE OF BULGARIA

Desislava VARADZHAKOVA\*

National Institute of Geophysics, Geodesy and Geography at Bulgarian Academy of Sciences, Geography Department,  
Economic and Social Geography Division, Sofia, Bulgaria, e-mail: dvaradzhakova@gmail.com

Alexander NAYDENOV

University of National and World Economy, Department of Statistics and Econometrics, Sofia, Bulgaria, e-mail: anaydenov@unwe.bg

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**Abstract:** The main goal of the article is to study the generations that are actively participating in the tourism market at the moment and to examine their attitudes towards domestic tourism. The analyses of the generations' domestic leisure tourism practices in Bulgaria include two-dimensional frequency distributions and statistical pair-wise hypothesis testing in order to clarify the exact differences amongst the generations studied. The study reveals that the youngest generations travel more than the elders. The top 3 'factors' that burden the travelling intentions amongst the Bulgarians are: lack of financial resources, lack of enough free time and family reasons. The most significant reason for older generations not traveling is lack of enough money and for the younger is mix between lack of finance and lack of enough free time. The generations differ from each other in their travel preferences, behaviour, expectations. However, some similarities are observed between them. It is noteworthy that most respondents, regardless of the generation they belong to, have visited more summer seaside resorts than mountain winter resorts in the last five years.

**Keywords:** generational theory, domestic leisure tourism, Bulgaria, attitudes, Generation X, Millennials, Generation Z, Alpha Generation, representative survey, hypothesis testing, statistical analysis

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### INTRODUCTION

UNWTO states that according to their data domestic tourism generates higher revenue than international tourism in most destinations worldwide (UNWTO, 2020). Leisure travel generates 80% of the tourism expenditure globally (Statista, n.d.). Statista (n.d.) also estimates that the revenue of the holiday packages that form the leisure travel, in 2023 will surpass the pre-pandemic level. Leisure tourism includes holidays and trips for relaxation. To define the concept of domestic leisure tourism, we use for a basis the definition of UNWTO, since 1995, which states, that holidays are all journeys for pleasure including at least four consecutive nights away from home but at the country of residence of the tourist.

We can consider the importance of domestic leisure tourism in two directions: first, with respect to the increasing free time and second, the need for relaxation due to stress or overcoming prolonged crisis situations. Free/leisure time increased after World War I with the implementation of an 8-hour working day and practice of a 5-day working week at the end of 20th century. Leisure time very often is considered as time for entertainment and relax, whereas leisure activities are those who are practiced in the free time for pleasure. For the purposes of this article and in connection with the methodology of the conducted research, the results of which are presented we understand as domestic leisure tourism travel within the country of origin of the tourists for vacation and recreation for four or more consecutive nights in summer resorts or winter ski destinations. Domestic leisure tourism aims to avoid stress in everyday life and explore new destinations in the country.

During the COVID-19 pandemic, the stress and tension of the unknown disease and the isolation of people generated the need for leisure tourism trips. The closure of many destinations and restrictions on travel abroad to limit the spread of the disease have become one of the main reasons for the development of domestic leisure tourism. From an economic point of view, it has become a stimulus not only for the development of the local economy, as it is outside of force majeure situations, but also an opportunity to restore the tourist business, as a result of the pandemic restrictions. Many countries have launched campaigns to stimulate domestic tourism, among them the programs Bonus Vacanze in Italy, for families with incomes of up to EUR 40,000, in France the program #CetÉtéJeVisiteLaFrance, promoting the diversity of local destinations in the country, Malaysia that created travel discount vouchers for expenditure related to domestic tourism, etc. (UNWTO, 2020). For the success of such campaigns, it is necessary to know the attitudes of domestic tourists towards the destination.

Considering the significance of domestic tourism for the countries' economies many governments promote it by creating marketing campaigns. Better targeting of focus groups requires knowledge of their habits, attitudes, preferences, influence of information sources, etc. One of the main indicators for classifying target groups is according to their age. The term generation is very popular when we try to assign individuals to a specific age group, especially when trying to find

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\* Corresponding author

common characteristics, behaviour, or attitudes towards specific activity of a target audience. It is very useful in business and in tourism specifically. The Center for Generational Kinetics (2016) defines the generation as „a group of people born around the same time and raised around the same place“. And the demographer Marc McCrindle defines the generations as a group of people who were shaped by events, trends, and innovations that occurred within a specific time frame (15 years at the top end), and who are similar in age and stage of life. People of a generation exhibit similar characteristics, values and preferences (Center for Generational Kinetics, Generational birth years, 2016) and can be considered as a separate target group. That is why the main goal of the present article is to study the generations that are actively participating in the tourism market at the moment and to examine their attitudes towards domestic tourism. The main research questions we ask ourselves are:

RQ1 Which generations most often practice domestic tourism?

RQ2 Which generations are most satisfied with their stay in Bulgarian resorts?

RQ3 What are the main information sources that influence different generations when choosing a destination for domestic holiday tourism?

In this article, a literature review of the theory of generations and their importance for domestic holiday tourism is made. The research methodology is presented in five main steps. The presented results are based on a nationally representative study conducted in Bulgaria. In the Discussion, a comparison is made with other similar studies of the most active generations at the moment and their attitude towards domestic holiday tourism. In conclusion, some basic conclusions are made, which can have both theoretical value and practical contribution to the preparation of promotional, advertising and PR campaigns with the aim of optimizing the image of domestic holiday tourism at the national level.

This paper will expand knowledge on consumer behaviour and marketing and specifically on the relationship between destination image and generational differences within a domestic tourism context. The results might help marketers develop marketing and promotion campaigns that will prove useful when they plan actions focusing on this important segment.

## LITERATURE REVIEW

### Types of generations

The analysis of the generations is important not only for sociology, but also for marketing and other sciences (McCrindle, 2023). It's a focus on the academic world but also is important for business decision making (Mancheva-Ali and Kostadinova, 2023). Generations around the world have gone through various specific significant for their region political and economic events. But the basis of the generation theory is mostly the Western world. Because of this when the generations are defined the time limitations are based on globally significant events (Varadzhakova and Statev, 2017). A number of authors work on the classification of generations. Strauss and Howe (1991) make generations classification of the Americans born between 1584 and 2069. They are the first to identify, categorize, and name every generation in American history. The authors determine the duration of the generations between 17 and 33 years. Strauss and Howe (1991) define five generational cycles: Colonial (1584-1700), Revolutionary (1701-1791), Civil war cycle (1792 - 1859), Great power cycle (1860 - 1942) and Millennial cycle (1943-2003). For the people born in XX and XXI centuries they offer the following classification: G.I. Generation (born between 1901 - 1924) and Silent Generation (1925-1942) that belongs to the Great power cycle and the next generations form part of the Millennial cycle, the Boom generation (1943 - 1960), Thirteenth generation (1961-1981), Millennial generation (1982 - 2002), new adaptive (2003-2024), new idealist (2025-2046) and new reactive (2047-2069). Strauss and Howe (1991) also identified four generational types in every generational cycle: idealists, civic, reactive and adaptive. The idealists are always born immediately after a secular crisis.

They are dominant and inner-focused generation, mature into spiritual awakening-inspiring adults, cultivate principle as moralistic midlifers, and eventually emerges as visionary elders leading the next secular crisis. The reactive generation matures into risk-taking, alienated rising adults, mellows into pragmatic midlife leaders during a secular crisis. The civic generation is a dominant and outwardly focused, grows up as more and more shielded youths, matures through a secular crisis; unites into a heroic and achieving cadre of rising adults. Typical for the adaptive cycle is that the people from this generations having grown up at a time of crisis and experiencing both secular assurance and spiritual uneasiness.

Pew Research Center (Pew Research Center, n.d.) defines different classifications of the generations as follows: Greatest (born before 1927), Silents (born 1928-1945), Baby boomers (1946-1964), Gen Xers (1965-1980), Millennials (1981-1996), Post-Millennials or lately named Gen Z (1997-2012). According to the Center for Generational Kinetics (2016) the generations have similar but not the same age structure. Their theory divides them as follows: Traditionalists (born before 1945), Baby Boomers (born 1946-1964) Gen X (born 1965-1976), Millennials (born 1977 to 1995), and Gen Z (born 1996 to 2015). The reason that the age structure of generations differs between different research teams is that they consider specific social and political events to be significant and structure-determining.

The social analyst and demographer Marc McCrindle (McCrindle Research, 2006) defines the generations more like Pew research Center. According to him the oldest generations is the Federation (Greatest) generation (born before 1925), followed by the Builders (born 1925-1945), the Baby Boomers (born 1946-1964), Generation X (born 1965-1979), Generation Y (born 1980-1994), Generation Z (born 1995-2009). He also defines the next generation, named Alpha Generation (born in 2010). On the market now are mostly the generations of the Builders and afterwards.

McCrindle (2023) summarizes some characteristics of the generations in Australia. The Builders contributed to the building of society, and their lives were marked by the Second World War. This generation is characterized by the birth boom that occurred after the Second World War. The birth rate was 3.5 babies per woman. This increase in the birth rate also leads to a boom in economic development, construction, etc. Generation X is associated with Douglas Coupland's international bestseller "Generation X: Tales for an Accelerated Culture" and also with this generation's mantra of anti-

establishment and pushback against authority figures. It is typical of this generation to take advantage of times of economic prosperity and small business development opportunities until the development of the COVID-19 pandemic (McCrindle, 2023). They are more susceptible to marketing and advertising campaigns (Roberts and Manolis, 2000). In Eastern Europe, including Bulgaria, Generation X is influenced by the change in the economic and political system and the advancement of technology, which become the main factors influencing the point of view of this generation (Bielnińska-Dusza, 2022).

The behavior of Generation Y, known also as Millennials, has been marked by the tragic events of September 11, 2001. In the field of tourism, this generation is also characterized by its trips abroad (McCrindle, 2023). In marketing aspect their attitudes, behavior and habits are studied but not fully comprehended yet (Naumovska, 2017). Generation Y very often uses the Internet as a resource for better-informed purchasing decisions (Dulay et al., 2022). This generation is more than the others before it looks for work-life balance (Smith, 2010).

Generation Z differs from previous generations (Chen, 2023). The mindset of Gen Z was mostly shaped during the COVID-19 pandemic. This generation is aware of economic uncertainty. They are focused on education and lifelong learning and realize that in a competitive environment they must work hard to achieve their goals in life. Another noteworthy aspect of Gen Z is that they are the first generation to have grown up completely dependent on the internet (McCrindle, 2023). Kang et al. (2020) call them “digital natives”. This generation actively consumes online content, is creative, and likes to communicate online (Yadav and Rai, 2017). They are influenced by social media, vlogs and other types of Internet advertising (Zaib Abbasi et al., 2023). However, Generation Z do not have in-depth technological knowledge, but use the Internet mainly to access social networks or for other types of communication (Shtepura, 2022).

Generation Alpha is the first generation to be fully born in the 21st century and will be shaped into the new millennium. The name comes from the first letter of the Greek alphabet, as a symbol of something new. The beginning of this generation has been marked by technology, most notably the launch of Instagram and the iPad in 2010. Their daily routine is app-based games and increased time spent in front of the screen. They are characterized by less social formation (McCrindle and Fell, 2020). The representatives of generation Alpha are currently up to 14 years old, between their childhood and early adolescence. Their formation as individuals has been marked by increasing globalization and the COVID-19 pandemic. They have yet to be formed as attitudes and preferences and to be studied by the academic world and business.

### **Which generations are on the market?**

The consumer behavior and attitudes of individual generations are a key factor in building a marketing strategy, which, in turn, contributes to the creation, promotion and sale of tourist products and services (Mancheva-Ali and Prodanova, 2021) or for the formation of the image of a tourist destination. Trends in tourist attitudes and behavior can be better interpreted in the context of the evolution of society as a whole (Monaco, 2018), which is reflected in the generational theory. Currently, there are five generations in the tourist market as tourists who can make decisions: in part the Builders, the Baby boomers, Generation X, Generation Y, Generation Z. It is also necessary to know the characteristics of the Alpha generation, as future participants in the tourism market, although due to their fragile age they are not yet able to make independent decisions about their trips. The Builders generation is between 78-98 years right now. They hardly participate in the tourist market due to their advanced age. When traveling abroad, most of them cannot be insured due to their age and the policy of the insurance companies. They usually travel accompanied by younger relatives and for shorter distances due to their health condition.

The baby boomer generation is associated with the so-called 55+ or 65+ travel packages for senior citizens as they are currently between the ages of 59 and 77. Because for the moment they are the largest generational group, with a good income and one of the tourist categories with the quickest growth rates as tourist segment the business have long regarded Baby Boomers as the most attractive travel market. In Bulgaria most of them have good education, relatively good income (mostly the younger in this generation), as retired people they have enough free time to travel. They have diverse interests and mainly benefit from the tourist packages outside the active season in Southern Europe, intended for pensioners. The main problem for some of the travelers is their health. They often practice multigenerational travel, as travel packages for their age group allow them to travel with younger people. According to Lehto et al. (2008) the Baby boomers in their younger years preferred to spend their free time with their families away from home, secluding themselves and indulging in romance. The older subgroup of them is less likely to use the Internet when planning their tourist trips. However, the Baby boomers adopted the Internet earlier than commonly supposed (Beldona, 2005).

Generation X is currently between the ages of 44 and 58. They are active people who work. A large part of them is also well-educated. Usually, these are people with a lot of work experience, dedicated to their work, at the top of their careers, so they try to balance between their work duties and their free time to travel. The younger ones consider traveling with their children, and the older ones of this generation have the opportunity to independently choose the destinations to visit since their children are now grown and travel separately. They tend to visit distant, exotic destinations. In their younger years, Generation Xers trusted travel advisors, used travel packages, and sought discounts on prices (Huang and Petrick, 2010), preferred to travel in a family group (Benckendorff and Moscardo, 2010). Now, similar to the youngest generations, generation Y has high rate of adoption of Internet as travel planning tool (Kim et al., 2015) and they also are engaged in sharing travel information (Lin et al., 2022). According to Seabra et al. (2020) this generation is looking for simplicity and authenticity, relaxation and socialization. Generation X tourists are by far those who value the most domestic destinations, so they have to be a prime target for tourism organizations (Seabra et al., 2020).

Generation Y or Millennials are the most active travel segment on the market. They are currently between the ages of 29 and 43. They have enough income to travel but do not have time to do it, because they are in their more active working age. Like Generation X, they seek a balance between work and leisure. They lived in times of rapid changes, including in

Bulgaria they are popular as the “children of transition”, regarding the political changes in the country. In the USA they are the largest generation in the country’s history (Goldman Sachs, n.d.). They pay attention to a healthy lifestyle. When they travel, they are looking to know more about the local culture and traditions. Like the next Generation Z, Millennials love to travel. They use online travel agents, specialized platforms, apps and social media to share their travel experiences (Kifworo and Dube, 2023). Sometimes the social media content has impact on the choice of domestic viral destinations and is related to the Fear-of-Missing-Out (Harahap et al., 2024). Generation Z encompasses people who are currently between the ages of 14 and 28. This makes this group extremely heterogeneous, as some of them are already of working age and can make their own travel decisions, while others are still teenagers whose travel depends on their parents. They will be the largest group of travellers (Liu et al., 2023; Pinho and Gomes, 2023). According to Aina and Ezeuduji (2021) lack of funds is one of the main factors that hinder the participation of older individuals of this generation in domestic tourism. Another characteristic of this generation is that they are attracted of the green destinations (Nowacki et al., 2023).

In the scientific literature, generations are mostly considered through the prism of tourism in general (Haddouche and Salomone, 2018; Băltescu, 2019; Kim and Park, 2020; Pendergast and Wilks, 2021; Loan and Hoang, 2023) or their participation in specific types of tourism (Cavagnaro et al., 2018; Marino et al., 2021; Görpe and Öksüz, 2022; Pinho and Gomes, 2023). However, research on the participation of different generations in domestic tourism is relatively weak. In the last ten years, generational analyses of domestic tourism have been done for the domestic tourism market in Australia (Gardiner et al., 2014), China (Ding et al., 2022), Malaysia (Adnan and Omar, 2022), Portugal (Seabra et al., 2020), Slovakia and Czechia (Pompurová et al., 2023). The presented studies are not representative of the respective countries and this fact highlights a research gap that, although only for one country, the present study tries to fill. For the first time, the results of a nationally representative study are presented, which covers all generations currently participating in the domestic tourist market in one country, in this case - Bulgaria.

## METHODOLOGY

Making a meaningful comparison between different age groups is important not only from a scientific point of view but also from business and demographic perspectives. In order to produce analytical results comparable to other similar studies we have used the classification of the generations defined by Mark McCrindle (McCrindle Research, 2006) summarized in the following Table1. Due to the limitations of some representative survey characteristics, concerning the matter that only persons aged 18+ are interviewed and the oldest person selected in the sample is 85 years old, for the following analyses we were able to use the generations: Builders, Baby boomers, X, Y and Z.

Table 1. Classification of the generations by Mark McCrindle (McCrindle Research, 2006)

Name of the generation	Year of birth	Age in 2023
Federation /Greatest/ generation	Before 1925	99 and over
Builders	1925-1945	78-98
Baby boomers	1946-1964	59-77
Generation X	1965-1979	44-58
Generation Y	1980-1994	29-43
Generation Z	1995-2009	14-28
Alpha Generation	From 2010	13 and less

As it was already mentioned above all of the following analyses, concerning the generations’ domestic leisure tourism practices in Bulgaria, are based on a national representative survey with a sample size of 1003 adults (i.e. persons aged 18+). The random sample specification can be summarized using the following Figure1.

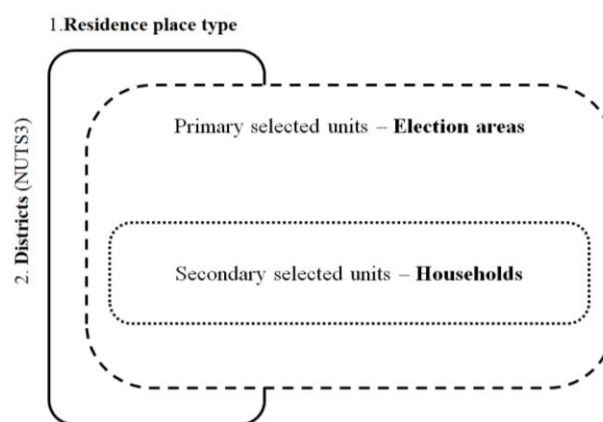


Figure 1. Sampling details

As Figure 1 shows, the survey is based on a two-staged clustered sample stratified by the residence place type<sup>1</sup> and the 28 Bulgarian districts (NUTS3 level classification). For the first cluster selection stage the primary sampling units (PSU)

<sup>1</sup> Residence place type includes 3 categories: district administrative center city, other town and rural places

are the election areas<sup>2</sup> and for the second cluster selection stage the secondary sampling units (SSU) are households<sup>3</sup>. The PSUs at the first stage were stratified proportionally to the size measured by the population in each of the 84 strata. The SSUs were randomly selected within each PSUs. All adults from the SSUs sampled were interviewed by a face-to-face TAPI<sup>4</sup> approach using an online LimeSurvey questionnaire during the period April-May 2023. The data processing and data analytics were executed by the usage of IBM SPSS version 29 software. The specifics of the generation groups domestic leisure tourism practices were studied using the following survey questions (part of the whole survey questionnaire):

Table 2. Survey questions used for further analyses

Variable	Question	Measurement scale
Q1	In the last 5 years, have you travelled to Bulgaria for the purpose of leisure tourism?	Nominal
Q2	What is the main reason why you have not travelled on leisure tourism in the last 5 years in Bulgaria?	Nominal
Q3	To what extent do the following sources of information influence your opinion when choosing a leisure place in Bulgaria on the scale: 1 – to a very small extent to 7 – to a very large extent?	Ordinal
Q4	How often do you travel for leisure tourism in Bulgaria?	Ordinal
Q5	Usually, what is the average length of your stay (in number of nights) in a Bulgarian mountain resort (in winter)?	Ratio
Q13	To what extent are you satisfied with your holiday in the Bulgarian winter resorts in the last 5 years on the scale: 1 – I am not satisfied at all to 7 – I am completely satisfied?	Ordinal
Q14	Usually, what is the average length of your stay (in number of nights) in a Bulgarian seaside resort (in summer)?	Ratio
Q22	To what extent are you satisfied with your holiday in the Bulgarian summer resorts in the last 5 years on the scale: 1 – I am not satisfied at all to 7 – I am completely satisfied?	Ordinal

Due to the features of the climate of the Republic of Bulgaria – hot summer and cold winter, and also because of the prevailing tourist-flow – more crowds at the seaside during the summer and more tourists at the mountain resorts during the winter season, the present study emphasizes on the specifics of the mountain tourism during the winter and the seaside tourism during the summer. In order to transform the answers of question Q4, concerning the travel frequency, from ordinal to ratio scale the following rule is applied: Each month → 12 times per year, Several times a year → 4 times per year, Once a year → 1 time per year, Once in a few years → 0,3 times per year, Less often → 0,1 times per year, Haven't travelled in Bulgaria → 0 times per year. The thorough analyses of the generations' domestic leisure tourism practices in Bulgaria include a number of statistical analyses such as: two-dimensional frequency distributions and statistical pair-wise hypothesis testing in order to clarify the exact differences amongst the generations studied. We have executed a descriptive analysis for the frequency distributions and the hypothesis testing that implicitly includes the following stages:

Stage 1: Stating the initial research hypothesis – null and alternative.

In all testing procedures concerning the abovementioned topics, the null hypothesis states that there is no significant difference between two (or more) generations and the alternate hypothesis states the opposite – there is a significant difference between two (or more) generations.

Stage 2: Choosing a suitable significance level for the hypothesis testing.

During all hypothesis testing procedures, the 5% (0,05) significance level is used.

Stage 3: Selection of the suitable test statistic according to the data and procedure specifics.

In order to investigate all potential differences amongst the generations, we have used non-parametric statistical tests due to the nature of the variables used – non-normally distributed.

Stage 4: Performing computations using the sample data and the chosen test statistic.

Based on the data from the national representative survey and the non-parametric tests a number of calculations have been done using the IBM SPSS ver. 29 software.

Stage 5: Decision-making process based on the p-value and the significance level comparison

In the cases where the p-value is less than the significance level the null hypothesis is rejected while in the cases where p-value is greater or equal than the significance level the null hypothesis is retained.

## RESULTS

Travel is perceived as social experience (McKercher, 2023) necessary for all generations. Every human generation has its own characteristics and features usually formed by the specifics of the 'era' that it had been born and lived in. Although the life of each generation 'member' is a different 'story', there are always some similarities and tendencies that they share which could be generalized and summarized. In the next few paragraphs, we will try to uncover some 'hidden' specifics of the generations' domestic leisure tourism practices in Bulgaria using the data from a national representative survey, details about which were discussed in the Methodology section of this article. When there is a need for the general examination of the domestic leisure tourism practices, we usually investigate the facts concerning the real travel experience of the sampled target population during the last 5 years' period. The results of this investigation are presented in the following Table 3. As it can be seen from the Table 3, there is an obvious difference in the domestic leisure tourism practices amongst the generations. Although only the half of the Generations Z and Y and a little more than 1/3 of the Generation X visit the winter (mountain) resorts in Bulgaria, the latter are significantly more visited by the younger generations (Z, Y and X) than the elder ones (Baby boomers - 18,4% and Builders – only 4,3%).

<sup>2</sup> Election area is a subdivision of the Bulgarian territory created to provide its population with an easier access to the location where they can vote.

<sup>3</sup> Private households of Bulgarian citizens.

<sup>4</sup> TAPI - tablet assisted personal interview.



The seaside resorts in Bulgaria are definitely more preferred by the locals than the mountain ones. Almost all (90,2%) representatives of the Gen. Y and great share of the other 'younger' generations (Gen. Z – 88,7% and Gen. X – 80,1%) have visited a summer resort during the last 5-year period. A statistically significant lower leisure tourism practice rates are typical for the Baby boomers (61,2%) and especially for the Builders (26,1%).

Table 3. Domestic leisure tourism practices in Bulgaria in the last 5 years by generation – share of respondents that have visited a resort (percent)

Leisure tourism practiced	Generation				
	Generation Z	Generation Y	Generation X	Baby boomers	Builders
	(A)	(B)	(C)	(D)	(E)
Winter (mountain) resorts	51,3%	50,6%	34,6%	18,4%	4,3%
	C D E	C D E	D E		
Summer (seaside) resorts	88,7%	90,2%	80,1%	61,2%	26,1%
	D E	C D E	D E	E	

Note: Total sample size is 1003 persons. Results are based on 2-sided significance tests. For each significant pair, the key of the category with the smaller column proportion appears in the category with the larger column proportion. Significance level for each column comparison (A, B, C, D, E) is 5%.

Usually there are specific reasons that hinder the Bulgaria citizens to enjoy even a short vacation at the domestic resorts. The top 3 'factors' that burden the travelling intentions amongst the Bulgarians are: lack of financial resources, lack of enough free time and family reasons (incl. taking care for young children, elder relatives, etc.). The comparison between the main reasons for not travelling amongst the generations considered are presented in following Table 4

Table 4. Main reasons for not travelling on domestic leisure tourism in the last 5 years by generation (percent)

Main reason for not travelling		Generation				
		Generation Z	Generation Y	Generation X	Baby boomers	Builders
		(A)	(B)	(C)	(D)	(E)
Winter (mountain) resorts	Lack of financial resources	37.5%	37.2%	39.9%	55.3%	36.4%
					A B C E	
	Lack of enough free time	26.8%	28.9%	32.0%	9.9%	x
		D	D	D		
Summer (seaside) resorts	Family reasons	10.7%	19.8%	10.1%	16.5%	22.7%
		-	-	-	-	-
	Lack of financial resources	30.8%	37.5%	46.3%	65.2%	58.8%
					A B	
	Lack of enough free time	23.1%	37.5%	18.5%	8.9%	x
			C D			
	Family reasons	7.7%	8.3%	13.0%	9.6%	5.9%
		-	-	-	-	-

Note: Total sample size for winter resorts is 661 persons and for the summer resorts is 243 persons. Results are based on 2-sided significance tests. For each significant pair, the key of the category with the smaller column proportion appears in the category with the larger column proportion. Significance level for each column comparison (A, B, C, D, E) is 5%. "x" - this category is not used in comparisons because its column proportion is equal to zero or one.

The most important factor for not travelling to domestic winter destinations for a slightly more than a third the generations Z, Y, X and the Builders is the lack of financial resources. This even more applies to the 'Baby boomers' because more than a half of them share this problem, which is significantly more than the other generations. The 'situation' is similar about the visiting of the seaside resorts, although in this case the Baby boomers are significantly more burdened by the money only comparing to the youngest generations – Z and Y. The second most 'influential' factor for not travelling is the lack of free time especially for the busier youngsters. Less than a third of generations X, Y and Z share the lack of enough time to visit a winter resort and significantly lower is the rate for the elder Baby boomers (9,9%). Usually, the Gen. Y is in the 'whirlwind of life' and that is why more than a third of them (37,5%) do not have enough time to visit a seaside resort which is significantly more than Gen. X (18,5%) and the Baby boomers (8,9%). The family reasons for not practicing domestic tourism are 'ranked' at the third place as a 'travelling stopper' ranging from 10,1% to 22,7% for the winter resorts and from 5,9% to 13,0% for the summer resort 'non-visitors'. The statistical tests showed no significant differences between the generations concerning that particular reason. Next table represents a comparison amongst generations concerning the information sources influence degree on domestic leisure tourism destination choice by the Bulgarian citizens.

Table 5 draws a very clear 'picture' of the information sources influence on the destination choice. As a 'master influencer' in Bulgarian can be defined the opinion given by the relatives and friends of the respondents and this is confirmed by each and every generation (no significant difference between the generations considered). On the opposite side, the print media such as: the 'old-fashion' newspapers, magazines, etc. almost lost its power of influence on all generations, ranking at last place on the 'scale of influence'. No significant difference on this topic has been found amongst the generations too. The 'modern' generations Z, Y and X prefer significantly more to use specialized online tourism platforms to choose travel destinations than the 'non-internet' generations – Baby boomers and Builders. The same 'pattern' can be found amongst the generations studied also when we focus on the internet sites (incl. YouTube). Generations Z, Y and X prefer significantly more those information sources than the elder two generations. Gen. Z and Y are more influenced by the websites even more than the Gen. X.

Table 5. Information sources influence degree on domestic leisure tourism destination choice in Bulgaria by generation (average)

Information sources	Generation				
	Generation Z	Generation Y	Generation X	Baby boomers	Builders
	(A)	(B)	(C)	(D)	(E)
Print media (incl. newspapers, magazines, etc.)	2.28	2.34	2.52	2.65	3.56
	-	-	-	-	-
Electronic media (incl. radio, television, etc.)	3.75	3.57	3.54	3.12	3.75
	-	-	-	-	-
Internet sites (incl. YouTube videos, etc.)	4.87	4.57	4.06	2.91	2.31
	C D E	C D E	D E		
Specialized online tourism platforms (incl. Airbnb, Booking, Google maps, etc.)	5.02	4.78	4.41	3.01	1.94
	D E	D E	D E		
Opinions of relatives/friends	5.67	5.83	5.60	5.57	5.59
	-	-	-	-	-

Note: Total sample size is 1003 persons. Results are based on 2-sided significance tests. For each significant pair, the key of the category with the smaller column value appears in the category with the larger column value. Significance level for each column comparison (A, B, C, D, E) is 5%. Non-significant differences are marked with “-”.

Although the electronic media (incl. radio, television, etc.) has lost its influential ‘glory’ it still has some influence on the domestic leisure tourism destination choice in Bulgaria which is equally shared amongst the different generations.

When considering the domestic leisure tourism practices specifics, it is important to provide a comparison of the travel frequency amongst the generations as it is presented in Table 6. As it can be seen from Table 6, the travel frequency becomes more intense with the younger generations and more ‘relaxed’ as the age progresses. The youngest Gen. Z (2.54 times a year) and Y (2.47 times a year) travel significantly more often the Baby Boomers (1.20 times a year) and the Builders (0.37 times a year). The ‘middle’ Gen. X (1.99 times a year) is closer to the younger generations from the travel frequency perspective but significantly different from the elder 2 generations in terms of a more frequent travelling.

Table 6. Travel frequency for domestic leisure tourism in Bulgaria by generation (average times per year)

Travel frequency	Generation				
	Generation Z	Generation Y	Generation X	Baby boomers	Builders
	(A)	(B)	(C)	(D)	(E)
Times per year	2.54	2.47	1.99	1.20	0.37
	C D E	C D E	D E		

Note: Total sample size is 1003 persons. Results are based on 2-sided significance tests. For each significant pair, the key of the category with the smaller column value appears in the category with the larger column value. Significance level for each column comparison (A, B, C, D, E) is 5%. Non-significant differences are marked with “-”.

Table 7. Duration of the domestic leisure tourism stay by resort type and generations (average days per stay)

Resort type	Generation				
	Generation Z	Generation Y	Generation X	Baby boomers	Builders
	(A)	(B)	(C)	(D)	(E)
Winter (mountain) resorts	4.14	4.30	4.59	4.39	7.00
					A B C D
Summer (seaside) resorts	7.65	6.63	7.09	6.54	4.17
	E	E	E	E	

Note: Total sample size for winter resorts is 342 persons and for the summer resorts is 760 persons. Results are based on 2-sided significance tests. For each significant pair, the key of the category with the smaller column value appears in the category with the larger column value. Significance level for each column comparison (A, B, C, D, E) is 5%.

Table 8. Degree of satisfaction with the domestic leisure holiday by resort type and generations (average)

Resort type	Generation				
	Generation Z	Generation Y	Generation X	Baby boomers	Builders
	(A)	(B)	(C)	(D)	(E)
Winter (mountain) resorts	5.14	5.27	5.29	5.52	5.00
	-	-	-	-	-
Summer (seaside) resorts	4.90	4.79	4.90	4.94	5.50
	-	-	-	-	-

Note: Total sample size for winter resorts is 342 persons and for the summer resorts is 760 persons. Results are based on 2-sided significance tests. For each significant pair, the key of the category with the smaller column value appears in the category with the larger column value. Significance level for each column comparison (A, B, C, D, E) is 5%. Non-significant differences are marked with “-”.

There is an obvious and a statistically significant difference between the generations considering the duration of the domestic leisure tourism stay too (Table 7). The winter resorts typically are visited approx. 4-5 days by all generations except for the Builders who usually spent a week there. On the opposite, a ‘typical’ vacation for the locals at the Bulgarian seaside usually lasts around 7 days for all generations except for the Builders who usually can afford to spend slightly more than 4 days there. Summarizing the whole vacation experience of the visitors at the Bulgarian resorts using the question: “To what extent are you satisfied with your holiday in the Bulgarian resorts in the last 5 years on the scale:

1 - I am not satisfied at all to 7 - I am completely satisfied?" outlined mostly positive feedback (Table 8). Overall, the Bulgarian mountain resorts obtain a little more 'thumb-ups' than the seaside ones, except for the Builders who liked more their summer vacation experience, there are no significant differences between the generations concerning the degrees of domestic leisure holiday satisfaction.

## DISCUSSION

The results of the present study are focused on several main topics: the preferences for domestic leisure tourism in winter and summer resorts, the length of stay of individual generations in them, the possible reasons for not visiting them and the information sources that influence decision-making from tourists to practice domestic leisure tourism, as a way to improve the advertising and PR policy of the state. The comparison of these data with other similar ones is relatively difficult, since there are no previous nationally representative studies on the subject in Bulgaria, and on the other hand, the relationship between generations and domestic tourism in various foreign studies has not been realized in countries with the same natural tourism resources. However, we will try to discuss the present results through the lens of similar studies existing in the scientific literature. Leisure trips are most practiced by all generations according to research of Expedia Group (2017). The Baby boomers mark the lowest share of relaxing trips that is similar to the results of both domestic leisure tourism practices in winter and in summer at the present study. In most countries with attractive beaches and a suitable climate, seaside tourism is highly developed. About the leisure tourism, research of the International Bank for Reconstruction and Development/The World Bank (2022) shows that the top motivation of about 75% of the Germans and UK travellers is to relax, rejuvenate and go to the beach. Our results confirm that also for all generations of Bulgarian tourists, summer seaside tourism is much more often practiced than winter mountain tourism.

Expedia Group (2017) survey reveals that Baby boomers are the generation that makes the longest trips. This fact differs with the results from Bulgarian domestic leisure tourism survey. For the winter mountain tourism, the Builders generation stay is the longest and for summer seaside tourism the Generation Z representatives stay longer than other generations.

The main priority of the Millennials and the representatives of Generation Z is to travel through the world (Deloitte Global Millennial Survey, 2020). They look for unique travel experience and the business has to understand this specific characteristic of the newest generations (Potjanjaruwit et al., 2024). According to our survey, the youngest generations (Y and Z) in Bulgaria, and also in Slovakia and Czechia (Pompurová et al., 2023) travel in their country much more frequently than the oldest. In Bulgaria they visit more winter resorts than the older generations. But also, almost all (more than 90%) interviewed Millennials have visited summer seaside resorts in the last five years.

The reasons that prevent participation in domestic leisure tourism among different generations are also investigated. We have identified three main reasons for all generations, namely lack of financial resources, lack of enough free time and family reasons. Similar to other studies of older tourists (Przybysz and Stanimir, 2022), lack of financial resources is the main reason the Baby boomers to not practice neither winter nor summer domestic leisure tourism.

When research of the information sources of culture and heritage based experiential tourism in Bulgaria is made by Culinary Arts and Hospitality Association (2021) only 80 respondents gave their opinion. The results show that like in our research the most influential information resources are Internet sites and platforms (85%) and recommendations from friends and relatives (63,7%). This survey doesn't analyze the opinion of the representatives of different generations because it is very limited as participants but shows significant differences considering the opinion of friends and relatives as motivating factors that is the top information source for all participants in our study never mind the generation they belong. The reasons could be the different types of tourism (culture and heritage based experiential tourism vs. leisure tourism), but also the socio demographic profile of the respondents, because the younger the generation is the smaller the difference between the influence of the top information sources is.

## CONCLUSION

The generations differ from each other in their travel preferences, behaviour, expectations. However, some similarities are observed between them. It is noteworthy that most respondents, regardless of the generation they belong to, have visited more summer seaside resorts than mountain winter resorts in the last five years. Some common characteristics are also observed in terms of reasons not to travel. The most popular are lack of financial resources, lack of enough free time and family reasons. As expected, the older generations, who rely primarily on their pension income, identify the lack of financial resources as the main obstacle to realizing domestic leisure tourism. Among the younger generations (X, Y and Z) there is a mixture of not enough free time and not enough funds. When select a domestic leisure tourism destination all generations trust most the opinion of friends and relatives, but the younger generations take in mind specialized online platforms and Internet sites and the oldest look for advertisement in electronic media. About the travel frequency for domestic leisure tourism in Bulgaria the generational analysis shows that the youngest generations (Y and Z) travel much more than the Builders. Regarding the winter resort stays, the generations don't show big differences. Only the stay of the Builders is much longer than the stay of the others. Regarding the summer seaside resort visits the Builders have the shortest stay. All generations show a similar degree of satisfaction with their stays in domestic leisure resorts. The satisfaction of the winter mountain resort is higher than this of the summer seaside visits.

There are several limitations and opportunities for future research. The advantage of the obtained results is based on the conducted nationally representative survey. A major limitation is, however, that no other large-scale studies were found to make an adequate comparison. On the other hand, research on this subject is being done for the first time in Bulgaria, and it is impossible to track and analyze trends in the preferences of different generations. There are also relatively few international

studies found in both business publications and academic literature that focus the audience's attention on domestic holiday tourism and look in detail at generational differences in winter and summer resorts. To a large extent, this is also due to the specifics of the available natural tourist resources in different countries. Moreover, the results of the present study, obtained by the use of a representative (random) sample, are in the form of statistical estimates. The latter are characterized by the fact that they are burdened with stochastic errors and could be “guaranteed” with certain confidence level, typically 95%.

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## HOW DOES SPIRITUAL LEADERSHIP DRIVE EMPLOYEE PERFORMANCE IN THE HOSPITALITY SECTOR? UNRAVELING THE ROLE OF AFFECTIVE COMMITMENT

Tamer AYAD\* 

Management Department, College of Business Administration, King Faisal University, Al-Ahsaa, Saudi Arabia;  
Tourism Studies Department, Faculty of Tourism and Hotels, Suez Canal University, Ismailia, Egypt, e-mail: tayad@kfu.edu.sa

Ahmed M. HASANEIN 

Management Department, College of Business Administration, King Faisal University, Al-Ahsaa, Saudi Arabia; Hotel Management Department, Faculty of Tourism and Hotel Management, Helwan University, Cairo, Egypt, e-mail: aabdelrazek@kfu.edu.sa

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**Abstract:** This research endeavors to investigate the interrelationships among spiritual leadership (SL), affective commitment (AC) and employee performance (EP) in the Egyptian hotel industry. Employing a quantitative research approach, the study distributed self-administered surveys to a randomly chosen group of employees. Analyzing 623 valid survey responses using structural equation modelling (SEM), the research revealed significant positive correlations between SL and both EP and AC, with AC also showing a noteworthy positive effect on EP. Moreover, the study found that AC acts as a mediator in the relationship between SL and EP.

**Keywords:** Spiritual Leadership, Employee Performance, Affective Commitment, Hospitality Industry

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### INTRODUCTION

In the fast-paced environment of the hotel industry, the influence of spiritual leadership on employee performance cannot be overstated (Wang et al., 2021; Ali et al., 2022; Qohin and Wihuda, 2023). Spiritual leaders, with their emphasis on values, ethics, and a higher purpose, have the power to inspire and motivate employees to excel in their roles (Ali et al., 2022). This sense of belonging fosters dedication, motivation, and discretionary effort among employees, leading to enhanced organizational outcomes such as productivity, job satisfaction, organizational commitment, and positive team dynamics as well as enhanced performance (Qohin and Wihuda, 2023). Furthermore, the study of Bayighomog and Arasli (2022) was conducted in the Cameroonian hotel industry disclosed that the synergy between spiritual leadership and organizational outcome (i.e., affective commitment and employee performance) creates a harmonious work environment conducive to success and excellence. Spiritual leadership (SL) involves a value-driven approach to guiding and inspiring individuals towards a higher purpose within an organizational context (Hunsaker, 2022; Karim et al., 2022; Yang et al., 2022; Liu et al., 2023). Is rooted in principles of integrity, empathy, and transcendental vision, spiritual leaders highlight the comfort of their employees, encouraging a significance of value, belonging, and interconnectedness (Abbas et al., 2023). In accordance with the study of Karim et al. (2022), spiritual leaders seek to cultivate a culture of trust, empowerment, and personal growth, ultimately driving organizational success through the alignment of individual values with collective goals through emphasizing the importance of ethical decision-making, empathy, and authenticity.

Affective commitment (AC) represents an emotional bond and sense of belonging that individuals develop towards their organization (Budur, 2022). AC involves a deep-seated attachment characterized by feelings of loyalty, identification, and enthusiasm towards organizational goals and values (Harrison et al., 2022). Employees with high levels of affective commitment are driven by a genuine passion for their work and a strong desire to contribute to the success of the organization (Meredith et al., 2023). According to Lahmar et al. (2023) AC fosters a sense of mutual care and reciprocity between employees and their organization, leading to greater job satisfaction, motivation, and ultimately, enhanced organizational performance. Employee performance (EP) implies to the effectiveness and productivity of individuals in fulfilling their job responsibilities and achieving organizational objectives (Vuong and Nguyen, 2022). It encompasses several dimensions for instance, task proficiency, quality of work, creativity, adaptability, and interpersonal skills (Tingo and Mseti, 2022). Effective employee performance is essential for organizational success, as it directly influences productivity, customer satisfaction, and overall competitiveness (Karyatun et al., 2023). Depending on continuous feedback, training, and development initiatives, organizations strive to enhance EP, thereby maximizing individual and collective contributions towards organizational goals and outcomes (Salim et al., 2023).

The hospitality industry in the Egyptian context is widely recognized as labour-intensive, requiring significant human input to deliver exceptional guest experiences (Sobaih, 2015). In this context, the relationship between spiritual leadership

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\* Corresponding author

and employee performance becomes particularly pertinent. Spiritual leadership, with its focus on aligning work with broader values and fostering a sense of purpose and connection, can play a crucial role in motivating and empowering employees within this labor-intensive environment (Fry, 2003). By nurturing a culture of care, empathy, and authenticity, spiritual leadership can enhance employee engagement, satisfaction, and ultimately contribute to the delivery of superior hospitality services. Despite the growing recognition of the importance of spiritual leadership in organizational settings worldwide, there remains a notable gap in the literature regarding its specific impact on employee performance within the Egyptian hospitality industry. Additionally, while affective commitment has been extensively studied in various organizational contexts, its role as a mediator in the relationship between spiritual leadership and employee performance remains largely unexplored within the Egyptian hospitality sector. Therefore, investigating these interconnections in the Egyptian context can provide valuable insights into the effectiveness of spiritual leadership practices and their implications for enhancing employee performance and organizational outcomes in this specific cultural and business environment.

Drawing upon Spiritual leadership theory (SLT), The aim of this research is to investigate the influence of SL on EP within the Egyptian hotel industry, with a particular focus on understanding the mediating role of AC. By exploring these dynamics, the study seeks to contribute to a deeper understanding of how leadership styles rooted in values and transcendental purpose influence employee attitudes and behaviors, ultimately shaping organizational effectiveness and success within the unique context of the hotel sector in Egypt.

## LITERATURE REVIEW

### 1. Spiritual leadership and Employee Performance

Several studies (e.g., Anggara and Aulia, 2021; Pio, 2022; Rahmatika et al., 2022; Manel et al., 2023; Khaddam et al., 2023; Subhaktiyasa et al., 2023) highlighted the purported significance of SL in influencing EP is increasingly acknowledged as a pivotal determinant of organizational success. SL indicated by its prominence on values and ethics, has been shown to positively influence various dimensions of EP (Rahmatika et al., 2022). According to the study of Jiang et al. (2023), spiritual leaders inspire and motivate employees by fostering a sense of meaning, purpose, and interconnectedness within the organization. Moreover, SL leads to greater engagement, commitment, and discretionary effort among employees, ultimately resulting in enhanced performance outcomes such as task proficiency, creativity, adaptability, and job satisfaction (Manel et al., 2023). The study of Wu et al. (2020) investigated the impact of spiritual leadership on employee engagement and found a significant positive association between the two constructs in a Taiwanese context. Furthermore, SL cultivates a supportive organizational culture characterized by trust, empathy, and authenticity, which further contributes to employee well-being as well as EP (Syukur et al., 2023). Therefore, we posit that:

**H1:** SL has a positive and direct effect on EP

### 2. Spiritual leadership and Affective Commitment

There is great attention on how SL influences AC within organizations because it is believed to have the capacity to nurture a feeling of purpose and belonging among employees (Battal and Ibrahim, 2023). Several research (e.g., Rumangkit, 2020; Jeon and Choi, 2020; Djaelani et al., 2021; Grego-Planer, 2022; Lahmar et al., 2023; Ullah et al., 2023) suggested that spiritual leaders through their emphasis on values and transcendental purpose, cultivate a work environment where employees feel emotionally connected to the organization's mission and vision. Consequently, employees may develop a strong sense of AC characterized by loyalty, enthusiasm, and identification with the organization (Jeon and Choi, 2020). However, the direct deterministic correlation between SL and AC points to the complexity of organizational dynamics and the many factors that influence employee attitudes (Ullah et al., 2023). Moreover, the subjective nature of spirituality and varying interpretations of its role in leadership further complicate the assessment of its impact on AC (Rumangkit, 2020). Hence, considering these discussions, we could postulate that:

**H2:** SL has a positive and direct effect on AC

### 3. Affective Commitment and Employee Performance

Numerous research (e.g., Aflah et al., 2021; Nauman et al., 2021; Alqudah et al., 2022; Udin et al., 2022; Rifa'I, 2023; Nizam and Hameed, 2023) strengthened that AC emerges as a cornerstone in shaping EP within organizational contexts. AC as an emotional connection and sense of belonging to the organization play a crucial role in influencing employees' dedication, motivation, and discretionary efforts in their roles (Park et al., 2023). The study of Manel et al. (2023) argued that strong AC are inclined to exceed their job expectations, demonstrating genuine loyalty and passion for the organization. This emotional investment of AC fosters a positive work atmosphere, promoting collaboration, resilience, and a shared sense of purpose (Nauman et al., 2021). Consequently, the study of Nizam and Hameed (2023) heightened that AC leads to enhanced EP, characterized by increased productivity, job satisfaction, and positive team dynamics. Organizations that prioritize and foster AC among their workforce stand to benefit from a more engaged and high-performing team, enhancing the organization's overall prosperity and longevity within the contemporary, ever-changing workplace landscape (Alqudah et al., 2022; Udin et al., 2022; Rifa'I, 2023). Therefore, while some studies suggest a positive association between SL, AC and EP, further research (i.e., Rumangkit, 2020; Aflah et al., 2021; Grego-Planer, 2022) argued that there is a need to elucidate the mechanisms underlying this relationship between SL and EP and explore potential mediators and contextual factors. According to Maryati and Astuti (2022) AC fosters a strong emotional connection between employees and their organization generally and their spiritual leaders specifically by cultivating dedication, motivation, and discretionary effort among employees. Consequently, our hypotheses are formulated as follow:

**H3:** AC has a positive and direct effect on EP

**H4:** AC mediates the relationship between SL and EP

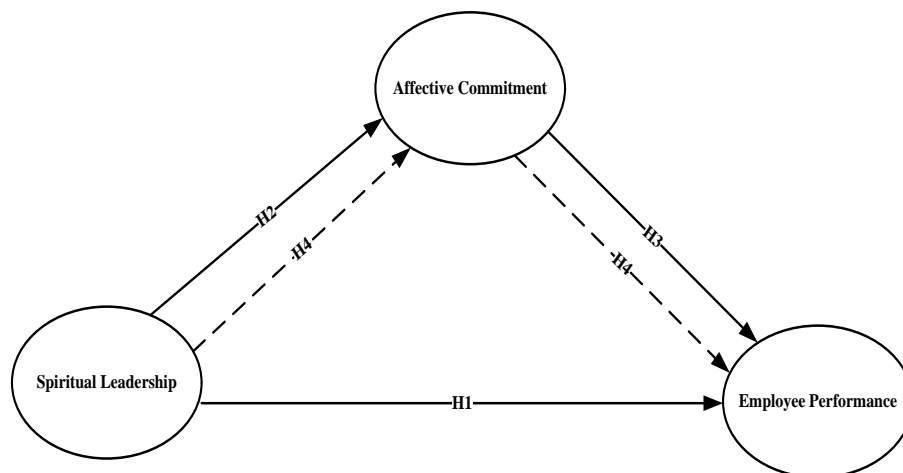


Figure 1. Research Conceptual Model

## MATERIALS AND METHODS

The methodology of the study was conducted according to the following Figure 2.

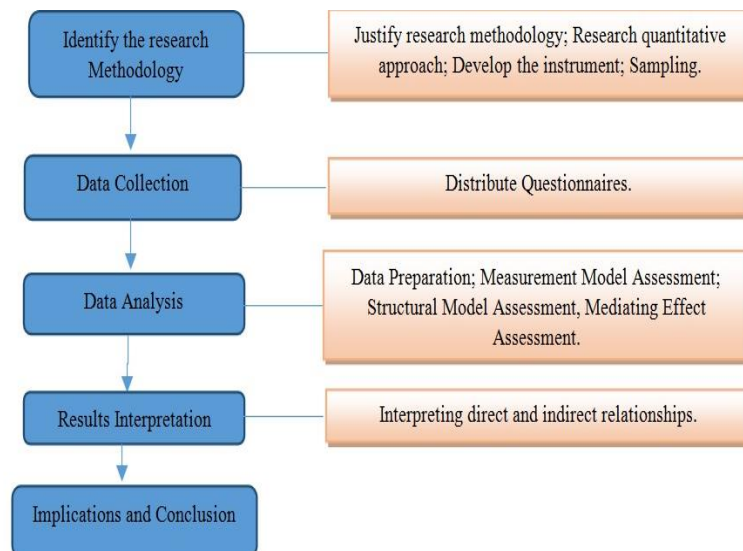


Figure 2. Research Methodology Flow-chart

### The scale and the study constructs

The variables of this study are spiritual leadership, employee performance and affective commitment, which are adopted from the literature. A scale derived from Fry et al. (2005) study was used to measure and evaluate spiritual leadership from the perspective of three dimensions: vision, hope/faith, and altruism, with a total of 9 sentences included in the questionnaire to measure "SL" such as: My organization's vision inspires me to perform better; I show my faith in my organization and its mission by doing everything I can to help it succeed; and leaders in my current organization have the enough courage to stand up for their employees. Employee performance was measured by 5 items, derived from Jansson and Yperen (2004), which are the employee's completion of the duties specified in the job description.

The employee's fulfillment of all formal performance requirements of the job. The employee's performance "EP" of all responsibilities required by the job. The employee's failure to neglect aspects of the work to be performed. The employee's success in performing his or her essential duties. As for the affective commitment "AC", it was measured by six items scale derived from Meyer and Allen (1991), which cited at Nguyen et al. (2020), which are: I am happy to choose the current organization to work for. I always feel that the problems and difficulties that the organization n faces are also my problems. I have the feeling that the current organization is my second home. I feel that I belong completely to the current organization. I have the feeling that the organization is like a family and I am a member of it. Certainly, the current organization, it has special importance to me. All variables' scale showed a high reliability value above 0.90.

### Population and Sample Size

In alignment with the study's objective, the target research population is hotel employees. Due to challenges in precisely gauging the workforce's size at hotels, Veal's (2006) findings were consulted, estimating the research

population at approximately 20,000 individuals. Employing the Herbert Larkin equation, a sample size of 377 individuals was determined for this study (Ayad, 2017).

### Data collection

This study adopted a quantitative approach, utilizing a self-administered questionnaire to gather primary data from the sampled individuals. Prior to distribution, the questionnaire underwent testing, review, and adjustment based on feedback from a panel of tourism industry experts and university professors. The questionnaire was disseminated to 634 employees between December 2023 and January 2024. Of these, 623 questionnaires were completed, yielding a response rate of 98%, which were subsequently subjected to statistical analysis. Divided into four sections, the questionnaire addressed demographic information in the first part, while the remaining sections focused on the three study variables: spiritual leadership, employee performance, and affective commitment. Respondents were instructed to rate each element of these variables using a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), based on their perspectives.

### Analysis Techniques

To examine the descriptive data of the study's sample, the statistical software SPSS version 29 along with Excel sheet 2021 was employed. Furthermore, to assess both direct and indirect relationships among variables and to investigate the research hypotheses, PLS-SEM version 4.0.9.9 was utilized.

## RESULTS AND DISCUSSION

### Measurement Model (Outer Model) Convergent Validity

To ascertain the reliability and validity of the variables and elements in this study for model construction, a convergent validity test was conducted. The results indicated a high level of reliability across all elements, surpassing the threshold set by Hair et al. (2017) at 0.7. Additionally, the composite reliability (CR) of all study variables was examined, with all scores exceeding the recommended cut-off point by Bryman and Cramer (2011) and Hair et al. (2017), also set at 0.7. Furthermore, the average variance extracted (AVE) for all variables surpassed the threshold advised by Fornell and Larcker (1981) at 0.5. These findings collectively support and affirm the reliability and validity of the model. See table 1 for detailed results.

Table 1. Results of Convergent Validity

Construct	Item	Loading	AVE	CR
Spiritual Leadership (Fry et al., 2005)	SL-1	0.817	0.686	0.881
	SL-2	0.706		
	SL-3	0.824		
	SL-4	0.739		
	SL-5	0.706		
	SL-6	0.706		
	SL-7	0.716		
	SL-8	0.702		
	SL-9	0.705		
Affective Commitment Meyer and Allen (1991), as cited at Nguyen et al (2020).	AC-1	0.834	0.624	0.806
	AC-2	0.706		
	AC-3	0.811		
	AC-4	0.842		
	AC-5	0.706		
	AC-6	0.811		
Employee Performance (Jansson and Yperen, 2004)	EP-1	0.903	0.628	0.734
	EP-2	0.811		
	EP-3	0.811		
	EP-4	0.841		
	EP-5	0.901		

### Discriminant Validity

To enhance trust in the model's outcomes and interpretations, tests including the Fornell-Larcker criterion and cross-loading methods were employed. Their purpose was to confirm the discriminant validity of the model and ascertain that all constituent variables are distinct from one another (Kock, 2020) (Tables 2, 3, and Figure 3).

Table 2. Results of Fornell-Larcker criterion (\* The values in bold are the square root of AVE)

Construct	SL	AC	EP
SL	<b>0.828</b>		
AC	0.671	<b>0.790</b>	
EP	0.684	0.491	<b>0.792</b>

The results presented in the previous table indicate that each of the research variables elucidates variance in its components more effectively compared to the collective explanatory power of the other variables within the model. This serves to substantiate the discriminant validity of the model, aligning with the criteria outlined by Fornell and Larcker

(1981) as well as Hair et al. (2017). The results outlined in the previous table affirm the discriminant validity of the model, as endorsed by Chin (1998). This is because all elements of the variables exhibit stronger loading on their respective constructs, surpassing their loading on any other variables within the model's constructs.

Table 3. Discriminant validity - Cross Loading

	Spiritual Leadership	Affective Commitment	Employee Performance
SL-1	<b>0.817</b>	0.656	0.639
SL-2	<b>0.706</b>	0.485	0.374
SL-3	<b>0.824</b>	0.711	0.638
SL-4	<b>0.739</b>	0.305	0.572
SL-5	<b>0.706</b>	0.434	0.409
SL-6	<b>0.706</b>	0.127	0.049
SL-7	<b>0.716</b>	0.403	0.443
SL-8	<b>0.702</b>	0.414	0.542
SL-9	<b>0.705</b>	0.281	0.431
AC-1	0.706	<b>0.834</b>	0.409
AC-2	0.100	<b>0.706</b>	0.071
AC-3	0.452	<b>0.811</b>	0.201
AC-4	0.631	<b>0.842</b>	0.415
AC-5	0.301	<b>0.706</b>	0.303
AC-6	0.586	<b>0.811</b>	0.401
EP-1	0.730	0.420	<b>0.903</b>
EP-2	0.074	0.218	<b>0.811</b>
EP-3	0.013	0.155	<b>0.811</b>
EP-4	0.609	0.381	<b>0.841</b>
EP-5	0.751	0.498	<b>0.901</b>

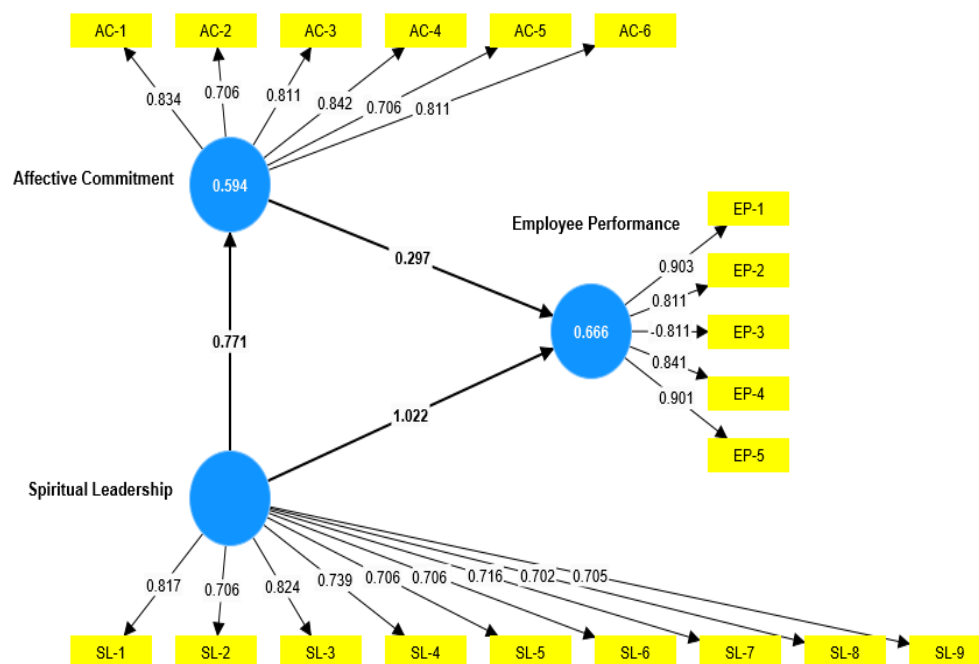


Figure 3. Measurement Model

### Structural Model (Inner Model); Coefficient of determination ( $R^2$ )

The coefficient of determination test ( $R^2$ ) was employed to estimate the model's predictive capacity in explaining the percentage of variance observed in the dependent variable using the independent variable. Results indicated that the variance attributed to the independent variable "SL" on the dependent variable "EP" was high, while on the dependent variable "AC" it was moderate, based on the threshold established by Chin (1998) (Table 4).

Table 4.  $R^2$  of the Endogenous Latent Variables

Constructs	R-square	Results
EP	0.670	High
AC	0.594	Moderate

### Effect size ( $f^2$ )

The effect size " $f^2$ " test was employed to assess the individual impact of each external latent variable on the internal latent variable. The results revealed that the effect size of the variable "SL" as an external latent variable on both "EP" and "AC" as



internal latent variables was significant, indicating a large effect. Furthermore, the effect size of "AC" as an external latent variable on "EP" as an internal latent variable was moderate, based on the criterion proposed by Cohen (1988) (Table 5).

Table 5. Assessment of Effect Size ( $f^2$ )

Constructs	Employee Performance	Affective Commitment
Spiritual Leadership	0.923 (Large)	0.832 (Large)
Affective Commitment	0.522 (Medium)	

### Goodness of Fit of the Model (GoF)

The Goodness-of-Fit (GOF) test was utilized to verify the reliability of the proposed model for this study as a comprehensive fit measurement model. This evaluation considered factors such as the level of measurement, structure, and overall performance of the model, following the guidelines outlined by Chen (2010):

$$\text{GoF} = \sqrt{R^2 \times \text{AVE}} \quad \text{GoF} = 0.638$$

Based on the results of the GoF test and with reference to the standard outlined by Wetzels et al. (2009), the adequacy of fit for the model proposed in this study can be affirmed, indicating it is valid enough to be considered a global comprehensive PLS model.

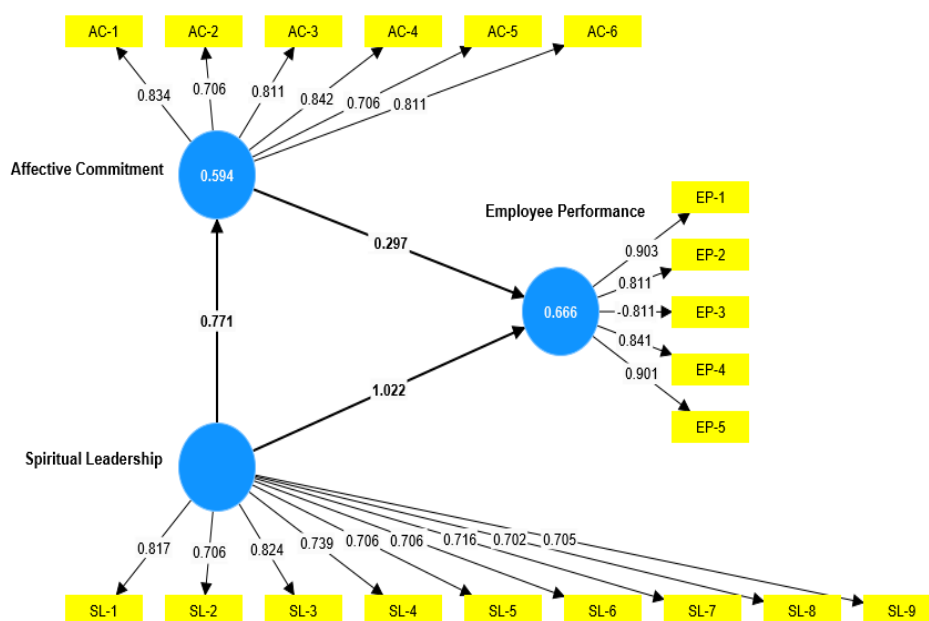


Figure 4. The Final Proposed Structural Equation Model

### Hypotheses assessment (Significance of path coefficients)

To ascertain the validity of the study hypotheses, a significance test on path coefficients was performed, with the goal of evaluating the degree of alignment between the proposed theoretical model and the primary study data. The summary of all hypothesis testing results can be found in Table 6. This research introduced three direct hypotheses and one indirect hypothesis (Figure 1). The results of the structural equation model (Tables 5 & 6, Figure 4) indicated that "SL" has a significant positive effect on both "EP" (Effect size= 0.346, Std. Beta = 1.022,  $P = 0.000$ ) and "AC" (Effect size= 0.832, Std. Beta = 0.771,  $P = 0.000$ ), thereby supporting hypotheses H1 and H2. Similarly, "AC" was found to have a significant positive impact on "EP" (Effect size= 0.522, Std. Beta = 0.297,  $P = 0.000$ ), confirming hypothesis H3. Furthermore, the SEM outcomes demonstrated the mediating effect of "AC" in the relationships between "SL" and "EP" (Std. Beta = 0.228,  $P = 0.000$ ), with both the lower and upper bounds of the bootstrapped confidence interval surpassing zero. This indicates that zero did not fall within the interval, and the  $P$  value was 0.000, in line with the recommendations of Preacher and Hayes (2008). These results support the mediating influence of affective commitment, thus validating hypothesis H4.

Table 6. Path Coefficient of the study Hypotheses (Significant at  $P^{**} = < 0.01$ )

Hypothesis (Paths)	Effect	Std. Beta	Std. Error	T Value	P values	Results
H1: SL → EP	Direct	1.022	0.036	28.388	0.000	Supported**
H2: SL → AC	Direct	0.771	0.023	33.521	0.000	Supported**
H3: AC → EP	Direct	0.297	0.048	6.188	0.000	Supported**
H4: SL → AC → EP	Indirect	0.228	0.038	6	0.000	Supported**

### DISCUSSION AND CONTRIBUTION

Based on Spiritual Leadership theory, this study delves into examining how "SL" impacts "AC" and "EP" among hotel employees in Egypt. Furthermore, it explores how "AC" mediates the relationship between "SL" and "EP". This investigation

aims to offer a more profound insight into how leadership styles grounded in values and transcendent purpose affect employee attitudes and behaviors, consequently molding organizational effectiveness and success within the distinctive environment of the hotel industry in Egypt. The findings revealed that "SL" significantly and positively influences "EP" among employees in the hotel industry in Egypt, aligning closely with prior research by Wu et al. (2020) who examined the impact of spiritual leadership on employee engagement and found a significant positive association between the two constructs in a Taiwanese context. Similarly, the results indicated a significant positive relationship between "SL" and "AC" among hotel industry employees in Egypt, consistent with the findings of Ullah et al. (2023) who explored the influence of SL on knowledge-hiding behavior through commitment in Pakistani agriculture research institutes who found that SL through their emphasis on values and transcendental purpose, cultivate a work environment where feel emotionally committed their organizations.

Additionally, it was found that "AC" significantly and positively impacts "EP" among hotel industry employees in Egypt, echoing the conclusions drawn by Nizam and Hameed (2023) who explored the influence of Knowledge Sharing on EP and the role of AC in Pakistani banking sector who showed that AC leads to enhanced EP, characterized by increased productivity, job satisfaction, and positive team dynamics. Moreover, the results underscore the indirect effect of "SL" on "EP" among hotel industry employees in Egypt through the intermediary role of "AC", confirming the mediating function of "AC" between these variables. This finding is in line with the study conducted by Maryati and Astuti (2022) explored the role of AC in the relationship between of SL and EP of lecturers in Indonesian private universities who affirmed that AC fosters a strong emotional connection between lecturers and their universities generally and their SL and their performance.

The study has yielded several outcomes that carry significance for both theoretical understanding and practical application within the hotel industry. It addressed gaps in existing literature concerning the mediating role of affective commitment in the relationship between spiritual leadership and employee performance in the hotel sector. This implies that "AC" holds the potential to modify the impact of "SL" on "EP". Furthermore, these results hold managerial implications for the hotel industry, highlighting the necessity for leaders within these establishments to foster positive spiritual and social interactions and prioritize employees' affective commitment, thereby influencing their performance positively. By recognizing and leveraging these reciprocal dynamics, the findings from this research can inform leadership strategies aimed at nurturing thriving and high-performance work environments within the Egyptian hotel industry.

The research findings contribute to enrich the existing theoretical framework by integrating the concepts of spiritual leadership and affective commitment within the context of the Egyptian hospitality sector. By synthesizing these concepts, we provide a deeper understanding of the underlying mechanisms that drive employee performance in this unique cultural setting. The research also highlights the significance of aligning leadership practices with the cultural values and norms prevalent in Egyptian society. Our research offers practical implications for decision makers within the Egyptian hospitality sector. By identifying the key spiritual leadership practices that foster affective commitment among employees, we provide guidance for leaders to cultivate a work environment conducive to employee engagement, satisfaction, and ultimately, enhanced performance.

## CONCLUSION

This study aims to explore the direct influence of spiritual leadership on affective commitment and employee performance among individuals working in the hotel industry in Egypt, as well as the indirect influence of "SL" on "EP" through "AC". Data were gathered from 623 employees in Egyptian hotels. Descriptive data were analyzed using SPSS version 29 and Excel Sheet 2021 to examine demographic characteristics of the participants. Furthermore, PLS-SEM version 4.0.9.9 was employed to investigate the direct and indirect relationships between variables and to assess the research hypotheses. The SEM findings revealed that spiritual leadership positively and significantly affects affective commitment and employee performance among hotel industry employees in Egypt. Additionally, the results demonstrated a mediating role of affective commitment in the association between spiritual leadership and employee performance in the Egyptian hotel industry. Recognizing and leveraging these reciprocal dynamics may assist decision-makers in formulating leadership strategies aimed at fostering thriving and high-performance work environments in Egyptian hotels.

Like preceding research endeavors, this study has inherent limitations and constraints that indicate avenues for future investigation. Subsequent inquiries could delve into demographic variables like gender and age, either as moderators or by conducting analyses across diverse groups to discern variations in the examined relationships. Furthermore, further exploration could probe alternative mediators, contrasting their impacts with those observed in our study. It's imperative to be cautious when generalizing the findings of this study, considering its exclusive focus on employees in the Egyptian hospitality sector. Hence, future research endeavors could reevaluate the current model across a range of cultural contexts.

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**Conflicts of Interest:** The authors declare no conflict of interest.

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## WEATHER-DRIVEN FLUCTUATIONS IN DAILY BEACH TOURISM: INSIGHTS FROM COASTAL DESTINATION DYNAMICS IN SPAIN

**Diego R. TOUBES\*** 

Faculty of Business and Tourism, University of Vigo, Ourense, Spain, e-mail: drtoubes@uvigo.es

**Noelia ARAÚJO VILA** 

Faculty of Business and Tourism, University of Vigo, Ourense, Spain, e-mail: naraujo@uvigo.es

**Lucília CARDOSO** 

CiTUR – Center for Tourism Research, Development and Innovation, Polytechnic University of Leiria,  
Leiria, Portugal, e-mail: lucilia.a.cardoso@ipleiria.pt

**Luís LIMA SANTOS** 

CiTUR – Center for Tourism Research, Development and Innovation, Polytechnic University of Leiria,  
Leiria, Portugal, e-mail: llsantos@ipleiria.pt

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**Abstract:** Tourism dynamics are profoundly influenced by weather conditions, particularly in regions celebrated for their climatic appeal. The Rías Baixas, a renowned coastal destination in northwest Spain, presents an exemplary case for examining this interplay. This study aims to enhance comprehension of how tourists alter their daily activities in response to weather changes, providing valuable insights for improved planning and management in the tourism sector. Faced with the methodological challenge of accurately measuring daily tourist flows, especially in areas such as beaches without entry registers, this study innovatively uses daily vehicle traffic intensity data in access areas to quantify tourist behavior patterns. Positive correlations are observed between the arrival of vehicles and sunshine. For tourism businesses, short-term weather forecast information, as well as a better understanding of travelers' behavior, is crucial for decision making and operational planning.

**Keywords:** coastal tourism destination, tourism behavior, tourism planning, meteorology, daily vehicle traffic

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### INTRODUCTION

Seasonality in tourism is a widely recognized phenomenon that significantly influences the dynamics of tourist destinations. This phenomenon is characterized by the succession of temporal changes that impact the flow of tourists throughout the year. While in many destinations this seasonality is clearly manifested in distinctive seasonal patterns, such as the division between spring-summer and autumn-winter, it is also influenced by a series of additional factors that generate shorter cycles and overlap with climatic seasons (Butler, 2001). Among the various factors that influence seasonality, climatic events play a crucial role. Previous studies indicate that climatic events directly affect tourists' decisions regarding the destination to visit and the trip planning process. This influence varies depending on the type of tourist activities, with outdoor activities being the most sensitive to climatic variations (Moreno, 2010).

In addition to the climate, other factors such as work holiday periods, the succession of days of the week and institutional and natural variables also contribute to seasonality in tourism. It is important to highlight that the climate not only influences the tourist's decision about the destination to visit, but also determines the environmental context in which the tourist activities will take place (Butler, 2001). Tourist satisfaction during their vacation can be significantly affected by the weather conditions of the destination, especially when these differ from previous expectations. However, the understanding of how personal and sociodemographic characteristics influence meteorological preferences and thresholds is still limited in the field of tourism (Esteban-Talaya et al., 2005). Through this research, we seek to better understand how the daily variability of institutional and climatic factors affects tourist flows during the high season in destinations characterized by high seasonality, as is the case of sun and beach areas. This knowledge is essential for companies and authorities in the efficient planning and management of their tourist operations and services.

To do this, first a theoretical review of the effects of climate on tourism is carried out, especially in the planning and choice of tourist destination, and then, as an empirical part of the study, a review of daily tourist flows is carried out. in an area where there is no entry registration to the beaches, in Sanxenxo (Rías Baixas, Galicia, Spain), using the reports from the General Directorate of Traffic on the average intensity of vehicle traffic as an innovative methodology.

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\* Corresponding author



## LITERATURE REVIEW

Seasonality is common to many tourist destinations and is due to the succession of temporary changes that affect the flow of tourists. In many tourist destinations, the temporal and geographical distribution of tourists throughout the year is markedly defined by seasonal patterns (spring-summer and autumn-winter), but seasonality is also produced by other factors and presents shorter cycles that overlap with those of the climatic station. For example, there are institutional factors, such as work holiday periods; calendar, such as the succession of the days of the week; or natural factors, such as the variability in tourist flow produced by climatic variables (Butler, 2001). More recent studies, including those by Zhang and Kulendran (2017) and Senbeto and Hon (2019), advocate for a multifactorial approach to elucidate the determinants of tourist responses to seasonality. The tourism sector is very sensitive to climate events since these events directly affect the tourist's decision-making about the destination to visit and the trip preparation process (Michailidou et al., 2016; Ridderstaat et al., 2014; Scott and Lemieux, 2010; Bigano et al., 2006; De Freitas, 2003). The influence of climatic factors varies significantly depending on the type of activities that tourists carry out at the destination, with activities practiced outdoors, in general, being more sensitive to climatic variations than those practiced indoors. Furthermore, the influence of individual factors on tourist flows varies by destination. According to Hadwen et al. (2011), climate is the primary driver of seasonal visitation patterns in equatorial and tropical regions. However, Charles-Edwards and Bell (2015) suggest that a better understanding of the variables affecting tourism seasonality in other areas is needed.

The climate also determines the environmental context in which the activities in which tourists participate will take place. Thus, the effects of climate on tourism at the destination level include two aspects: the direct effects on tourists, for example, comfort conditions and ideal weather conditions for the practice of certain activities, and the effect contextual, for example, species present, quality and state of ecosystems and the environment in general (Moreno, 2010). In turn, in the medium and long term, the tourism industry produces effects on the climate through the emission of greenhouse gases (GHG).

Regarding the direct effects of the climate on tourists, visitor satisfaction with their vacations can be significantly influenced by the meteorological conditions at the destination (Vojtko et al., 2022), especially when there is a discrepancy between the expected climate—normal conditions for that area—and the actual weather encountered (Esteban-Talaya et al., 2005). Research aimed at understanding how personal and sociodemographic characteristics influence meteorological preferences and thresholds, as well as climate-based decisions, is still scarce in the field of tourism. Mieczkowski (1985) was one of the first researchers to apply the findings about comfort conditions in specific activities related to leisure and tourism. Mieczkowski devised a Tourism Climate Index composed of five sub-indices: hours of light - daytime thermal comfort, temperature - daily thermal comfort, precipitation, hours of sunshine and wind speed. Recently there have been researchers who have worked in this area in different contexts, such as mountain tourism (Steiger et al., 2016), ski tourism (Rutty et al., 2015) and beach tourism (Rutty et al., 2020; Rutty and Scott, 2016; Martínez-Ibarra and Gómez Martín, 2012).

Destination demand studies have faced criticism for their reliance on simplistic individual climate variables, rather than accounting for the complex variables that truly drive demand dynamics (Gössling and Hall, 2006). It has been established that factors determining international tourist flows are predominantly linked to demand factors in the originating region and supply factors in the destination areas (Gidebo, 2021). Research employing the gravity model approach has identified the standard negative distance effect and the tourism climate index as key indicators of tourism flow volume (Eryigit et al., 2010). While temperature is commonly the primary variable in these studies, it alone does not adequately capture tourists' climatic preferences at a destination (Hamilton and Lau, 2006). Climate information also plays an important role during the trip preparation process, and travelers use different types of information depending on the planning phase they are in. Moreno (2010) differentiates the phases of Trip Preparation, where travelers consult the destination's average weather to choose when and where to travel, using guidebooks and previous experience; Pre-Trip: with the date approaching, weather forecasts are reviewed to define activities and luggage, crucial for short-notice trips; and During and Post-Trip: the weather experienced at the destination drives daily activities and, once back home, impacts satisfaction and memories of the trip. The perception of credibility of climate information providers, whether media or institutions, also determines the decision-making of the tourist or traveler (Dong et al., 2018). Many sun and beach destinations are seasonal destinations, with the high season -during summer- and low season -in winter and autumn- occurring during the year. However, even within the high season there is daily variability in the tourist flow that depends largely on the succession of working days and holidays - weekends - and the weather. A study by Toubes et al. (2020) carried out in the most touristic area of the Rías Baixas, in Galicia, finds that the climatic variables with the greatest influence on tourists' decisions to travel to the bathing area are the maximum temperature and insolation - hours of sunshine -, above the "no rain" variable. Between these two, sunshine is the climatic parameter with the greatest influence on the level of occupancy of the beaches. These results are in line with other works carried out in Spain, such as that of Gómez-Martín and Martínez-Ibarra (2012), which show that the density of beach use is controlled mainly by solar radiation.

One of the main intuitions of the study by Toubes et al. (2020) is that in trip planning there seems to be a period of adaptation to climate changes. Users experience some inertia in their behavior, such as a brief adaptation period due to changes in planned plans. The weather conditions may be optimal for going to the beach, but there is a short "adaptation period." For example, after a few days of bad weather, even if the forecasts are good for sun and beach tourism, tourists will not immediately approach the tourist area. That day there may be ideal conditions for practicing leisure activities on the beach, but as it has been preceded by days of bad weather, mobility to the tourist area has been much lower. This period of adaptation occurs in both directions: after a period with good conditions for sun and beach tourism, the arrival of a day with unacceptable weather is mitigated by this inertia. The information provided by the weather forecast service

is frequently updated and is increasingly accurate and accessible to users, so weather misinformation does not seem to be the reason for this delay in adaptation.

The unpredictability of tourist flow affects businesses in areas where daily demand can vary substantially. The elements of this behavior include the choice of destination, the type of activity carried out and mobility. Uncertainty in demand flows directly affects companies and employment. Tourism companies that operate without reservation - as is the case with many restaurants and leisure activities - do not have the capacity to make an accurate forecast of daily demand.

The paper aims to analyze how daily changes in institutional and weather factors impact tourist numbers in highly seasonal destinations. It seeks to enhance comprehension of tourist reactions to climatic shifts, addressing the challenge of demand unpredictability which significantly affects businesses and employment in the tourism sector. The goal is to enable more accurate forecasting and planning for tourism-related businesses and authorities. To do this, an analysis of the daily traffic of cars to a sun and beach destination in the Rías Baixas, in the northwest of Spain, is carried out. Specifically, the study is carried out in the Salnés peninsula, where one of the main tourist spots in Galicia, Sanxenxo and O Grove, is located.

## METHODOLOGY

There is great difficulty in obtaining data on the daily tourist flow. Official organizations that offer data on tourist flows, such as the National Statistics Institute or the Galician Statistics Institute, provide monthly but not daily aggregate data, for example, the hotel occupancy survey. On the other hand, visitor records in tourist offices reflect only a part of the daily tourist movement since only a small percentage of visitors access these offices in search of information.

Some studies on the subject have tried to collect information on daily tourist flows through different methods and techniques, for example: time-lapse video recording systems (Brandenburg and Arnberger, 2001), mobile positioning (Järv et al., 2007) or image captures through webcams (Gómez-Martín and Martínez-Ibarra, 2012; Martínez Ibarra, 2011; Moreno et al., 2008; Kammler and Schernewski, 2004; Toubes et al., 2020).

Other tourism contexts with check-in, such as campgrounds, parks, zoos or ski resorts, can more accurately assess demand flows. An added difficulty in sun and beach tourism is that there are no entry records to the beaches except for those that are saturated and where the authorities have decided to establish an entry control with a registry. This research explores new ways of measuring daily tourist flows in areas where there is no entry registration.

The General Directorate of Traffic provides reports on the average intensity of vehicle traffic, but this information offers average statistics and does not provide information on daily variability. Daily traffic information can be obtained using motor vehicle traffic intensity (MVTI) data in access areas. In this work, MVTI data are used in combination with daily meteorology data to obtain information on the daily and seasonal fluctuation of beach tourists.

The study methodology was structured in seven workflow steps:

1. Study area selection: municipalities of Sanxenxo and O Grove located on the Salnés peninsula in north-eastern Spain.
2. Population and tourist flow analysis: examination of the population data of Sanxenxo.
3. Transportation mode assessment: analysis of the primary transportation method used by visitors.
4. Data collection points: a) MVTI data collection at the motorway toll that gives road access to the tourist area; b) climatic data collection from the meteorological station in Sanxenxo.
5. Data parameters: sunshine percentage as the climatic parameter to account for seasonal daylight changes.
6. Data collection period: data was gathered from July 1 to August 31, 2019.
7. Data analysis: the data were analysed to understand the daily variability of tourist flows in response to climatic factors.

The study is carried out in the tourist area of Salnés, where the municipalities of Sanxenxo and O Grove are located. The main attraction of the Rías Baixas is concentrated on the coast, making it an area dependent on the favorable weather for swimming. Sanxenxo is the main town in the region and the most important tourist destination in the autonomous community of Galicia. It has an oceanic, temperate and humid climate that is very variable throughout the year. It is a well-defined sun and beach destination, with a high seasonality. The census population in Sanxenxo is 17,856 people in December 2021 (IGE, 2023). This population grows especially in the high season months, July and August. In the month of July, 191,011 tourists spent the night in hotels and campsites in Sanxenxo and 246,272 in August (Figure 1).

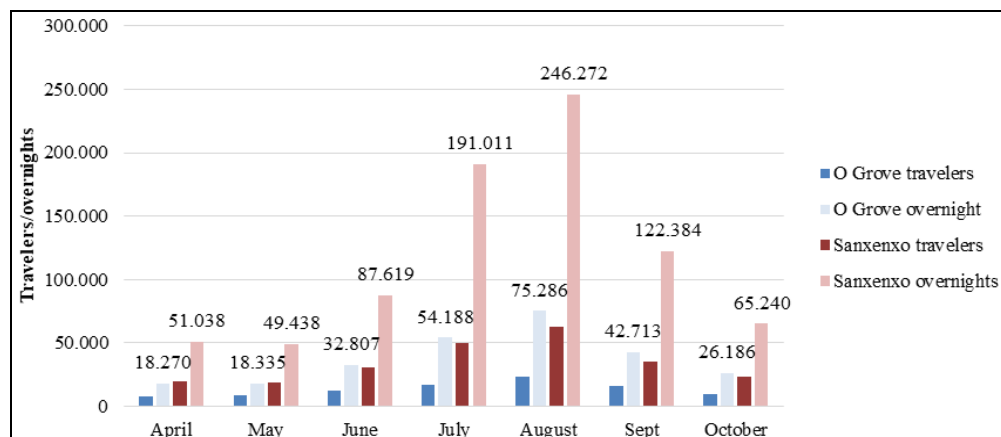


Figure 1. Travellers and overnight stays in Sanxenxo and O Grove in April-October 2019 (Data source: INE, 2020)

Sanxenxo is recognized as the Spanish municipality with the highest number of Blue Flag beaches, totaling 17. According to the category of Williams (2011), it has semi-urban rural and urban beaches, among the latter Silgar is the best known. O Grove has 15 beaches and coves, among the best-known tourist spots are A Lanzada beach and Illa de A Toxa. In this area there is a significant daily tourist flow and many users use their private car to access the area. The study carried out by Toubes et al. (2020) in the same tourist area shows that the car is the most used means of transportation, with 70.3% of visitors who access the area using it. The MVTI data were collected at the Curro toll station on the AP-9, km. 119,394, and were provided by the concessionaire company, Audasa (Autopistas del Atlántico Concesionaria Española S.A.). This toll links the AP-9 motorway with the VG-4.1 expressway that gives access to the beach area of the municipality of Sanxenxo and the Grove peninsula (Figure 2).

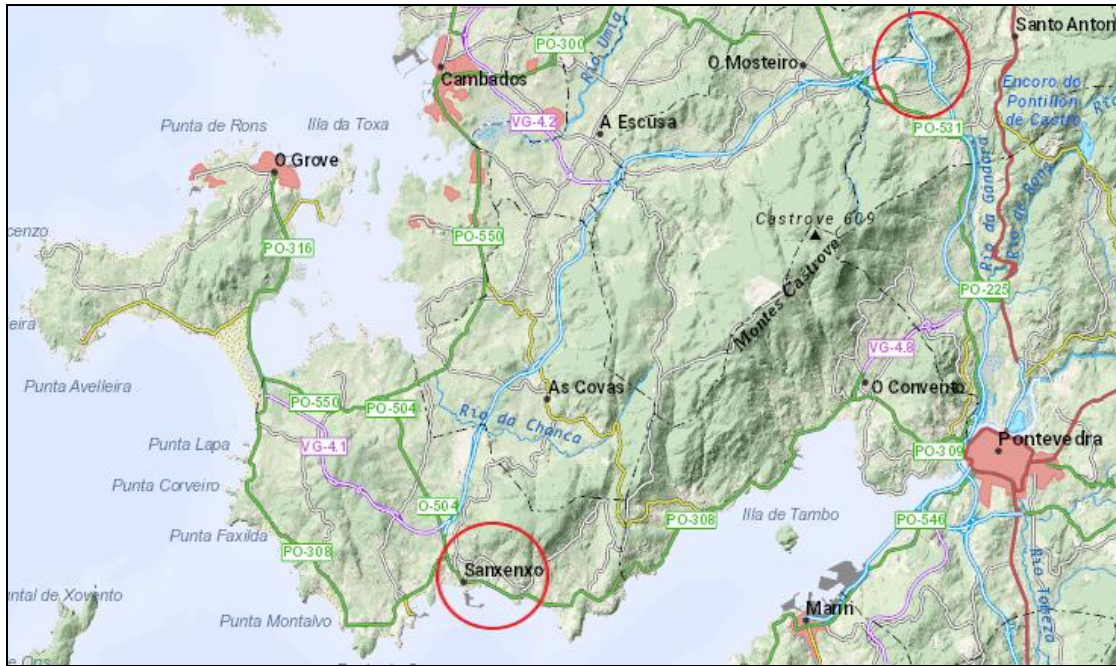


Figure 2. Map of the Salnés peninsula with the main road accesses \* The red circles indicate (a) the connection of the AP-9 motorway with the VG-4.1 expressway and (b) the town of Sanxenxo (Source: Xunta de Galicia, Institute of Territory Studies)

The AP-9 highway connects the most important cities on the western coast of Galicia, from Ferrol to Vigo. There is another access road to Sanxenxo, the regional highway PO-308 that serves the coastal towns up to Pontevedra, but this road has been converted into a minor access road, with speeds limited to 40 km per hour and no section with a dashed line where you can overtake. In turn, data on climatic variables were collected from the MeteoGalicia (2022) meteorological station located in Sanxenxo. The station is located at 42.4° latitude and -8.8° longitude, 900 meters from Silgar and 7.9 km from A Lanzada, and provides data automatically every ten minutes. The climatic parameter of sunshine is used, measured in percentage of sunshine, instead of the hours of sunshine since due to the seasonal change the hours of daylight have been gradually decreasing since July 1. The data was collected between July 1 and August 31, 2019. This period is the high season for this area of the Rías Baixas. We note that this period is before the announcement of COVID-19 and, therefore, the impact of the pandemic has not influenced the data.

## RESULTS AND DISCUSSION

The entry and exit data of the AP-9 provide us with information about the vehicles that access the tourist area (exit of the AP-9) or leave it to return to their places of origin (entrance of the AP-9). The data distinguishes between light vehicles (LV) and heavy vehicles (HV). The first analysis of the data reflects an evident influence of the day of the week on the flow of vehicles, and that this influence is opposite for each type of vehicle, LV or HV. Thus, it is observed that the highest outbound traffic of the LV is on holidays, with an average of 11,632 LV/day, compared to the average traffic of 7,687 LV/day from Monday to Friday, similar to that of Saturdays (7,898 LV/day). On the contrary, the flow of HV is higher on weekdays (480 HV/day) and lower on holidays (128 HV/day) and Saturdays (154 HV/day).

In the case of access to the tourist area, the HV pattern is very similar, with higher average traffic during the week (529 HV/day) and lower average traffic on holidays (121 HV/day) and Saturdays (197 HV/day). The flow of HVs is governed by the work day, that is, on work days the traffic is much greater, dropping by more than 73% on holidays and Saturdays, both in entry and exit traffic. The majority of HV traffic does not seem to be governed by tourist leisure reasons, but rather by work reasons. The HVs may include buses that access the area for tourist reasons, but since these cannot be discriminated from the total, in this study we will dispense with the HVs for the analysis of the flow of tourist movement.

For LVs, the behavior pattern changes, since Fridays and Saturdays are the days with the highest traffic entering the tourist area (10,879 LV/day on Fridays and 10,114 LV/day on Saturdays). On the other hand, inbound traffic decreases from Monday to Thursday (8,356 LV/day) and on holidays (8,480 LV/day) (Figure 3).

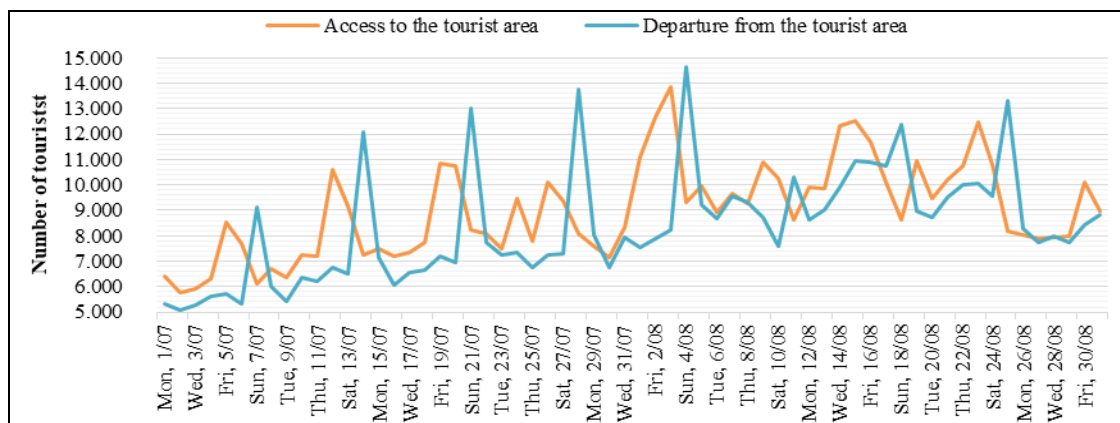


Figure 3. Number of daily LVs that enter or leave the tourist area (Data source: Audasa, 2020)

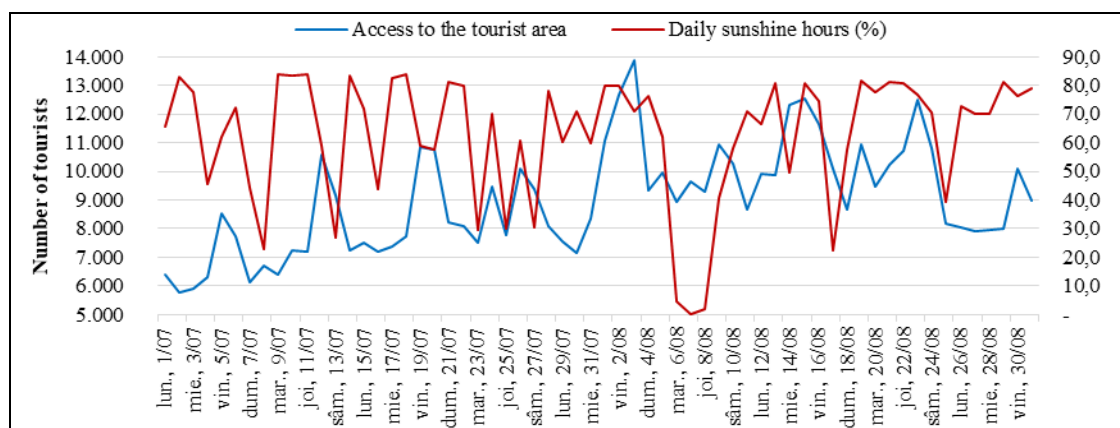


Figure 4. Daily data on the percentage of sunshine and the number of LVs that access the tourist area (Source: Audasa and MeteoGalicia)

Therefore, during the months of July and August, the greatest flow of passenger cars (LV) towards the tourist area occurs on Fridays and Saturdays and they leave it on Sunday, mainly in the final hours of the day. In these periods, the peaks occur, entry and exit; They are flows of “weekend visitors.” This pattern is much clearer during the month of July, and from August 4 the MVTI decreases in intensity. On Sunday 4/08 there is outbound traffic of 14,637 LV and the following Sunday 11/08 it drops to 10,292 LV. This decrease in the middle of the high season may be due to the fact that tourists are more settled in the territory and therefore there is not as much vehicle movement. However, such a sharp decline only seems to happen that weekend, so the weather information for that week is analyzed below.

As explained in the theoretical development, in previous studies it has been found that sunshine (hours of sunshine) is the variable with the highest positive correlation with respect to the flow of visitors to the study area. The daily flow of LV that access the tourist area and the daily sunshine data during the months of July and August are shown in Figure 4.

The daily percentage of hours of sunshine varies greatly throughout the two months. Almost completely clear days follow one another (with 80% sunshine), with overcast days (20% sunshine). The longest period in which sunshine does not drop below 50% is from 07/29 to 08/06 (9 days). It is precisely in this period when the highest peak of LV that access the area is observed, specifically on Saturday 08/03 with 13,861 LV. From Monday 08/05 to Friday 08/09, the average sunshine level is 22%, the lowest of the entire analyzed period. The number of LVs that access the area drops drastically, with an average of 9,746 LV/day during that week, compared to the average of 11,526 LV/day the following week (18% more traffic), with an average insolation of 70,3%. Table 1 shows the daily data for the week of August 5 to 11.

Table 1. Meteorological conditions and movement of LV to the tourist area in the second week of August (Source: Audasa and MeteoGalicia)

Day	Access to the area	Leaving the area	Rain l/m <sup>2</sup>	Sunshine (%)
Monday, 08/05	9,941	9,205		62.2
Tuesday, 08/06	8,937	8,679	1.0	4.8
Wednesday 07/08	9,664	9,575	14.6	0
Thursday, 08/08	9,272	9,337	20.6	2.1
Friday, 08/09	10,915	8,735		40.7
Saturday, 08/10	10,269	7,609		58.1
Sunday, 08/11	8,649	10,292		71.1

Despite being in the middle of the high season and the weather forecast for Sunday, August 11, was ideal for sun and beach tourism, the access data to the tourist area on Friday and Saturday are among the lowest in the period analyzed. The reason may be that until Friday the weather conditions have not begun to improve (Table 1) and visitors need “adaptation time” to the new favorable conditions for outdoor activities. This latency or adaptation period was noted in other studies



and can be found here. Visitors have an inertia in their behavior and even if the weather forecast is good, the rain and overcast skies from previous days dissuade tourists from making the trip. This has repercussions on the planning and operations of businesses in the area: given the forecast of good weather on the weekend, they prepare by hiring staff and stockpiling merchandise, but the volume of visitors is lower than expected, with the consequent damage to the business.

**Correlation test;** In order to know if there is a relationship between the arrival of vehicles in the area and the hours of sunshine, and if applicable, if this relationship is established immediately or there is a latency period, we perform a correlation test. The weekly seasonality in vehicle arrival data is so high that an analysis of daily arrivals without this fact would distort the results. For this reason, we have separately analyzed the vehicle arrival data for each day of the week during the two months and its correlation with the sunshine data. Although positive correlations are observed between the arrival of vehicles and sunshine, the Pearson correlation test does not yield significant results for any of the days. Fridays, the day of the beginning of the weekend and when the highest MVTI are observed, show a positive correlation of 0.399 between MVTI and sunshine, however the correlation is not statistically significant at a 95% confidence interval ( $p$ -value = 0.2877). That is, although a certain influence of weather on the MVTI is observed, no statistical evidence has been found in this regard. Nor has statistical significance been found in the latency or good -time accommodation tests that have been carried out.

## CONCLUSION

The seasonal behavior of weekend visitors follows a periodic pattern influenced by work and holidays that is known by the tourist businesses in the area, which prepare and plan accordingly. The weather also influences tourist flows to the area since the main tourism is sun and beach; however, the variability of climatic parameters complicates business planning. This study shows the weekly seasonality in the arrival of visitors to the tourist area, which is more pronounced during the month of July, and the influence of the sunshine factor on the flow of tourists in the area is analyzed. It can be observed graphically how “bad weather” (low percentage of sunshine) for the enjoyment of the sun and the beach affects tourist flows, reducing the number of vehicles that access the tourist area.

The results of the research point to the existence of a brief adaptation period on the part of visitors, that is, despite receiving an ideal weather forecast for the practice of activities typical of sun and beach tourism, it is possible that Visitors are reluctant to make the trip to the tourist area because the bad weather of the previous days weighs on their trip planning and decision. However, no statistical evidence has been found in this regard. In subsequent studies, it would be advisable to carry out an analysis of the true proportion of “last minute” visitors, those who decide to make the trip or transfer at the last minute (or cancel it) and assess the importance that the weather has in this decision. On the part of tourism businesses, it would be of interest to have information on the magnitude of losses due to unforeseen variations in the daily flow of visitors and their impact on tourism companies. Companies already consider long-term seasonality, the rebound in tourism in the summer season and the daily variability of tourist flow due to institutional factors (holiday or not) when planning their operations. However, the daily variability of tourist flows caused by climatic conditions is subject to greater uncertainty and is a field yet to be understood. Certainly, short-term weather forecast information is crucial for decision making and operational planning for these businesses.

One of the significant advantages of the methodology used in this study is the utilization of disaggregated data at a daily level and of high quality, as it displays data that has been effectively observed and recorded, rather than mere estimates. As a limitation, it should be noted that this is a cross-sectional study, and to identify long-term trends and patterns, it would be advisable to expand the research into a longitudinal study analyzing the same variables over successive periods. The advent of COVID-19 substantially altered tourist flows, making it challenging to perform homogeneous comparisons between the years 2019 to 2022.

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## UNVEILING THE SOCIO-CULTURAL IMPACT OF RELIGIOUS TOURISM AT BOUDHANATH STUPA IN KATHMANDU, NEPAL

Bivek DATTA<sup>\*</sup> 

Department of Management and Commerce, Mangalayatan University, Jabalpur, India, e-mail: bivekdatta@gmail.com

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**Abstract:** This study explores the socio-cultural and economic impacts of religious tourism at Boudhanath Stupa, Kathmandu, Nepal, examining their influence on the quality of life and cultural integrity of the local community. It aims to gauge community perceptions and assess the sustainability of tourism practices at this heritage site. Employing a positivist paradigm and a deductive approach, this research used quantitative methods to analyze the socio-cultural, economic, and perceptual effects of religious tourism. Utilizing Cronbach's Alpha, descriptive and Analytical statistical techniques, the study analyzed local community perceptions, providing insights into sustainable tourism practices relevant to religious tourism. Community perceptions, attitudes, and beliefs significantly impact the dynamics and outcomes of religious tourism at Boudhanath Stupa. These findings underscore the complex impacts of religious tourism, including cultural, social, economic, and perceptual dimensions, highlighting the importance of these factors in the planning, management, and promotion of religious tourism at the site.

**Keywords:** Religious tourism, Boudhanath Stupa, Kathmandu, social impact, cultural exchange, Quality of life, Economic Benefits, Community Perception

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### INTRODUCTION

Religious tourism, often described in both theoretical and practical contexts, revolves around travel primarily driven by religious motives (Rinschede, 1992). Destinations for such tourists generally include holy, pilgrimage, or religious heritage sites, which not only represent but also celebrate the unique cultures and traditions of their locales (Nolan and Nolan, 1992; Shinde, 2010; Smith, 1992). These places are often perceived as peaceful, awe-inspiring locales that encourage meditation, stimulate reflective thought, and foster an appreciation for religious tenets (Levi and Kocher, 2013). Additionally, religious sites often integrate natural, cultural, and architectural elements that underscore the interconnectedness of humanity and the environment (Verschuuren, 2007). Religious tourism not only offers a pathway to the financial preservation of natural landscapes and ancient cities but also enhances both local and visitor awareness of conservation issues while dissuading local communities from pursuing unsustainable ways of living (Borges et al., 2011). This form of tourism significantly contributes to economic development by creating job opportunities and stimulating local economies (Ghimire, 2019; Levi and Kocher, 2009). The maintenance of these sacred sites enables communities to enrich their understanding of their own cultures and traditions, and the growth of religious tourism ensures these places and their attractions are preserved and protected (Simone-Charteris and Boyd, 2010). In terms of conservation, religious sites tend to be focal points for understanding ritual practices rather than a comprehensive view, which holds considerable importance for both religious and non-religious individuals alike (Gilchrist, 2020; Thouki, 2019). The terms pilgrimage and religious tourism are often used interchangeably, though they do not always mean the same thing, as pointed out by Digance (2003) and Tsironis (2022).

The sustainability of tourism at religious sites involves balancing the sanctity of these locations with their communal and touristic use, necessitating an understanding of how sacredness is perceived by individuals (Levi and Kocher, 2013). Beyond their religious functions, holy sites like Buddhist temple complexes serve broader community roles, providing social and educational services to the Sangha and others (Levi and Kocher, 2013). These locations represent the unique cultures and traditions of the cities or regions where they are found (Singh and Rana, 2016).

### LITERATURE REVIEW

Religious tourism, one of the oldest forms of tourism, plays a pivotal role in the economic framework of both developed and developing nations, often acting as a critical economic development tool in Asian countries (OECD, 2008). It not only supports cultural preservation but also sustains livelihoods (Abereijo and Afolabi, 2017; Levi and Kocher, 2013). Recognized as a global phenomenon within the history of religion, religious tourism continues to thrive and evolve (Abad Galzacorta et al., 2016; Hassan et al., 2022; Rinschede, 1992). The Organization for Economic Co-operation and Development (OECD) highlights that cultural and heritage tourism, closely linked with religious tourism, brings considerable economic benefits and represents a significant achievement for the host countries. The tourism sector is notably fragmented and diverse, mainly comprised of micro, small, and medium-sized enterprises, which make up about 85% of all business entities within OECD member countries (OECD, 2022).

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<sup>\*</sup> Corresponding author

Fleischer (2000) observed that pilgrims and other religious tourists are avid consumers of religious products, with the economic impacts of religious tourism surpassing those of other sectors. Moreover, religious tourism supports the preservation of cultural and religious heritage sites and attractions (Fleischer, 2000). According to Shackley (2002), the perceptions of religious sites are shaped by individuals' personal and cultural backgrounds. While religious tourists may feel a profound sense of divinity, non-religious visitors often find these sites to be spiritually enriching, offering tranquility and inspiration (Sharpley and Sundaram, 2005). Before the COVID-19 pandemic, travel and tourism were significant contributors to the global economy, representing 10% of global GDP and 6% of the world's total exports (Behsudi, 2020; Rasool et al., Citation, 2021; UNWTO, 2015). Data from the United Nations World Tourism Organization indicated that in 2016 and 2019, about 27% of international travel was driven by motives such as religious activities, visiting friends and relatives, or medical reasons (UNWTO, 2016, 2021). Tourist statistics from Nepal's Ministry of Culture, Tourism, and Civil Aviation in 2019 revealed that holiday or pleasure travel drew the largest number of visitors, followed by those traveling for pilgrimage purposes, highlighting the diversity of tourists' motivations which include pleasure, pilgrimage, trekking, and mountaineering (MoCTCA, 2020). Pilgrimage tourism uniquely blends traditional shrine visits with cultural journeys, orchestrated and facilitated by religious groups with spiritual goals (Gautam, 2021). Religious tourism and entrepreneurship are closely interconnected with Nepal's unique religious history, customs, culture, and tradition (Gautam, 2023).

The literature revealed a comprehensive exploration of religious tourism's impacts on communities, focusing on economic benefits, cultural preservation, and quality of life improvements. The study highlights how religious tourism supports economic growth through job creation and enhancing local economies, which is consistent with findings from Ghimire (2019) and Levi and Kocher (2009). Cultural aspects such as the preservation of heritage and enhancement of local culture through tourism echo the benefits outlined by Simone-Charteris and Boyd (2010).

Ghimire (2019) studied the economic impact of religious tourism on small businesses in Shikoku, Japan, finding that 73.3% of respondents reported a significant economic influence on their lives from these enterprises (Ghimire, 2019). Kusi et al. (2015) investigated the role of micro and small businesses in generating employment, increasing income, and alleviating poverty within developing countries (Kusi et al., 2015). It was also found that small businesses located in areas with historical religious significance play a crucial role in poverty alleviation (Ghimire, 2019), as evidenced by improvements in individuals' education, health, and standard of living (Ghimire, 2014; 2019). The local community's perception of tourism significantly influences their support and involvement in future tourism development (Almeida-Garcia et al., 2016; Nafi and Ahmed, 2017; Gu and Wong, 2006) and impacts their quality of life (Rojulai et al., 2018). The development of tourism significantly reduces the proportion of vulnerable employment, enhancing the socio-economic conditions by creating more job opportunities and increasing income (Scarlett, 2021). The local community recognizes that tourism development stimulates the regional economy through the creation of various job opportunities and the enhancement of their earnings (Bello et al., 2017). Additionally, the expansion of tourism contributes to overall infrastructure improvement and facilitates the establishment of new small businesses (Acha-Anyi and Ndolose, 2022). However, the influx of tourists can have adverse effects if tourism development is pursued solely as an economic strategy without considering the environmental impact, potentially leading to unsustainable mass tourism (Castilho et al., 2021).

Historically, tourism research largely focused on tourist satisfaction rather than the host community's perception of tourism development (Belisle and Hoy, 1980; King et al., 1993; Pizam, 1978). However, in recent decades, the opinions of host communities have become central to research across various regions (Andereck et al., 2005; Besculides et al., 2002; Rasoolimanesh et al., 2017; Sharma and Dyer, 2009; Tsai et al., 2016; Tsundoda and Mendlinger, 2009; Vareiro et al., 2013; Zaidan, 2016; Roy et al., 2021). Without local engagement and consideration of their views, tourism development is unlikely to succeed (Pekerşen and Kaplan, 2022). Pramanik and Ingkadijaya (2018) found that enhanced tourism settings bolster the local community's attitudes towards embracing cultural diversity and transform their perceptions to respect others' customs, ultimately leading to an improved quality of life. The primary aim of this study is to evaluate the multifaceted impacts of religious tourism at Boudhanath Stupa in Kathmandu, Nepal, focusing on cultural exchange, quality of life, economic benefits, and community perceptions which was not studied by other researchers and is a literature gap. This research investigated how religious tourism fosters cultural exchange and contributes to the economic development of the area, assessing its correlation with the quality-of-life improvements for the local community and the shaping of community perceptions towards tourism activities. By analyzing these dynamics, the study uncovered how religious tourism at Boudhanath Stupa influences the socioeconomic fabric and the sustainable development of the local community, using indicators cultural exchange, quality of life, economic benefits, and community perceptions

## OBJECTIVES

- To investigate the relationship between cultural exchange and religious tourism of Boudhanath Stupa.
- To assess the association between the development of quality of life in the local community and religious tourism.
- To examine the correlation between religious tourism and economic benefits at Boudhanath Stupa.
- To analyze the influence of community perceptions on religious tourism at Boudhanath Stupa.

## HYPOTHESES

### Hypothesis 1

Ho: There is no significant relationship between cultural exchange and religious tourism of Boudhanath stupa

Ha: There is a significant relationship between cultural exchange and religious tourism of Boudhanath stupa

### Hypothesis 2

Ho: The development of quality of life in the local community is not significantly associated with religious tourism.

Ha: The development of quality of life in the local community is significantly associated with religious tourism.

Hypothesis 3

Ho: There is no significant positive relationship between religious tourism and economic benefits at Boudhanath stupa.

Ha: There is a significant positive relationship between religious tourism and economic benefits at Boudhanath Stupa.

Hypothesis 4

Ho: There is no significant influence of religious tourism on community perceptions at Boudhanath stupa.

Ha: There is a significant influence of community perceptions on religious tourism at Boudhanath stupa.

## THEORETICAL FRAMEWORK

The theoretical framework of this study posits that community perceptions of religious tourism play a crucial role in shaping its social consequences. It outlines key factors influencing how communities perceive religious tourism and its societal effects. The framework illustrates the interplay between the dependent variable, religious tourism, and independent variables such as cultural exchange, quality of life development, economic benefits, and community perceptions. Additionally, the study draws upon social exchange theory, which suggests that individuals engage in social interactions based on perceived costs and benefits. This theory is relevant to understanding how local residents view religious tourism as a social exchange involving both advantages (e.g., economic opportunities, cultural exchange) and disadvantages (e.g., overcrowding, loss of privacy). Halim et al. (2022) evaluated how local communities perceive the impacts of tourism and their willingness to support its future development. Their research indicates a positive correlation between social, economic, and environmental factors which collectively enhance the local community's quality of life.

The study also highlights the community's favorable views on the prospects of future tourism development. It suggests that if tourism effectively improves the overall quality of life for residents, this enhancement is likely to foster greater community backing for future tourism initiatives. Building on this concept, the upcoming study aims to thoroughly examine the diverse impacts of religious tourism at Boudhanath Stupa in Kathmandu, Nepal, with a particular focus on cultural exchange, quality of life, economic advantages, and community perceptions. The theoretical model proposed in the study draws from understanding the reciprocal relationship between the community and the tourists, framed within the broader context of religious tourism.

Building on the initial theoretical framework and incorporating the insights from Halim et al. (2022), it becomes evident that the community's perceptions are not only reactive but play an active role in shaping the trajectory of religious tourism development. This dynamic can be understood more profoundly through the lens of the framework, which posits that these perceptions are based on the continuous assessment of the costs and benefits associated with tourism.

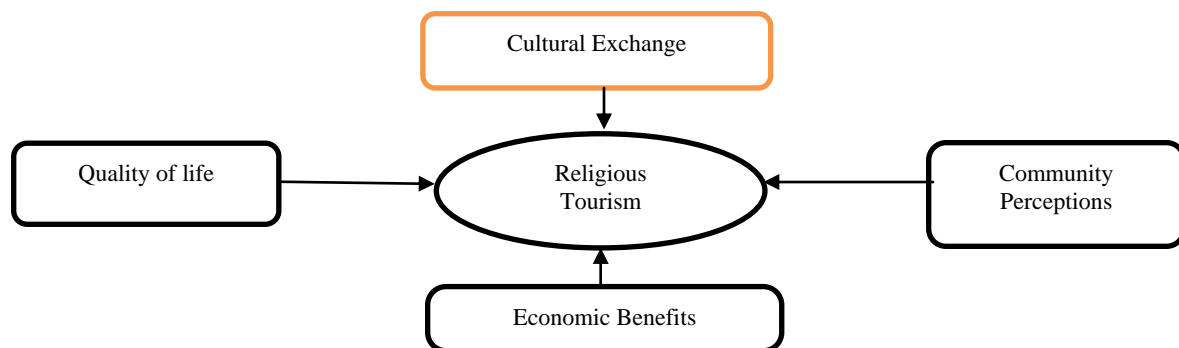


Figure 1. Theoretical Framework (Source: Halim et al., 2022)

## METHODOLOGY

The study focused on understanding the community's perceptions of religious tourism and its social impact on local residents of Boudhanath. The study was quantitative in nature. The study incorporated a descriptive research design to identify the relation between dependent and independent variables. The study adopted a descriptive and inferential research design to depict the socio-demographic, economic, and social characteristics of the respondents. The survey method was utilized to collect data from the participants. The primary objective of this study was to examine the social impact on local residents of Boudhanath and to establish a correlation between community perceptions of religious tourism and its social impact on the local community. A deductive approach has been used in this study and the researcher has formulated four hypotheses with the support of the literature, after that relevant research methods were chosen and applied to test the hypothesis. The survey method utilizing a survey instrument i.e. questionnaire was employed to collect data for this study. Sampling technique adopted was purposive sampling. The data for this research was collected specifically from the area of Boudhanath, focusing on the responses of the local residents in that region. In case the selected person was not able to fill up the questionnaire due to different reasons such as language barrier and time, the questionnaire was given to the next tourism business stakeholders. A total of 420 questionnaires were distributed among the local people, of which 402 were found to be complete in all respects. Since the population is unknown and the minimum sample size being 384, a sample of a minimum of 402 respondents with a 95% confidence interval was used for this study. The data was collected in January, 2024. According to Delafrooz et al., 2014:1-9.

$$n = z^2 \times p \times q / e^2$$

$$n = (1.96)^2 \times (0.5) \times (0.5) / (0.05)^2 = 384$$

z: The standardized value associated with the chosen confidence level.

p: The estimated value of the observed attribute variable within the community.

q: The estimated value of other unobserved objects or variables.

e: The permissible error within the measurement range of observations.

The research employed a questionnaire method to gauge the perceptions and social impact levels of the local community in the Boudhanath area. Selected attributes encompassed significant elements pertinent to socioeconomic evaluation, such as cultural exchange, local lifestyle development, changes in identity and values, economic growth, and community perceptions of religious tourism. A self-administered questionnaire in English was crafted, divided into two sections based on the literature review. The first section aimed to gather demographic and characteristic data from local residents, while the second section assessed their perceptions of Boudhanath's social impact and economic contribution from religious tourism. Participants used a five-point Likert scale, ranging from 'strongly agree' (5) to 'strongly disagree' (1), to indicate their agreement levels with the attributes related to social impact and economic generation.

The questionnaire underwent pre-testing by locals of Boudhanath, with several items revised based on feedback to enhance clarity. Reliability and validity of measuring instruments focus on the adequacy, scope, and truthfulness of research validity. The questionnaire design underwent thorough review and finalization before involving respondents, followed by pilot testing on a sample size of 30. Cronbach's Alpha was calculated to determine the questionnaire's reliability, a statistical metric assessing internal consistency. A Cronbach's Alpha value exceeding 0.5 indicates reliable data. Based on the pilot test results, the prepared questionnaire demonstrated reliability, as Cronbach's Alpha is considered a robust indicator. Typically, a Cronbach's Alpha value of 0.7 or higher is deemed good, while below 0.5 is unacceptable. The reliability test results are presented in the Table 1.

The computed Cronbach's alpha for the dataset is 0.652, indicating internal consistency and suggesting both reliability and validity. This confirms the reliability of the questionnaire used in the study. With an overall Cronbach's alpha of 0.652 (Number of items = 23), the data is deemed reliable and valid for research purposes.

Table 1. Reliability Test

S. No	Variables	Cronbach's Alpha	No. of Items
1	Independent Variables	0.539	19
2	Dependent Variable	0.265	4
	Overall	0.652	23

### Data Collection

This research utilized primary data collected through a survey questionnaire, employing the survey method as the research approach. Only primary data were considered during the analysis phase. A structured questionnaire was distributed to respondents, with a total of 420 questionnaires randomly distributed using a simple random sampling approach. However, 402 valid responses were collected as they were complete in all respects, gathered over one week from 17<sup>th</sup> to 23<sup>rd</sup> February 2024.

### Primary Data Collection

Primary data collection involved the use of a survey questionnaire, distributed and collected through a self-administered method to ensure comprehensive completion and minimize missing data. This approach facilitated addressing participant queries and enhancing data accuracy. The data collection phase lasted approximately one week, with closed-ended questions presented to respondents aligned with the study's variables.

### Data Analysis and Interpretation

Data analysis utilized IBM SPSS Statistics 26 software, with each data point manually entered for effective organization. Cronbach's Alpha was employed to assess data reliability. Data was categorized based on various demographic characteristics, allowing identification of respondent features like age group, gender, and education level. Subsequently, respondent opinions on research variables were categorized, and relationships were analyzed using statistical techniques such as correlation and regression, aligned with the theoretical framework. Descriptive statistics including frequency count, percentages, mean, and standard deviation were employed to analyze variable average values and deviation extents from the average.

## RESULTS

Data analysis was performed using the software application SPSS. This section provides detailed insights into respondents' profiles and includes a descriptive analysis of their responses regarding conflict management styles and their correlation with dependent and independent variables. The main aim here is to explore the relationship between community perceptions of religious tourism and its impact, considering variables such as social impact, economic benefits, and community perceptions as independent variables, and religious tourism as the dependent variable.

### Descriptive analysis

The collected data from the questionnaire during the research process were subjected to descriptive analysis. The descriptive analysis involved calculating statistical measures such as mean and standard deviation for all the items of the dependent variable as well as the items of the independent variables i.e. Cultural Exchange, Development of quality



lifestyle of locals, community perceptions, economic benefits on religious tourism was measured on five point Likert scale anchored by "Strongly Disagree" represented by '1', "Disagree" represented by '2', "Neutral" represented by '3', "Agree" represented by '4', and "Strongly Agree" represented by '5'. These values assisted in analyzing the data by examining frequencies and aggregating information about research questions and variables. The questionnaire used for the study measures the underlying local perception regarding religious tourism and its influence on the society of Boudhanath. Cultural Exchange (Factor 1) contains four attributes. Development in the Life Style of Local (Factor 2) contains the four attributes. Community perceptions of religious tourism (Factor 3) contains four attributes. Economic Generation (Factor 4) contains the four attributes. Religion Tourism (Factor 5) contains the four attributes. These four factors cultural exchange, development in the lifestyle of locals, economic generation/benefits community perceptions on religious tourism were the independent variables in this study. The dependent variable for this study was religious tourism. Furthermore, the research deals with community perceptions and the social influence of Boudhanath.

### Cultural Exchange

The independent variable in this research is cultural exchange. The study includes a descriptive analysis of each question related to cultural exchange and an overall descriptive study on staff cultural exchange, as presented below:

Table 2. Descriptive Statistics of Cultural Exchange

Opinion Statement	N	Mean	Std. Deviation
Cultural conservation and restoration in Boudhanath through religious tourism	402	4.19	0.462
Religious tourism preserves cultural identity of host community in Boudhanath.	402	4.40	0.552
Tourism improves understanding and appreciation of different cultural community in Boudhanath.	402	4.11	0.744
Religious Tourism creates a good image of our local community.	402	4.26	0.559

The attributes associated cultural exchange deal with the cultural terms, including “cultural conservation”, “cultural identity”, “cultural understanding”, and “cultural activities”. These items are explained with the statement presented in the table. Table 2 shows the descriptive statistics of cultural exchange. The mean values of all the items related to cultural exchange are above the level of 4.0. among the four statements, " Religious tourism preserves cultural identity of the host community in Boudhanath." scored the highest mean of 4.40 with a standard deviation of 0.552, and the statement "Tourism improves understanding and appreciation of different cultural communities" scored the lowest mean of 4.11 with a standard deviation of 0.744. This states that the locals of Boudhanath find cultural conservation a restoration in Boudhanath. This shows that religious tourism is conserving the culture of Boudhanath.

### Development of Quality Life Style of Locals

The independent variable of this research is the development in the lifestyle of the local community. A descriptive study was conducted for each question drafted, and an overall descriptive analysis was performed to examine the development in the lifestyle of the local community. The results of the descriptive study are presented below in Table 3. The attributes associated Development of quality life style of locals with the increment in life style items, including “The resident’s behavior and attitudes are changed positively in Boudhanath”, “More security and stability in life in Boudhanath”, “Local residents of Boudhanath have recognized the importance of education”, and “Living standard of local has been improved at Boudhanath”. These items are explained with statements presented in table. Table shows the descriptive statistics of development in lifestyle item. Among four statements, the statement ‘Living standard of local has been improved in Boudhanath " has score the highest mean of 4.29 with a standard deviation of 0.621, and the statement with " More security and stability in life in Boudhanath." scored the lowest mean of 2.81 with a standard deviation of 1.198. This states that the locals of Boudhanath find the living standard of locals have been improved but they notice that resident behavior and attitudes have not met their expectations. This shows that locals are moderately satisfied with the development in the lifestyle of locals in Boudhanath.

Table 3. Descriptive Static of Development in Life Style of Locals

Opinion Statement	N	Mean	Std. Deviation
The resident’s behavior and attitudes are changed in positive way at Boudhanath.	402	4.00	0.805
More security and stability in life in Boudhanath.	402	2.81	1.198
Local residents of Boudhanath have recognized the importance of education.	402	4.04	0.620
Living standard of local has been improved at Boudhanath.	402	4.29	0.621

### Religious Tourism

The dependent variable of this research is religious tourism. Descriptive study was conducted for each question drafted, and an overall descriptive analysis was performed to examine the impact of religious tourism. The results of the descriptive study on religious tourism are presented below in Table 4.

Table 4. Descriptive Statics of Religious Tourism

Opinion Statement	N	Mean	Std. Deviation
Religious Tourism has enhanced Handicraft products at Boudhanath.	402	4.43	0.543
Religious Tourism has reduced the migration of locals to other places around Boudhanath.	402	3.83	0.987
Religious Tourism has augmented promotion of the local cultural, tradition and values at Boudhanath	402	4.25	0.648
Education and awareness towards the religious tourism has augmented social impact at Boudhanath	402	4.17	0.711

The factors associated with religious tourism reflect the transformations occurring in Boudhanath Stupa due to tourism activities. These factors are elucidated through items such as "Enhancement of handicraft products at Boudhanath due to religious tourism," "Reduction in the migration of locals to other areas," "Promotion of local culture, traditions, and values at Boudhanath through religious tourism," and "Heightened awareness of education regarding religious tourism and its social impact at Boudhanath." These items are expounded upon in the provided statements within the table 4. The table showcases the descriptive statistics of items related to religious tourism. The mean scores of all items fall above the threshold of 4.0 and below 5.0. Among the four statements, "Religious tourism has enhanced handicraft products at Boudhanath" achieves the highest mean score of 4.43, with a standard deviation of 0.543. Conversely, the statement "Reduce the migration of locals to other areas of Boudhanath" records the lowest mean score of 3.83, with a standard deviation of 0.987. This indicates that the locals mostly agree or strongly agree that handicraft products are significantly enhanced in Boudhanath due to religious tourism, but they perceive that the migration of locals to other areas within Boudhanath has not decreased.

### Economic Benefits

The focal independent variable in this research pertains to economic benefits. A descriptive and inferential analysis was conducted for each drafted question, and an overarching descriptive analysis ensued to assess the impact of economic generation. The findings of this descriptive study on economic generation are outlined below in Table 5.

The attributes related to Economic benefits focus on aspects concerning the generation of business and economic activity, as indicated by statements such as "Religious tourism has facilitated the creation of employment opportunities for local residents of Boudhanath," "Both direct and indirect employment opportunities have been provided to locals in Boudhanath," "Religious tourism serves as a platform for earning foreign currency," and "Religious tourism has contributed to the increase in revenue for Boudhanath." These statements are elaborated upon in the table provided, which displays the descriptive statistics of the economic benefits items. The mean scores for all items are above 4.0, indicating a favorable perception. Among the six statements, the assertion "Religious tourism has become a platform for earning foreign currency" attains the highest mean score of 4.40, with a standard deviation of 0.608, while the statement "Prices have increased due to the rising demand from tourists at Boudhanath" achieves a mean of 4.23, with a standard deviation of 0.693, indicating a noticeable rise in prices attributable to tourism.

Table 5. Descriptive Statistics of Economic Benefits

Opinion Statement	N	Mean	SD
Religious tourism has helped to generate employment opportunities for local people of Boudhanath.	402	4.28	0.622
Religious tourism has created opportunity of both direct and indirect employment.	402	4.34	0.595
Religion Tourism has become a platform for earning foreign currency.	402	4.40	0.608
Religious tourism has helped to increase the revenue of Boudhanath.	402	4.34	0.652
Prices have been raised due to the increasing demand of Tourists at Boudhanath.	402	4.23	0.693
Religious tourism has led to major economic growth of Boudhanath	402	4.25	0.774

### Community Perceptions on Religious Tourism

The focal independent variable in this study is the community's perceptions of religious tourism. A descriptive examination was conducted for each drafted question, and an overall descriptive analysis was conducted to assess the impact of community perceptions on security. The findings of the descriptive study on security are outlined below in Table 6.

Table 6. Descriptive Statistic of Community Perceptions on Religious Tourism

Opinion Statement	N	Mean	SD
Religious tourism has helped to preserve culture and tradition of Boudhanath.	402	4.42	0.599
Religious tourism has helped to increase the income of local people of Boudhanath.	402	4.34	0.548
Religious tourism has improved the infrastructure of Boudhanath.	402	4.32	0.662
Religious tourism has promoted the waste management and sewage disposal of Boudhanath.	402	4.07	0.804
Religious Tourism has led to overcrowd, noise to the local people and on stupa itself.	402	4.39	0.722

The attributes related to community perceptions on Religious Tourism encompass various aspects, as indicated by items such as "Religious tourism has contributed to the preservation of the culture and tradition of Boudhanath," "Religious tourism has increased the income of local residents of Boudhanath," "Religious tourism has enhanced the infrastructure of Boudhanath," and "Religious tourism has facilitated waste management and sewage disposal in Boudhanath." Additionally, the item "Religious tourism has resulted in overcrowding and noise for the local residents and the stupa itself" is included. These items are elucidated in the provided table, which presents the descriptive statistics of the religious tourism items. The mean scores for all items fall above 4.0 and below 5.0. Among the statements, "Religious tourism has helped to preserve the culture and tradition of Boudhanath" achieves the highest mean score of 4.42, with a standard deviation of 0.599, while "Religious tourism has promoted waste management and sewage disposal in Boudhanath" obtains the lowest mean score of 4.07, with a standard deviation of 0.804. This indicates that the local residents of Boudhanath perceive religious tourism as positively impacting waste management and sewage disposal in the area.

### Correlation Analysis

Pearson correlation analysis is utilized in this study to evaluate the relationship between various independent and dependent variables. This statistical method quantifies the magnitude and direction of the linear correlation between two

variables. The correlation between the dependent variable, social impact (including cultural exchange and development of quality life), economic generation, community perceptions on religious tourism, and the independent variable, religious tourism, is presented in the following Table 7.

Table 7. Correlation Analysis \* Correlation is significant at the 0.05 level (2-tailed); \*\* Correlation is significant at the 0.01 level (2-tailed)

		Religious tourism	Cultural exchange	Development of quality life	Economic benefits	Community perception
Religious tourism	Pearson Correlation	1	*			
	Sig. (2-tailed)					
	N	402				
Cultural exchange	Pearson Correlation	.366**	1			
	Sig. (2-tailed)	0.000				
	N	402	402			
Development of quality life	Pearson Correlation	.100*	0.071	1		
	Sig. (2-tailed)	0.044	0.154			
	N	402	402	402		
Economic generation	Pearson Correlation	.453**	.420**	.314**	1	*
	Sig. (2-tailed)	0.000	0.000	0.000		
	N	402	402	402	402	
Community perception	Pearson Correlation	.380**	.255**	0.078	.363**	1
	Sig. (2-tailed)	0.000	0.000	0.118	0.000	
	N	402	402	402	402	402

Results shown in the above Table 7 are discussed as below:

#### Relation between Cultural Exchange and Religious Tourism

The correlation analysis results as depicted in the table, reveal a Pearson Correlation Coefficient of  $r = 0.366$  between cultural exchange and religious tourism. This indicates a positive correlation between the two variables. Furthermore, the correlation is found to be statistically significant at a 1% level of significance, as indicated by the p-value is less than alpha i.e.  $0.000 < 0.01$ .

#### Relation between Development of Quality life and Religious Tourism

The correlation analysis results, as depicted in the table, indicate a Pearson Correlation Coefficient of  $r = 0.100$  between the development of quality life and religious tourism. This suggests a positive relationship between these two variables. The correlation is significant at 1% level of significance as the p-value is more than alpha i.e.  $0.044 < 0.05$ .

#### Relation between Economic benefits and Religious Tourism

The results of the correlation analysis, as displayed in the table, indicate that the Pearson Correlation Coefficient between Celebrity Image and Destination Image Promotion is  $r = 0.453$ , indicating a positive correlation between the two variables. Moreover, this value indicates that there is significant level correlation between Economic Generation and Religious Tourism. The correlation is statistically significant at a 1% level of significance, as indicated by the p-value being less than i.e.  $0.000 < 0.01$ .

#### Relation between Community Perceptions and Religious Tourism

The correlation analysis results in the table indicate that the Pearson Correlation Coefficient between Community Perceptions and Religious Tourism is  $r = 0.380$ . This implies a positive correlation between the two variables. Moreover, this value suggests a significant correlation between Community Perceptions and Religious Tourism. The correlation is significant at 1% level of significance as the p-value is less than alpha i.e.  $0.000 < 0.01$

### Regression Analysis

#### Impact of religious tourism on social aspect (Cultural Exchange)

Table 8, 9 and 10 displays regression analysis between religious tourism and social aspect including cultural exchange, development of quality life of local community of Boudhanath stupa.

Table 8. Regression analysis (a. Predictors: (Constant), Cultural exchange)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.366 <sup>a</sup>	0.134	0.132	0.29571

Table 9. ANOVA<sup>a</sup> (a. Dependent Variable: Religious tourism b. Predictors: (Constant), Cultural exchange)

Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.414	1	5.414	.000 <sup>b</sup>
	Residual	34.979	400	0.087	
	Total	40.393	401		

Table 10. Coefficients<sup>a</sup> (a. Dependent Variable: Religious tourism)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.116	.144		21.713	.000
	Cultural exchange	.269	.034	.366	7.868	.000

According to Table 8, the R-value of 0.366 reflects a positive relationship between religious tourism and the social aspect of the local community of Boudhanath. Similarly, the R square value of 0.134 denotes that only 13.4% of change in cultural exchange towards religious tourism. Table 8 provides evidence that the regression model is able to make reliable statistical predictions for the dependent variable as sig. p – value  $0.000 < 0.05$  ( $\alpha$ ). The  $\beta$  coefficient according to Table 10 indicates that 1 point increase in religious tourism would lead to 0.269 unit increase in social aspect of local community of Boudhanath. However, since the significant p – value  $0.000 < 0.05$  ( $\alpha$ ), B coefficient is statistically significant. The standard error of the estimate, which is measured at 0.295, signifies the degree of variability observed in religious tourism activity from the regression line, with a magnitude of 0.295 units.

### Impact of religious tourism on the social aspect

Tables 11, 12, and 13 display regression analysis between religious tourism and social aspect including the development of the quality of life of the local community of Boudhanath stupa.

Table 11. Model summary (a. Predictors: (Constant), Development of quality life)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.100a	.010	.008	.40814

Table 12. ANOVA<sup>a</sup> (a. Dependent Variable: Religious tourism; b. Predictors: (Constant), Development of quality life)

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.678	1	.678	4.068	.044b
	Residual	66.630	400	.167		
	Total	67.307	401			

Table 13. Coefficients<sup>a</sup> (a. Dependent Variable: Religious tourism)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.388	.198		17.105	.000
	Development of quality life	.095	.047	.100	2.017	.044

Table 11 shows that there is a weak positive relationship between religious tourism and the social aspect of the local community of Boudhanath, as indicated by an R-value of 0.100. Similarly, the R square value of 0.10 denotes that only 10% of change in social variance through religious tourism. Table 12 reflects that the regression model statistically predicts the dependent variable as sig. p – value  $0.000 < 0.05$  ( $\alpha$ ).

According to Table 13, the  $\beta$  coefficient suggests that a one-point increase in religious tourism corresponds to a 0.095 unit increase in the social aspect of the local community of Boudhanath. However, since significant p – value  $0.000 < 0.05$  ( $\alpha$ ), B coefficient is statistically significant. The standard error of the estimate, which is measured at 0.408, reflects the amount of variability observed in the religious tourism activity from the regression line, with a magnitude of 0.408 units.

### Impact of religious tourism on economic benefits aspect

Tables 14, 15, and 16 display regression analysis between religious tourism and the economic aspect of the local community of Boudhanath stupa. Table 14 demonstrates that there is a positive relationship between religious tourism and the economic aspect of the local community of Boudhanath, as indicated by an R-value of 0.453. Additionally, the R-square value of 0.205 indicates that only 20.5% of the variation in economic outcomes, attributed to religious tourism, has been accounted for in the model. The table 15 reflect that the regression model statistically predicts the dependent variable as sig. p – value  $0.000 < 0.05$  ( $\alpha$ ). The  $\beta$  coefficient according to Table 16 indicates that 1-point increase on religious tourism would lead to 0.388 unit increase in economic aspect of local community of Boudhanath. However, since significant p – value  $0.000 < 0.05$  ( $\alpha$ ), B coefficient is statistically significant. Standard error of the estimate of 0.330 indicates the variability of the observed value of tourism activity from regression line is 0.330 units.

Table 14. Coefficients<sup>a</sup> (a. Dependent Variable: Religious tourism)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.688	.160		16.782	.000
	Economic Benefits	.388	.038	.453	10.152	.000

Table 15. Model Summary (a. Predictors: (Constant), Economic benefits)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.453 <sup>a</sup>	.205	.203	.33008

Table 16. ANOVA<sup>a</sup>

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.228	1	11.228	103.054	.000b
	Residual	43.582	400	.109		
	Total	54.810	401			

### Impact of religious tourism on community perceptions

Tables 18, 19, and 20 display regression analysis between religious tourism and local community perceptions of Boudhanath stupa.

Table 17. Model Summary (a. Predictors: (Constant), Religious tourism)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.380a	0.144	0.142	0.37576

Table 18. ANOVA<sup>a</sup> (a. Dependent Variable: Religious Tourism; b. Predictors: (Constant), Community perception)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9.513	1	9.513	67.375	.000b
	Residual	56.478	400	.141		
	Total	65.991	401			

Table 19. Coefficients<sup>a</sup> (a. Dependent Variable: Religious tourism)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.820	.182		15.461	.000
	Community perception	.357	.044	.380	8.208	.000

According to Table 17, the R-value of 0.380 reflects a positive relationship between religious tourism and the economic aspect of the local community of Boudhanath. Similarly, R – square value of 0.144 denotes that only 14.4% of the change in community perception variance has been explained. The table reflects that the regression model statistically predicts the dependent variable as sig. p – value  $0.000 < 0.05$  ( $\alpha$ ). The  $\beta$  coefficient according to Table 19 indicates that a 1-point increase in religious tourism would lead to a 0.357 unit increase in local community perceptions of Boudhanath. However, since the significant p-value  $0.000 < 0.05$  ( $\alpha$ ), B coefficient is statistically significant. The standard error of the estimate of 0.375 indicates the variability of the observed value of tourism activity from the regression line is 0.375 units.

### Hypothesis Testing

**Hypothesis 1:** A significant relationship exists between cultural exchange and religious tourism.

The findings depicted in Table 7 reveal that the Pearson correlation coefficient between cultural exchange and religious tourism stands at  $r = 0.366$ . This correlation demonstrates statistical significance at the 1% level, given the p-value falling below the predetermined alpha threshold of 0.01 ( $p = 0.000$ ). Therefore, the affirmation of Hypothesis 1 confirms a notable and positive association between religious tourism and cultural exchange within the Boudhanath community.

**Hypothesis 2:** Religious tourism significantly impacts the development of quality of life at Boudhanath Stupa.

Table 7 illustrates the results, showcasing a Pearson correlation coefficient of  $r = 0.100$  between the development of quality of life and religious tourism. This correlation is statistically significant at the chosen significance level, as indicated by a p-value of  $0.000 < 0.01$ . Thus, Hypothesis 2 is supported, suggesting a meaningful connection between religious tourism and the enhancement of quality of life.

**Hypothesis 3:** There exists a significant positive relationship between religious tourism and economic benefits at Boudhanath Stupa. The data in Table 7 demonstrates a Pearson correlation coefficient of  $r = 0.453$  between economic generation and religious tourism. This correlation is statistically significant at the 1% level, with a p-value of  $0.000 < 0.01$ . Consequently, Hypothesis 3 is upheld, indicating a significant positive relationship between religious tourism and economic benefits within the Boudhanath community.

**Hypothesis 4:** Community perceptions significantly influence religious tourism at Boudhanath Stupa.

Examining Table 7, the Pearson correlation coefficient between economic generation and religious tourism yields  $r = 0.380$ . This signifies a statistically significant correlation at the 1% level, supported by a p-value of  $0.000 < 0.01$ . Therefore, Hypothesis 4 is confirmed, suggesting a notable positive relationship between religious tourism and community perceptions within the Boudhanath community.

### CONCLUSION AND DISCUSSION

The findings from hypothesis testing provide valuable insights into the intricate relationship between cultural exchange, quality of life, economic benefits, community perceptions, and religious tourism at Boudhanath Stupa. Hypothesis 1 confirmed a significant and positive association between cultural exchange and religious tourism, as evidenced by the Pearson correlation coefficient ( $r = 0.366$ ) and its statistical significance ( $p = 0.000$ ). This highlights the importance of cultural exchange in shaping perceptions and experiences of religious tourism within the Boudhanath community. Similarly, Hypothesis 2 revealed a meaningful connection between religious tourism and the development of quality of life ( $r = 0.100$ ,  $p = 0.000 < 0.01$ ), emphasizing the potential of religious tourism to contribute to enhancing the overall well-being and living standards of the local community. Hypothesis 3 further underscored the significant positive relationship between religious tourism and economic benefits ( $r = 0.453$ ,  $p = 0.000 < 0.01$ ).



This suggests that religious tourism plays a pivotal role in stimulating economic growth, generating employment opportunities, and boosting local revenue at Boudhanath Stupa. Lastly, Hypothesis 4 elucidated a notable positive relationship between community perceptions and religious tourism ( $r = 0.380$ ,  $p = 0.000 < 0.01$ ), indicating that the perceptions, attitudes, and beliefs of the local community significantly influence the dynamics and outcomes of religious tourism in the area. Overall, these findings highlight the multifaceted impacts of religious tourism on the Boudhanath community, encompassing cultural, social, economic, and perceptual dimensions.

The confirmation of each hypothesis underscores the importance of considering these various factors in planning, managing, and promoting religious tourism at Boudhanath Stupa. However, it is essential to acknowledge the limitations of the study, such as its focus solely on Boudhanath Stupa and the reliance on quantitative methods. Future research endeavours could adopt a mixed-methods approach, integrating qualitative insights to provide a more comprehensive understanding of the subjective experiences and perspectives of the local community and tourists.

Additionally, expanding the scope of the study to include other religious sites and communities would contribute to a broader understanding of religious tourism dynamics in Nepal and beyond. The study confirms the profound influence of religious tourism on cultural exchange, quality of life, economic benefits, and community perceptions within the local community. Religious tourism fosters a deepened appreciation and preservation of local cultural identity, enhancing intercultural understanding among visitors and residents alike. There is a tangible improvement in the quality of life for the local community, attributed to the infrastructural and economic developments driven by tourism.

The economic boost from tourism is evident in job creation, increased local spending, and enhanced business opportunities for small enterprises. The perceptions and attitudes of the local community towards tourism are generally positive, influenced significantly by the economic and cultural benefits perceived. These findings underscore the integral role of religious tourism in promoting sustainable economic and cultural development.

### **Implications for Theory, Practice, and Future Research**

This study contributes to the theoretical understanding of how religious tourism affects socio-economic dynamics in heritage sites. For practitioners and policymakers, the study highlights the importance of stakeholder engagement in tourism planning to ensure that the benefits of tourism are equitably distributed and culturally respectful. Further research is recommended to explore longitudinal impacts of tourism, potential negative effects over time, and comparative studies with other religious sites to generalize findings.

### **Recommendations**

To address and enhance the socio-cultural impacts of religious tourism at Boudhanath Stupa, the author recommends the following approaches

First, increasing community participation in the planning and decision-making processes related to tourism is crucial. This ensures that development efforts are aligned with the needs and values of the local population, fostering a sense of ownership and inclusivity.

Second, the introduction of educational programs aimed at tourists can help in preserving local customs and traditions. By informing visitors about the cultural significance of the site and expected behaviours, these programs aim to promote respectful engagement and prevent the dilution of the cultural heritage.

Third, the adoption of sustainable tourism practices is advocated to minimize the environmental footprint of tourism activities. Measures such as controlling the number of visitors during peak times can significantly reduce the wear and tear on the site, helping to preserve it for future generations.

Fourth, the development of economic mechanisms, such as community funds or cooperatives, is recommended to ensure that the financial gains from tourism are equitably shared among all community members. This approach not only boosts local economies but also helps in reducing economic disparities.

Lastly, it is suggested to implement a regular monitoring system to assess the impacts of tourism. By continuously evaluating these effects, the community can adjust its strategies to ensure the long-term sustainability and well-being of both the site and its inhabitants. These adjustments will help in maintaining a balance between welcoming tourists and preserving the heritage site's integrity.

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## BEYOND SERVICE EXCELLENCE: EXPLORING BRAND IMAGE AS THE BRIDGE BETWEEN SERVICE QUALITY AND CUSTOMER LOYALTY IN NATURE TOURIST CAMPS

**Mohammad Salameh ALMASARWEH\*** 

Department of Business Administration, School of Business, The University of Jordan – Aqaba Branch,  
Aqaba, Jordan, e-mail: m.almasarweh@ju.edu.jo

**Ayman HARB** 

Department of Hotel Management, School of Tourism and Hospitality, The University of Jordan – Aqaba Branch,  
Aqaba, Jordan, e-mail: a.harb@ju.edu.jo

**Mahmoud Barakat ALNAWASEH** 

Business Department, School of Business, University of Jordan - Aqaba, Aqaba, Jordan, e-mail: m.alnawaiseh@ju.edu.jo

**Tawfiq Aref ALMAJALI** 

Dean of Law school, The University of Jordan, Aqaba, Jordan, e-mail: T.almajali@ju.edu.jo

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**Abstract:** The previous research emphasized the importance of service quality, brand image, and customer loyalty in the context of the hospitality industry. However, there seems to be a need for more in-depth investigation into the specific mechanisms and strategies of service quality within the nature tourist camps that contribute to building a positive brand image and fostering customer loyalty. To cover this gap in knowledge, this study examined customer loyalty and brand image perception about nature tourist camps service quality in Jordan. This research is crucial due to the rapid growth of the outdoor accommodation industry and the importance of service quality. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to analyze the data collected from tourists who stayed at Wadi Rum. The results demonstrate that brand image significantly mediates the relationship between SERVQUAL model dimensions and customer loyalty. Theoretical and practical implications were discussed.

**Keywords:** Nature tourist camps, Outdoor accommodations, Service quality, Brand image, Customer loyalty

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### INTRODUCTION

Companies compete hardly in today's global market, always looking for new methods to anticipate service quality, comprehend clients' perceived value, and improve their brand image to win over loyal customers (Srivastava and Sharma, 2013). Since a strong brand image can significantly impact consumer behavior and corporate choices, many businesses aim to increase customer loyalty by cultivating a positive brand image among consumers (Zhang et al., 2016).

According to research by Shi et al. (2014), better profitability and improved service quality are positively correlated. Similarly, Blery et al. (2009) discovered a favorable correlation between repurchase intention and service quality. In any firm, particularly in the service industry, customer loyalty and satisfaction are critical to attracting new clients and retaining existing ones (Priyo et al., 2019). Hospitality managers think happier patrons can translate into more sales (Ali et al., 2021; Rahimi and Kozak, 2017). However, numerous studies have demonstrated that only having happy clients does not ensure their continued patronage or loyalty (Kiseleva et al., 2016; Poku et al., 2013; Mittal and Lassar, 1998).

In this context, the success of a business is thought to depend more on customer loyalty than on customer happiness. Furthermore, a business's reputation can have a big influence on marketing initiatives and can be good or bad (A Izboun et al., 2023; Alhamad et al., 2021; Lee et al., 2018; Godey et al., 2016; Lin and Lu, 2010). According to Zeithaml et al. (1996), brand image is defined as the capacity to influence how customers view the goods or services provided. According to Jiang and Zhang (2016), the hotel industry's brand image is considered a critical factor in influencing customer loyalty and independent of the travel market. While the literature explores the relationship between service quality, brand image, and customer loyalty in the context of the hospitality industry, there is a research gap that could be addressed. The existing literature primarily focuses on the relationship between service quality and customer loyalty, as well as the role of brand image in influencing customer perceptions. However, there seems to be a need for more in-depth investigation into the specific mechanisms and strategies within the hospitality industry's nature tourist camps that contribute to building a positive brand image and fostering customer loyalty.

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\* Corresponding author

The research could delve into understanding the unique aspects of nature tourist camps within the hospitality sector and how these factors influence brand image formation. For instance, the study explores whether specific service quality dimensions are more critical in the context of nature tourist camps compared to conventional hotels. Therefore, this study examines customer loyalty and brand image perception about Jordan's natural tourist camps' service quality. The research is crucial due to the rapid growth of the outdoor accommodation industry and the importance of service quality. Practitioners can use the findings to enhance profitability and academics to validate findings and guide future studies. Additionally, exploring nature tourist camps is particularly relevant given the increasing trend of tourists seeking immersive experiences in natural settings. As eco-tourism and nature-based travel gain popularity, understanding the dynamics of customer loyalty and brand image in nature tourist camps becomes crucial for businesses aiming to thrive in this niche market. This study aims to contribute valuable insights to industry professionals and researchers in this evolving landscape.

## **LITERATURE REVIEW**

### **Service Quality and Customer loyalty**

According to management and marketing literature, the quality of a service is determined by how healthy customers perceive it, either meeting or exceeding their expectations (Selles, 1993; Zeithaml et al., 1996). Service quality has garnered significant attention from service marketing and management researchers in recent decades (Oh and Kim, 2017; Tamwatin et al., 2015; Jiang and Zhang, 2016). Furthermore, much effort has gone into comprehending the idea of service quality and creating measurement scales for it (Kitapci et al., 2014; Orel and Kara, 2014; Shi et al., 2014). In particular, many businesses, including mobile banking, health management, telecommunications, education, hospitality, and tourism, have thoroughly evaluated their many components of service quality. The concept of service quality is complex and includes several elements, each of which affects patients' happiness and the overall level of service quality in a unique way Paul and others (2016). In today's world, word-of-mouth referrals and customer satisfaction are heavily influenced by service quality. Customer happiness is commonly acknowledged as a valuable indicator of a product or service's worth to customers, as opposed to concentrating on cognitive outcomes Yang et al. (2018), Khan and Fasih, 2014. Additionally, because it fosters repeat business, customer loyalty, and recommendations, consumer happiness can be used to gauge companies' present and future performance (Boadi et al., 2019; Meesala and Paul, 2018). In another recent study, Annabella (2019) found a positive association between customer happiness, loyalty, and intentions to make repeat purchases.

Customer satisfaction is, therefore, essential to the hospital industry's ability to run a profitable business and cultivate enduring client relationships (Anabila, 2019; Chotivanich, 2014; Aftab and Razzaq, 2016). Customer loyalty is described by researchers as a customer's propensity to suggest or uphold a favorable attitude toward a service provider and to make repeat purchases from that supplier whenever feasible. A customer's propensity for a particular brand, likelihood of doing business with a given retailer again, and word-of-mouth recommendations are all indicators of loyalty (Molinillo et al., 2022). Further research is necessary in this vital field because customer loyalty is one of the most significant criteria for businesses to increase their market share (Jenneboer et al., 2022; Julander et al., 1997). There are two components to customer loyalty: behavioral and attitudinal. A customer's intention to consistently buy a brand or service from a service provider is known as behavioral loyalty. Conversely, a customer's optimistic views and feelings about a brand or service provider are called attitudinal loyalty. Julander and Mägi (1996). Conversely, attitudinal loyalty is a powerful indicator of customer loyalty since it describes the consumer's intention to repurchase the product or service and promote it to others (Bowen and McCain, 2015). According to several empirical investigations, there is a significant relationship between client loyalty and customer satisfaction (Zeithaml et al., 1996). Additionally, Brodie et al. (2009) studies on service quality indicate that favorable consumer repurchasing behavior is more likely when there is an improvement in service quality.

### **The Relationship between Service Quality and Customer Loyalty:**

According to Rahim (2012) definition, the four A's (Assurance, Tangibility, Empathy, and Responsiveness) and total service quality strongly correlate with every facet of service quality, including student happiness and reliability. Customer satisfaction, which promotes consumer repurchase, strengthens the bond between the caliber of the services provided and the clients, claim Malik et al. (2012). Chinomona et al. (2013) state that the model's foundation is brand service qualification, directly affecting customer happiness. Ultimately, brand satisfaction and trust are expected to impact brand selection, according to Tabaku and Kushi (2013). Kumowal et al. (2016) and Vasumathi and Subashini 9 (2015) both contend that satisfied customers are necessary for brand loyalty. Shala and Balaj (2016) assert that the general caliber of the user experience on an e-commerce platform is crucial.

When the customer's expectations and perceptions of the quality of service align, the supplied quality of services is deemed adequate; when they don't, it is considered unacceptable. The quality of products and services affects consumer satisfaction, loyalty, and perceived value, according to Naeimavi and Gaskari (2016). Better service will increase customer satisfaction, which promotes creative customer commitment. Dimyati and Subagio (2016) claim that the business uses product differentiation to build value and a brand. Returning customers demonstrate their loyalty to a firm by making more purchases from it, according to Alnaser et al. (2017). Offering top-notch service is an efficient way to keep customers loyal to the bank. The review suggests a correlation between brand loyalty and service excellence, with some studies claiming a direct correlation and others suggesting an indirect one.

### **Service Quality model**

The Service Quality model, a widely used framework for measuring service quality, has been the subject of extensive literature. Researchers have explored its application, strengths, and limitations over the years. The model, developed by



Parasuraman, Zeithaml, and Berry, employs four dimensions (reliability, responsiveness, assurance, and empathy) to assess service quality. Despite documented limitations, such as its applicability in diverse industries, the Service Quality model remains a valuable tool for evaluating service quality, as evidenced in studies on hospitality services, medical services, and IT service measurement (Hartwig and Billert, 2018; Jonkisz et al., 2021). Thus, the researchers built the research model based on SERVQUAL model as shown in Figure 1.

### Dimensions of Service Quality

**Assurance**, in the context of service quality, refers to the skills and competencies employed by service providers in delivering services to customers (Alamgir and Shamsuddoha, 2004). It encompasses the elements that instill confidence and trust in customers regarding the reliability and professionalism of the service (Bilika et al., 2016). Assurance includes factors such as the expertise of service personnel, their ability to convey trust, and the overall competence displayed during service delivery (Pakurár et al., 2019). Customers must feel assured that the service provider has the qualifications and capabilities to meet their expectations and provide a satisfactory experience (Ali et al., 2021). Research indicates a positive relationship between service quality, assurance, and customer loyalty in the hotel industry (Anabila et al., 2022). Based on the notion above, the following hypothesis was proposed:

**H1:** Brand Image mediates the relationship between assurance and Customer loyalty.

**Empathy** refers to the organization's ability to understand and prioritize the needs and requests of its customers. It involves demonstrating understanding, care, and responsiveness to customers' emotions, concerns, and desires (Haming et al., 2019; Jenitta and Elangkumaran, 2014). Empathy is one of the dimensions commonly identified in service quality models, such as Service Quality; empathy underscores the importance of fostering a customer-centric approach and creating a service environment that reflects genuine concern for the well-being and satisfaction of the customers (Puri and Singh, 2018; Choi and Hong, 2024). Empathy plays a significant role in influencing customer loyalty, especially when mediated by hotel brand image. Bahadur et al. (2018) highlight that the empathic behavior of hotel employees positively impacts customer satisfaction and loyalty. The total impact of image congruence and customer satisfaction on brand loyalty is substantial, emphasizing the importance of a positive hotel brand image (Back, 2001). Service quality, influenced by empathetic interactions directly and indirectly, affects customer loyalty by identifying with the hotel brand (Gontur et al., 2022). Thus, empathy fosters positive emotional experiences, customer satisfaction, and a strong identification with the hotel brand, ultimately leading to increased customer loyalty. Based on the notion above, the following hypothesis was proposed:

**H2:** Brand Image mediates the relationship between empathy and Customer loyalty.

**Reliability** refers to the extent and consistency with which a product, system, or service performs its intended functions over time under specified conditions (Omar et al., 2015; Zygiaris et al., 2022). In the context of service quality, reliability emphasizes the ability of an organization to deliver services consistently, accurately, and dependably (Ramayah et al., 2011). It involves meeting customer expectations by providing services reliably and without unexpected interruptions or errors. In essence, reliability is a measure of the trustworthiness and predictability of a product or service, ensuring that it performs as expected and fulfills its intended purpose. Hence, reliability, a critical service quality dimension, plays a pivotal role in shaping customer loyalty within the hotel industry, with hotel brand image mediating this relationship (Rashid, 2013). The reliability of services, encompassing consistency and dependability, directly influences customer perceptions and loyalty. Based on the notion above, the following hypothesis was proposed:

**H3:** Brand Image mediates the relationship between reliability and Customer loyalty.

**Responsiveness**, in the context of service quality, refers to an organization's ability to promptly and effectively address customer needs, requests, and inquiries (Ghobadian et al., 1994). It involves the timely and efficient delivery of services and the willingness to assist customers with their questions or concerns (Zygiaris et al., 2022). A responsive service provider demonstrates a commitment to meeting customer expectations and ensuring a positive customer experience by minimizing waiting times and delivering assistance in a timely manner (Munusamy et al., 2010; Siregar et al., 2024; Sulistyadi et al., 2019). Responsive customer service is a critical factor in influencing customer loyalty in the hotel industry, with hotel brand image mediating this relationship (Kandampully et al., 2011). The literature highlights the significance of this dimension in shaping positive customer perceptions and fostering loyalty within the competitive hospitality sector (Alzoubi et al., 2021). Based on the notion above, the following hypothesis was proposed:

**H4:** Brand Image mediates the relationship between responsiveness and Customer loyalty.

### Brand Image and Customer loyalty

The brand of the company is among its most important assets. Keller (1993) asserts that "brand is reflected by the brand links kept by consumers in consumer memory." A brand's image is essentially what a customer considers the first time he encounters the brand. Customers make these associations in their brains due to their firsthand interactions with service. Customers make decisions based on these encounters by contrasting the results with their previous dealings with the business and the established correlations. Many empirical studies have found Brand image to be positively connected (Selles, 1993; Zins, 2001). Nonetheless, some research indicates that brand image is positively impacted by customer satisfaction and service excellence. Based on the previously mentioned idea, the following theory was put forth:

**H5:** Brand image significantly influences customer loyalty.

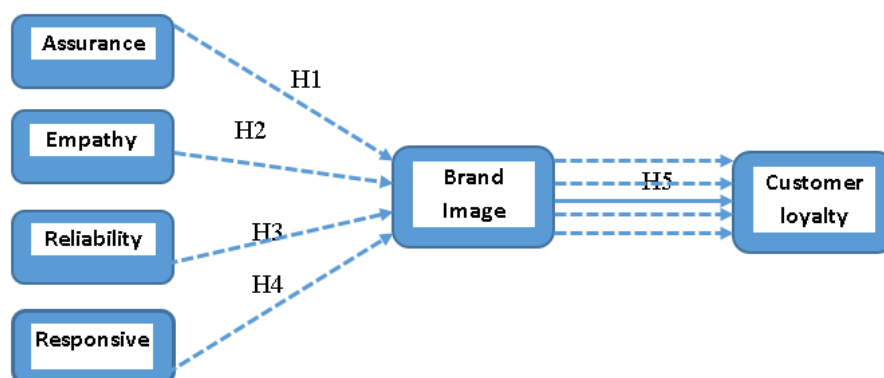


Figure 1. Conceptual model (Source: The model is developed based on previous studies: independent variables Aaker, 1991; Cronin and Taylor, 1992; Parasuraman et al., 1988; Akbaba, 2006. Mediating Variables: Oliver, 1997; Dependent variable)

### Study method

A questionnaire was developed and evaluated by a group of experts in the same field to ensure the validity of the measurement elements used, which were used by previous studies that studied the same field but in a different environment.

### Sampling and procedure

The study focused on tourists who had lodged at nature tourist camps within the "Wadi Rum reserve." This extraordinary location, known for its mesmerizing desert landscapes and cultural significance, provided a distinctive setting for our research. The convenience sample method was applied, comprising tourists who had experienced stays in these camps. A questionnaire was distributed to gather information related to the study's variables. Notably, a majority of respondents were foreign tourists from Europe and America, alongside some Arab tourists. A total of 275 questionnaires were distributed, and 225 were deemed valid for analysis. The inclusion of Wadi Rum as our study backdrop not only amplifies the relevance of our findings to a unique and culturally diverse tourism environment but also adds an enriching dimension to the broader discourse on nature tourism and its impact on customer loyalty and brand image perception.

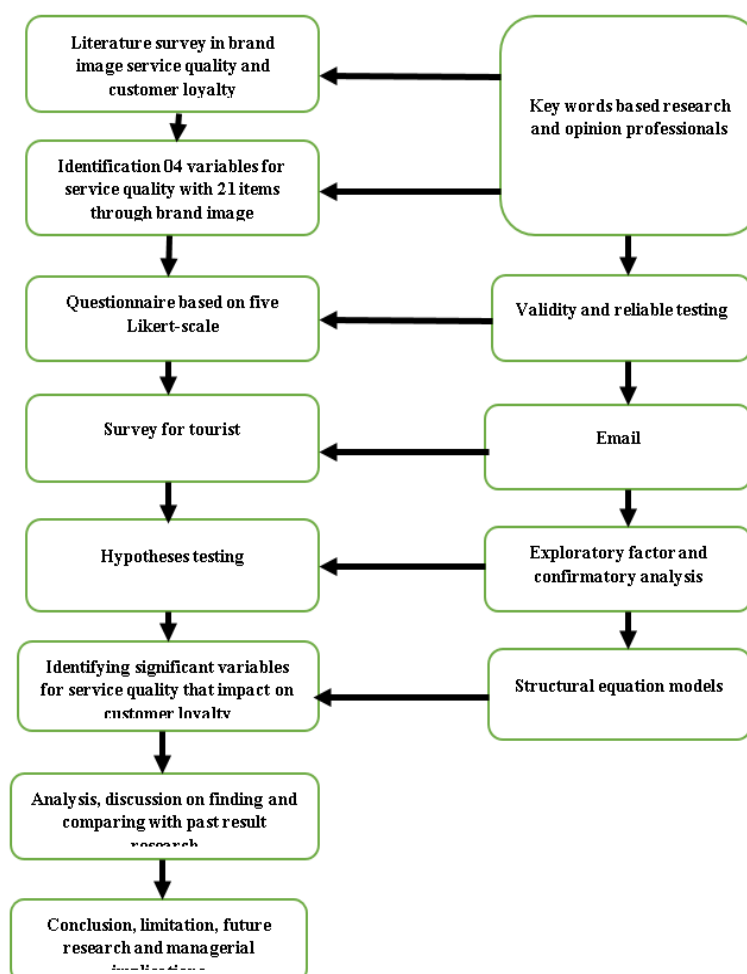


Figure 2. Research methodology

The structural equations model of partial least squares (PLS-SEM) was used to test hypotheses using Smart PLS.4.8.9 because it allows us to verify the validity of the measurement and structural models. PLS-SEM was widespread utilized in the fields of management and social sciences due to its capacity for providing reliable and consistent results (Avkiran and Ringle, 2018; Harb et al., 2021; Sarhan et al., 2020; Harb et al., 2023). After deleting responses with missing data, 225 questionnaires were retained to validate the form. The rule of thumb is that the minimum sample size should exceed ten times the most significant number of reflective indicators used to measure a given structure or ten times greater than the paths directed to the construction in the model (Hair et al., 2021). Whereas the paths in this model are five paths.

According to Hair (2016), the determination of an adequate sample size is pivotal for discerning specific R<sup>2</sup> values within the structural model's endogenous constructs. To this end, we consider R<sup>2</sup> values of 0.10, 0.25, 0.50, and 0.75, adopting significance levels of 1%, 5%, and 10% for precision. Furthermore, we factor in a statistical power of 80% and specify the level of complexity in the Partial Least Squares (PLS) path model. This complexity is defined as the maximum number of arrows directed at a construct in the PLS path model.

For example, assuming a maximum of five independent variables in both the measurement and structural models, we ascertain that a sample size of 45 observations is requisite to achieve a statistical power of 80%. This calculation is specifically tailored for detecting R<sup>2</sup> values of at least 0.25, maintaining a 5% probability of error. The meticulous consideration of these parameters ensures the robustness and reliability of our statistical analysis.

### Research instrument

The initial survey included 25 measurement indicators that needed to be evaluated on a 5-point Likert scale. The survey was given to six experts in the field, all of whom were university professors, as well as four experienced managers from the hospitality industry where the study took place. Following their feedback, the survey was modified to eliminate certain management terminology and rephrase two questions. This process helped ensure that the content and criteria of the survey were valid by engaging in thorough discussions with the experts, ensuring that the survey was grounded in theoretical models and accurately measured what it was intended to measure. Utilizing confirmatory factor analysis, the survey with a total of 25 indicators for the underlying variables was condensed to 21 items, resulting in a more concise and efficient questionnaire. Measurements according to Anabila et al., 2022; Parasuraman et al. (1988) developed the SERVQUAL (SQ) questionnaire to assess service quality based on five dimensions: tangibles, reliability, assurance, empathy, and responsiveness. Customer loyalty measurement according to (Anabila et al. (2022), while measurement of brand image from scale developed by (Chen and Tseng, 2010).

### Results

Table 1 shows the demographic data related to the respondents. Survey participants represent a diverse group of visitors from different countries.

Table 2. Profile respondent

		Total	%
Age	20-30	22	10 %
	31-40	64	28.5 %
	41-50	66	29 %
	More than 50	73	32.5 %
Gender	Male	120	53.4 %
	Female	105	46.6 %
Country	Europe	36	16 %
	American	39	17.4 %
	Russian	85	38 %
	Arab	41	18.2 %
	Other	24	10.7 %

### Structural model results

To experimentally validate our model, we followed a two-stage approach. First, we examined measurement models. In the second stage, we evaluated the structural model by testing the reliability and validity to determine the relationships between constructs in the path model (Chin, 1998; Hair et al., 2016; Ringle and Sinkovics, 2009).

To evaluate the measurement, we must assess the internal consistency reliability using Composite Reliability (CR) and Cronbach's Alpha. According to Table 2, all reflective internal consistency reliability constructs have values larger than 0.785 and 0.861 for CA and CR, respectively. These scores exceed the recommended 0.7 required levels (Chin, 1998). To determine the reliability of an indicator, it is necessary to ensure that a construct explains at least 50% of the variation in each of its related indicators (Chin, 1998). With reflective constructs, the indicator loadings are generally higher than the required threshold of 0.7 and statistically significant (Chin, 1998; Gefen et al., 2000; Henseler et al., 2015). This provides evidence of the indicators' reliability and confirms that they meet the criteria for internal consistency reliability. Another way to assess internal consistency reliability is by determining that the convergent validity (AVE) value should be higher than 0.50 (Chin, 1998; Fornell and Larcker, 1981). Another way to evaluate the measurement is to use convergent validity to assess reflective constructs to ensure they are distinctive. The Fornell-Larcker criterion and the Heterotrait-monotrait (HTMT) were used to achieve this, as shown in Table 3. According to the literature, if two constructs are conceptually similar, their accurate correlation should be less than 0.9, and if they are conceptually different, their exact correlation should be less

than 0.85. A correlation of 1 or close to 1 indicates insufficient discriminant validity between the two constructs (Henseler et al., 2015). The findings of this study showed that each construct was unique, as it shared more similarity with its corresponding indicators than with other constructs in the path model. The cross-loadings test confirmed that none of the indicators had higher loadings on any build different than the one it was supposed to load on in the path model. The HTMT correlations between the two constructs were all less than 0.782, which confirmed their distinctiveness.

Table 2. Convergent validity

	Indicator	Outer loading	CA	CR	AVE
Brand image	BI1	0.877	0.912	0.934	0.739
	BI2	0.819			
	BI3	0.882			
	BI4	0.880			
	BI5	0.839			
Customer loyalty	CL1	0.830	0.902	0.927	0.718
	CL2	0.846			
	CL3	0.850			
	CL4	0.872			
	CL5	0.840			
Empathy	EMPA1	0.864	0.755	0.858	0.668
	EMPA2	0.779			
	IMPA3	0.808			
Insurance	ISUR1	0.911	0.773	0.898	0.815
	ISUR2	0.894			
Responsiveness	RES1	0.842	0.858	0.914	0.779
	RES2	0.906			
	RES3	0.898			
Reliability	RIA1	0.864	0.857	0.913	0.778
	RIA2	0.894			
	RIA3	0.887			

Table 3. Discriminant validity Heterotrait-monotrait ratio (HTMT)

	Brand Image	Customer Loyalty	Assurance	Empathy	Reliability	Responsiveness
Brand Image						
Customer Loyalty	0.733					
Assurance	0.916	0.688				
Empathy	0.900	0.769	0.918			
Reliability	0.674	0.653	0.628	0.688		
Responsiveness	0.732	0.725	0.607	0.775	0.549	
<b>Fornell-Larcker criterion</b>						
Brand Image	0.860					
Customer Loyalty	0.668	0.848				
Assurance	0.771	0.575	0.903			
Empathy	0.765	0.636	0.731	0.818		
Reliability	0.599	0.575	0.511	0.567	0.882	
Responsiveness	0.651	0.640	0.493	0.624	0.472	0.883

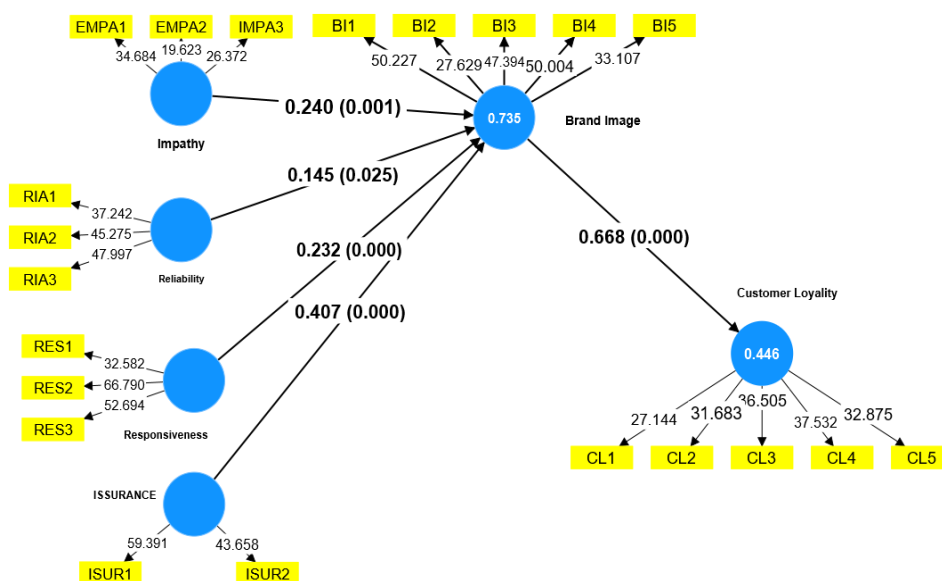


Figure 3. Structural model

### Testing hypothesis for structural model

The summary of the hypothesis test is presented in Figure 3. The figure illustrates the estimates of paths and causal relationships between the components of service quality, such as (responsiveness, assurance, empathy, reliability, and customer loyalty, in the presence of brand image as a mediator variable. The relationships between external and internal structures were evaluated using path coefficient values ( $\beta$ ), calculated t-values, and p-values. To determine the validity of the hypothesis, the computed t-value must be greater than 1.96, and the p-value must be less than 0.05. If the results are contrary, the null hypothesis is accepted. Table 4 presents the outcomes of the study's indirect and moderate hypothesis tests. All hypotheses were accepted and significantly with a p-value of  $< 0.00$ ; the first hypothesis is that brand image positively mediates the relationship between assurance and customer loyalty. The results show that the T-statistics are 5.190 and the P-value 0.000. After analyzing the results, it can be concluded that the first hypothesis is significant and therefore accepted.

Table 4. Testing hypothesis

	Beta	S m	Std	T.v	P-v
Assurance -> Brand Image -> Customer Loyalty	0.271	0.273	0.052	5.190	0.000
Empathy -> Brand Image -> Customer Loyalty	0.160	0.163	0.051	3.114	0.002
Reliability -> Brand Image -> Customer Loyalty	0.097	0.099	0.046	2.131	0.033
Responsiveness -> Brand Image -> Customer Loyalty	0.155	0.155	0.042	3.729	0.000
Brand Image -> Customer Loyalty	0.668	0.673	0.068	9.876	0.000

The second hypothesis examines whether that brand image positively mediates the relationship between empathy and customer loyalty. The test results disclose a T-Statistics value of 3.114 and a P-value of 0.000. After analyzing the results, it can be concluded that the second hypothesis is significant and therefore accepted. The Third hypothesis examines whether that brand image positively mediates the relationship between reliability and customer loyalty. The test results disclose a T-Statistics value of 2.131 and a P-value of 0.033. After analyzing the results, it can be concluded that the third hypothesis is significant and therefore accepted. The Fourth hypothesis examines whether brand image positively mediates the relationship between responsiveness and customer loyalty. The test results disclose a T-Statistics value of 3.729 and a P-value of 0.000. After analyzing the results, it can be concluded that the fourth hypothesis is significant and therefore accepted. The five hypotheses examine whether Reliability has a positive impact on Brand Image. The test results disclose a T-Statistics value of 9.876 and a P-value of 0.000. After analyzing the results, it can be concluded that the five hypotheses are significant and, therefore, accepted. This suggests that brand image has a positive impact on customer loyalty.

### CONCLUSION

This research aims to investigate the impact of service quality dimensions' customer on loyalty and brand image perception about nature tourist camps service quality in Jordan. Service quality dimensions represent the various facets and attributes that contribute to the overall assessment of the quality of services provided by an organization. These dimensions are crucial for understanding customer perceptions and expectations, ultimately influencing customer satisfaction and loyalty. The widely recognized and extensively studied dimensions of service quality are often captured by the SERVQUAL model developed by (Parasuraman et al., 1988). Assurance has been found to have a positive relationship with customer loyalty, and this relationship is mediated by the brand image. This finding aligns with previous studies (Mahatama and Wardana, 2021; Dam and Dam, 2021). The study suggests that when customers perceive a high level of assurance, such as the competence and professionalism of service personnel, it contributes positively to customer loyalty. The mediation role of brand image implies that the impact of assurance on loyalty is influenced by how the brand is perceived.

Additionally, Empathy has been found to have a positive relationship with customer loyalty, and this relationship is mediated by the brand image. This finding is consistent with previous studies (Bahadur et al., 2018; Mahatama and Wardana, 2021; Dam and Dam, 2021). The empathic behavior of employees during customer interactions contributes to increased satisfaction and loyalty to the service brand, often resulting in positive word-of-mouth. The study emphasizes that when customers perceive a genuine understanding and responsiveness from the service provider, it enhances their loyalty. The mediating role of brand image implies that the impact of empathy on loyalty is influenced by how the brand is perceived, highlighting the importance of cultivating a positive brand image through empathetic interactions.

The findings of this work indicate that reliability has a positive association with customer loyalty, and this relationship is mediated by brand image. The reliability of a product or service is a crucial factor influencing customer satisfaction and loyalty. The mediating role of brand image indicates that a reliable brand enhances the overall perception customers have, fostering loyalty. In essence, the positive impact of reliability on customer loyalty is partially channeled through the intermediary influence of a favorable brand image. This finding supports the research results of Bahadur et al. (2018), Wilson (2018), Mahatama and Wardana (2021), and Dam and Dam (2021) that indicate reliability positively associated with customer loyalty through brand image mediation. Moreover, the findings of this research indicate that brand image serves as a crucial mediator in the relationship between responsiveness and customer loyalty.

This finding is consistent with previous studies (Bahadur et al., 2018; Wilson, 2018; Mahatama and Wardana, 2021; Dam and Dam, 2021). This implies that the responsiveness of a business, including its ability to promptly address customer needs and concerns, influences not only customer satisfaction but also contributes to the formation of a positive brand image. This positive brand image, in turn, plays a significant role in fostering customer loyalty.

Furthermore, brand image has been found to influence customer loyalty. This finding aligns with prior research (Sangwan and Bhakar, 2018; Mehta and Tariq, 2020; Durmaz et al., 2018). This implies that a positive brand image



contributes to building trust and credibility among customers. When customers perceive a brand positively, they are more likely to trust the products or services it offers, fostering loyalty.

In conclusion, the findings of this research align with the broader understanding of service quality dimensions and their influence on customer loyalty. The concept of brand image acting as a mediator highlights the importance of not only delivering quality services but also effectively communicating and building a positive perception of the brand.

### Research implications

The study provides valuable insights into the relationships between service quality, brand image, and customer loyalty. Each dimension of service quality—assurance, empathy, reliability, and responsiveness—demonstrates a positive and significant influence on customer loyalty, mediated by brand image. These findings carry theoretical and practical implications for businesses, particularly in the tourism and hospitality sector, emphasizing the importance of not only delivering high-quality services but also cultivating a positive brand image to enhance customer loyalty. Firstly, the study reinforces the Service Quality model's relevance in measuring and understanding service quality in diverse industries, specifically in the context of nature tourist camps. Despite documented limitations, the model remains a valuable tool, and this study's findings contribute to the ongoing discourse on its application and effectiveness. Secondly, the positive mediation effect of brand image on the relationship between assurance and customer loyalty highlights the role of trust, competence, and professionalism in shaping customer perceptions. Consequently, industry practitioners are advised to invest in continuous training programs to improve the competence and professionalism of service personnel in nature tourist camps. Customer perception of a high level of assurance positively impacts loyalty. Strengthening these aspects contributes to a favorable brand image, influencing how customers perceive the brand's competence and professionalism. Thirdly, the study's confirmation of brand image as a mediator in the relationship between empathy and customer loyalty emphasize the impact of empathetic interactions on customer satisfaction and loyalty. Industry practitioners are urged to implement customer service practices that foster empathetic behavior during interactions. Genuine understanding and responsiveness positively influence customer satisfaction and loyalty, creating a ripple effect of positive word-of-mouth. Cultivating a positive brand image through empathetic interactions is essential for long-term loyalty. Fourthly, the positive mediation effect of brand image in the relationship between reliability and customer loyalty suggests that consistent and dependable service delivery fosters loyalty, particularly when coupled with a positive brand image. Therefore, industry practitioners should prioritize the reliability of products and services offered in nature tourist camps. Consistent and dependable service enhances overall customer perception and fosters loyalty. Investing in brand image mediation further solidifies the positive impact of reliability on customer loyalty. Lastly, the study's results highlight that responsive customer service and a positive brand image play a pivotal role in influencing customer perceptions and fostering loyalty. Hence, Develop and implement strategies to enhance the responsiveness of the business, addressing customer needs promptly. This influences customer satisfaction and significantly contributes to forming a positive brand image. The positive brand image, in turn, plays a crucial role in fostering customer loyalty.

### Limitations and Recommendations for Future Research

While the results of this research are promising, it's essential to acknowledge certain limitations. The study focused mainly on SERVQUAL model dimensions and how they are related to customer loyalty through the mediation of brand image. Future research can expand by focusing on more dimensions of service quality, such as competence, courtesy, credibility, security, etc. Future research can also expand on the factors that affect customer loyalty by investigating other antecedents. This study used brand images as moderators. Future research can use more variables as mediators, such as reputation.

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## ACTIVITY OF CLMV COUNTRIES (CAMBODIA, LAOS, MYANMAR, VIETNAM) AS A FACTOR IN THE DEVELOPMENT OF THE TOURISM ECONOMY IN SOUTHEAST ASIA

**Waldemar MOSKA\*** 

Gdansk University of Physical Education and Sport, Department of Physical Culture, Gdansk, Poland, e-mail: waldemarmoska@wp.pl

**Thu Ha LE** 

Gdansk University of Physical Education and Sport, Department of Physical Culture, Gdansk, Poland, e-mail: lth.cecc@gmail.com

**Owidiusz MOSKA** 

Gdansk University of Physical Education and Sport, Department of Physical Culture, Gdansk, Poland, e-mail: owi-84@wp.pl

**Duc Thang NGUYEN** 

East Asia University of Technology, Faculty of Tourism, Hanoi, Vietnam, e-mail: thangqlkh03@yahoo.com

**Nga Quynh NGUYEN** 

East Asia University of Technology, Faculty of Tourism, Hanoi, Vietnam, e-mail: quynhnga.nguyennguyenquynhnga80@gmail.com

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**Abstract:** The accession of Cambodia, Laos, Myanmar and Vietnam, as CLMV, to ASEAN in the second half of the 1990s, strengthened the organisation, which is now an economic competitor even to the European Union. However, the positive trends in this regard are believed to have been determined by the establishment of The Greater Mekong Subregion Economic Cooperation Program GMS-ECP in 1992, with the participation of six countries: China, Laos, Cambodia, Myanmar, Thailand and Vietnam. Following the establishment of the Mekong Cross-Border Sub-region in 1992, Cambodia, Laos, Myanmar and Vietnam, formed an association of CLMV countries in 1999, seeking joint economic development, contributing to the functioning of tourism as one of the key industries. There are not many publications regarding CLMV, most studies containing information about CLMV concern ASEAN. The study prepared by the authors is the first review study on the organization of tourism by CLMV countries and seeks medical tourism, economic cooperation, trade, transport, and development gap. The collected documents and other source materials were analyzed and assessed. Information on CLMV was considered to be limited due to the informal status of the arrangement.

**Keywords:** CLMV, ASEAN, Southeast Asia, tourism, political summits, Cambodia, Laos, Myanmar, Vietnam

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### INTRODUCTION

Due to the charming landscapes, favorable climate and many anthropogenic values, the countries: Cambodia, Laos, Myanmar and Vietnam, as the most economically backward in Southeast Asia, have united into one organizational entity, CLMV, intended to reverse previous negative trends and lead to a dynamic economic development. The study presents the activities of these countries, along with an indication of the correlation between joint activities and the development of tourism. There are just a few scientific studies in Vietnamese and English-language literature regarding tourism in the countries associated with the CLMV. Most of them are guides, travel reports or blogs. They include: Armbrrecht et al., 2008; Nguyen Ngoc Bich (ed.), 2016; Law et al., 2022; Thang, 2018; Moska, 2021; Moska, 2023.

After the unsuccessful establishment of the ASEA (Association of South East Asia) in 1961 and the successful formation of ASEAN in 1967, it took some 30 years for the more backward states in this part of the world to start uniting into associations, due to the multifaceted barriers existing in the South East Asian region (Moska and Moska 2022:183-184; Skopiec, 2011: 214-215). The opportunity to benefit from the development path and to participate in the structures of ASEAN (Association of South East Asian Nations) is considered one of the keys to the success of the CLMV countries, with the unwritten leadership of this association in the form of Vietnam (Thanh, 2016:147-166; Sluggish recovery, 2021; Vietnam leads, 2021). Table 1 outlines the origins of the CLMV, indicating the important role of the ASEAN and GMS-ECP associations in this regard.

### CLMV status

The CLMV, without a management structure, adopted the organisational status of country-led summits and also

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\* Corresponding author



conferences under the leadership of the ministers of economy, finance, transport, agriculture, education and tourism. During its 23 years of existence, tourism has proved to be one of the core activities of the CLMV countries, contributing to their economic development. Due to the dynamic activities, the permanent activity in the implementation of successive solutions and the variability of management, the study adopts a chronological analysis of the activities aimed at the proper organisation of tourism within the CLMV. The CLMV provides a mechanism for open cooperation, promoting the virtues and potential cooperation opportunities of individual member countries and a channel for support from other ASEAN countries and development partners for CLMV countries. It is also a forum for coordinating positions to protect the interests of CLMV countries in the economic integration process with ASEAN and other Asian partners.

Table 1. Genesis of the CLMV (Source: Gin, 2004:186; Tarling, 1999: 287; Association of Southeast, 2022; Celebrating ASEAN, 2017)

	Event	Members	Date
1.	ASA (ASEA)	Philippines, Malaysia, Thailand	1961
2.	ASEAN - 5	Philippines, Indonesia, Malaysia, Singapore, Thailand	1967
3.	ASEAN - 6	Brunei Darussalam, Philippines, Indonesia, Malaysia, Singapore, Thailand	1984
4.	GMS-ECP	China, Cambodia, Laos, Myanmar, Thailand, Vietnam	1992
5.	ASEAN - 7	Brunei Darussalam, Philippines, Indonesia, Malaysia, Singapore, Thailand, Vietnam	1995
6.	ASEAN - 9	Brunei Darussalam, Philippines, Indonesia, Laos, Malaysia, Myanmar, Singapore, Thailand, Vietnam	1997
7.	ASEAN - 10	Brunei Darussalam, Philippines, Indonesia, Cambodia, Laos, Malaysia, Myanmar, Singapore, Thailand, Vietnam	1999
8.	CLMV	Cambodia, Laos, Myanmar, Vietnam	1999
9.	ASEAN Plus Six	Australia, Brunei Darussalam, Philippines, India, Indonesia, Japan, Cambodia, South Korea, Laos, Malaysia, Myanmar, New Zealand, Singapore, Thailand, Vietnam	2005

As a general rule, CLMV Summits to address major issues and directions for cooperation are held annually. Six working groups, related to trade, investment, transport, information technology, human resources, agriculture, economy and tourism, have been established to pursue areas of cooperation.

#### Development of the CLMV (1999-2022)

The functioning of the CLMV in ASEAN structures was considered as a second-speed membership, similar to the conditions in the European Union. However, the historical difference of the CLMV countries from the rest of Southeast Asia and the economic development gap, due to the prospect of dynamic development and the need to ensure security in the area, did not prevent the pursuit of a unified structure for this part of the world (Soja, 2017: 45).

The countries, operating under a common banner since 1999, have taken many decisions at so-called CLMV Summits. The first event of this type was the CLMV Summit in Vientiane (Laos) on 27 November 2004, the organisation of which was agreed at the ASEAN-Japan Summit in Tokyo in December 2003. In Laos, the so-called *Vientiane Declaration* was adopted on strengthening cooperation and economic integration among CLMV countries in the framework of: trade, investment, agriculture, industry, energy, transport, information technology, tourism and human resource development. During the Eleventh ASEAN Countries Meeting and the First East Asia Summit, the Second CLMV Countries Conference was held in Kuala Lumpur in December 2005, where details on the implementation of the Vientiane arrangements were clarified and principles of cooperation with Thailand were agreed. Also, the Third CLMV Summit was held on the margins of the ASEAN meeting, in 2007 in Cebu (Philippines) (Kết nối, 2016; Backgrounder: Cambodia, 2008; Calendar of Meetings, 2004; Tổng quan hợp, 2016). The 4th Summit (Hanoi, Vietnam, 06.11.2008) was dedicated to strengthening cooperation within the CLMV and with other countries in the region, primarily in: trade, transport, agriculture, tourism, vocational education. Cooperation with the economic organisations of Southeast Asia, especially ASEAN, was identified as a priority. There was also support for the region's economic corridor initiatives, such as: East-West Economic Corridor (EWEC), Southern Economic Corridor (SEC) and Central Economic Corridor (CEC) (Joint Statement, 2008). During the fifth CLMV summit in Phnom Penh, Cambodia (16.11.2010), arrangements were made to organise working meetings on cooperation: trade (first meeting of CLMV finance ministers in August 2010 in Da Nang, Vietnam), communications, agriculture, human resource management and tourism (Joint Statement, 2010).

The 6th CLMV Summit was held on 12 March 2013 in Vientiane. The leaders of the countries reiterated earlier declarations from previous meetings, raising the need to reduce the development gap within ASEAN and CLMV. They agreed to jointly intensify activities in the spheres of transport, agriculture, tourism, human resource management and encouraging private sector activities in the implementation of CLMV projects.

It was found that the disparity in tourism between ASEAN and CLMV countries started to decrease as early as 2005 and consistently in the following years (Southeast Asian Economic, 2013; 6th Cambodia-Lao, 2022; Joint Statement, 2013). The 7th CLMV Summit held in Naypyidaw, Myanmar, in June 2015, pointed to the need for bilateral economic agreements between CLMV members, optimisation of cross-border economic corridors, creation of incentives for investment in agriculture, industry and energy, and tourism (Cooperation Summit, 2022).

The eighth CLMV Summit 'Shaping the Future and Caring for the Present', was attended by the Secretary-General of ASEAN, the UN Under-Secretary-General, the Executive Secretary of ESCAP (Economic and Social Commission for Asia and the Pacific) and representatives of the World Bank and the Asian Development Bank (ADB), took place on 16 October 2016 in Hanoi. The arrangements focused on the development of communications by: accelerating the construction of connectivity and economic corridors (north-south, east-west and south); the construction of the Vientiane-Hanoi Expressway; and the development of a feasibility study for the Yangon (Myanmar)- Muong Khoa (Vietnam)-Hanoi route

(Eighth CLMV Cooperation, 2016). The 9th CLMV Summit held on 15 June 2018, for the first time in Bangkok (Thailand), was led by a Cambodian delegation. Participants at the meeting reaffirmed the need to further narrow the development gap between CLMV countries and the rest of ASEAN, also declaring cooperation with China, South Korea and Japan (Cambodian PM Summarises, 2022). The meeting was preceded by the CLMV Regional Conference *Implementing the Sustainable Development Goals*, also held in Bangkok in March 2018.

At the 10th and 11th CLMV summit-videoconferences held on 9 December 2020 simultaneously by the Lao and Vietnamese governments, the individual member states committed to intensifying economic cooperation, including but not limited to regional linkages, improving economic infrastructure and developing economic corridors. The effective implementation of CLMV plans was highlighted through the smooth functioning of the associations: ASEAN and GMS (10th CLMV Summit, 2022; 10th CLMV Summit, 2020).

The CLMV's activities point to the leading role of Vietnam and Cambodia as major players in the association. While addressing a number of fundamental economic and social problems, economic security, counter-terrorism and drug trafficking, the CLMV does not engage in global problems due to its participation in ASEAN structures. Thanks to its dynamic economic development, stable political situation (Myanmar not included), membership of ASEAN and CLMV, it is estimated that Vietnam will become a member of the G20 in 2050 (Soja, 2017:44-69).

Table 2. Summits and main provisions of the CLMV<sup>1</sup>

lp.	CLMV peak/place	Date	Decisions, declarations
1.	I Summit/Vientiane	27.11.2004	Vientiane Declaration
2.	II Summit/Kuala Lumpur (Malaysia)	10.12.2005	Implementation of the Vientiane Declaration
3.	III Summit/Cebu	12.01.2007	Continuation of the Malaysian declaration
4.	IV Summit/Hanoi	06.11.2008	Declaration of Cooperation with Southeast Asian Economic Organisations
5.	V Summit/Phnom Penh	16.11.2010	Continuation of the Vietnamese declaration
6.	VI Summit/Vientiane	12.03.2013	Declaration on reducing the development gap of CLMV countries
7.	VII Summit/Naypyidaw	22.06.2015	Declaration to make CLMV the world's leading tourist destination
8.	VIII Summit/Hanoi	16.10.2016	Declaration on the construction of expressways linking CLMV countries
9.	IX Summit/Bangkok	15.06.2018	Declaration of cooperation with China, South Korea and Japan
10.	X summit/Laos (videoconference)	09.12.2020	Increasing the combined capacity of the CLMV
11.	XI Summit (CLV)/Hanoi (videoconference)	09.12.2020	Declaration to strengthen cooperation within: Cambodia, Laos and Vietnam

## RESULTS AND DISCUSSIONS

### Tourism as a core activity of CLMV countries

In 2011, GDP growth in the CLMV group was 14.1 per cent (CLMV Economic Ministers, 2022), one of the higher rates in the world. The joint operation of the four countries under the CLMV and later also the CLMVT (jointly with Thailand) and two Chinese provinces (Yunnan and Guangxi) is believed to have become one of the factors behind the more than 20-fold increase in tourism investment in the Southeast Asian region, from US\$20 trillion in 2000 to US\$400 trillion in 2019, as reflected in Figure 1. It should be recognised that the establishment of one intra-regional cooperation mechanism in the form of CLMV has contributed to narrowing the development gap, improving competitiveness, promoting growth and economic integration of the four sub-regional countries.

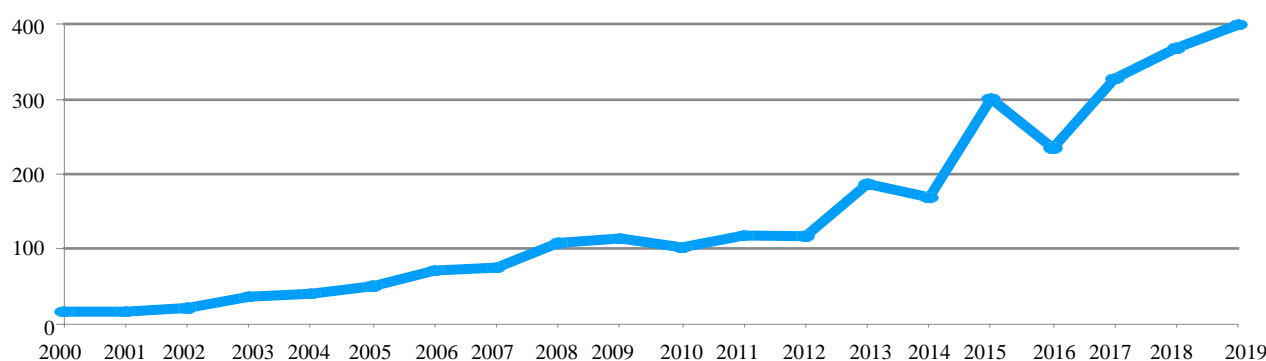


Figure 1. Investments in the tourism sector in the CLMV, from 2000 to 2019 (in USD trillions) (Source: Sihabutr et al., 2021, 1174)

Since 1992, tourism has become one of the highest priorities of the *Greater Mekong Subregion* countries (CLMV, together with Yunnan Province and Thailand) with the support of international organisations, subsequently included in the ACMECS (Ayeyawady-Chao Phraya- Mekong Economic Cooperation Strategy) prepared at Thailand's initiative in April 2003. On the other hand, in 1996, at the initiative of ASEAN, 10 Southeast Asian countries and China took part in a joint economic venture (ASEAN Mekong Basin Development Cooperation - AMBDC), which later (2000 - 2001) declaratively indicated the creation of joint tourism projects (Lim, 2008:17-46).

<sup>1</sup> Kết nối, 2016; Backgrounder: Cambodia, 2008; Calendar of Meetings, 2004; Tổng quan hợp, 2016; Joint Statement, 2008; Southeast Asian Economic, 2013; 6th Cambodia-Lao, 2022; Joint Statement, 2013; Cooperation Summit, 2022; Eighth CLMV Cooperation, 2016; Cambodian PM Summarises, 2022; 10th CLMV Summit, 2022; 10th CLMV Summit, 2020.

In 1994, tourism was added to the core business of the GMS - ECP, in addition to transport, telecommunications, energy, human resources, environment and trade and investment, forming the GMS Tourism Working Group (GMS TWG). The year 2002 marked the end of a 10-year period of strategy implementation, with ten flagship programmes, among them tourism in the form of the GSM Tourism Development (Ishida, 2008:115-140).

### **Financing tourism in the CLMV**

The tourism industry, which is developing thanks to the joint decisions of the CLMV countries, strengthening cooperation with other countries in the region and financial and economic organisations, has also been assisted by East Asian countries and banking sector institutions. However, Korean, Japanese and Chinese international policies, among others, have played a major role in shaping the development of the industry in Southeast Asia. The Republic of Korea had already adhered to the principle of investing in CLMV tourism since 1990, recognising it as a factor of dynamic economic growth, and since 2000, selected destinations in CLMV countries (Ha Long in Vietnam, Angkor Wat in Cambodia and Bagan in Myanmar) have been recognised as major tourist destinations in Korea. In 2006, Korean tourists became the foreign group most likely to visit Cambodia and the second (behind the Chinese) to travel to Vietnam.

In the post-2000 period, Japan has been one of the largest donors to tourism development in CLMV countries, supporting, among other things, tourism development in Laos, due to the Lao declaration to join the ASEAN Free Trade Area (AFTA) in 2008, and has invested US\$68 million in tourism development in Myanmar during the same period.

By becoming part of the GMS, the tourism industry also began to provide an opportunity for China to build border relations with CLMV countries. In 2004, as part of the CLMV's external support, Vietnam received US\$246 million from China, for such things as hospitality, communications and tourism development (Cheong, 2008:262-297; Uchida, 2008:209-261; Hongmei, 2008:171-208). The CLMV countries also received support from the Asian Development Bank (ADB), and the Mekong Tourism Development Project (GMS) to support the poorer parts of the region became part of the solution.

In 2021, ADB has allocated US\$1.7 million for tourism recovery in Southeast Asia after the COVID-19 pandemic, with funding for local entrepreneurs and the creation of digital platforms. And in 2022 in Cambodia, US\$3.7 million, with a US\$3 million share from the Japanese Support Fund, for a project (*Community-Based Tourism COVID-19 Recovery Project*) for tourism development of the historic Preah Vihear Temple in Preah Vihear Province and Phnom Da Temple in Takeo Province. From Japan's special fund for the ADB-GMS programme, in the period 1993 - 2000, for tourism in the CLMV: US\$0.6 million for the Mekong/Lancang River Tourism Planning Study; US\$1.25 million for tourism skills development in the Greater Mekong Subregion; US\$0.6 million for the preparation of the Mekong/Lancang River Tourism Infrastructure Development Project (Lim, 2008:17-46; New ADB Facility, 2021; ADB Approves, 2022). CLMV countries, have also become a natural beneficiary of funds raised for tourism development by ASEAN. In the period 2011-2015, based on the ASEAN Strategic Transport Plan (ASTP), an infrastructure fund with an initial capital of US\$500 million was established with the support of China, Japan, the Republic of Korea and local financial institutions (primarily ADB) (Chheang, 2013:67). Under the SWITCH-Asia Project (2007-2022), with 90% participation from the European Union, €4 million was invested in Laos to implement tourism projects in CLMV countries. The Luang Prabang Handle With Care (Sustainable Tourism Destinations) project, worth €1.8 million, was implemented between 2016 and 2019, and a project titled: SUSTOUR Laos (Promoting Sustainable Tourism by Integrating Small and Medium Enterprises into Sustainable Supply Chains and Raising Consumer Awareness) is being implemented between 2020 and 2024 for more than €2.2 million (SWITCH-Asia, 2022).

### **Promotion of and through tourism**

The implementation of tourism promotion development into CLMV joint activity plans should be discussed in the context of all summits of this association, as well as economic meetings at ministerial and business levels and tourism conferences and workshops. The ASEAN Sectoral Integration Protocol for Tourism, signed on 29.11.2004 in Vientiane, includes, among other things, indications of promotional activities to support tourism development in CLMV countries (ASEAN Sectoral Integration, 2004). Joint proposals for the promotion of tourism of CLMV countries amounted to, among other things, the organisation of: tourism workshops (e.g. a CLMV *Tourism Promotion Project* marketing workshop was organised in Hanoi in 2009, with the additional participation of Malaysia, the Philippines, Singapore and Thailand as well as the ASEAN office and the Mekong Tourism Coordination Centre); tourism conferences (e.g. International Tourism Investment Promotion Conferences "Four Countries - One Destination" in Vietnam 2011, Cambodia 2013, Myanmar 2015 and Myanmar 2016) (Regional Workshop, 2009). Binding decisions on tourism promotion within the CLMV were made at the ministerial level, analysing the implementation of previous commitments. Thus, in September 2012, the tourism ministers of the CLMV countries, at a conference in Ho Chi Minh City (Vietnam), assessed the cooperation to date on tourism promotion. In December 2013 in Bokor (Cambodia), during a meeting of CLMV countries' tourism ministers, a joint CLMV tourism cooperation plan for 2013-15 was signed, focusing, among other things, on the exchange of information on tourism planning and marketing. In 2016 in Yangon, during the CLMV Tourism Forum "Four Countries One Goal", arrangements were made for joint promotion of tourism and tourism products. On the other hand, a key meeting of tourism ministers of CLMV countries to approve the CLMV Tourism Action Programme for the period 2019-2021 in the context of, inter alia, tourism promotion was organised in 2019, on the margins of the ACMECS Tourism Summit, in Chiang Rai (Thailand) (A new push, 2012; Hợp tác Du, 2012; Việt Nam tham, 2019; Chheang, 2013, 53-54; Joint Statement, 2013; CLMV floating world, 2013; Tăng cường hợp, 2016; Tăng cường kết, 2016; CLMV Nations, 2016).

### **Communication solutions**

Arrangements for joint CLMV activities required the implementation of communication arrangements, which were

established at successive summits, ministerial meetings, conferences, trade fairs and business meetings and also in relation to the activities of CLMV-related organisations. Particularly important in this regard was the 5th CLMV Summit in 2010 in Phnom Penh, where measures were implemented to facilitate travel between CLMV countries and also the 7th Summit in Naypyidaw in 2015, indicating the need to optimise cross-border economic corridors, and the eighth meeting at this level in 2016 in Hanoi, where arrangements were made to develop communications by: accelerating the construction of connectivity and economic corridors (north-south, east-west and south); the construction of the Vientiane-Hanoi Expressway and the development of a feasibility study for the Yangon-Muong Khoa-Hanoi route. However, as early as 2000, the GMS decided to create three cross-border "corridors", including tourism (Joint Statement, 2010; Cooperation Summit, 2022; Eighth CLMV, 2016; Ishida, 2008:115-140).

In the following years, the role of guiding joint communication solutions began to be filled by ministers of economy, transport and tourism, organisers of trade fairs and conferences and also representatives of East Asian business. Namely, in 2016 in Yangon during the CLMV Forum "Four countries one destination", with the participation of tourism business and banks from each country (Central Bank of Myanmar, Bank for Investment and Development of Vietnam, Hoang Anh Gia Lai Corporation), many agreements were signed between airlines and travel agencies, and the joint recommendations of the Forum focused on river and sea tourism (Tăng cường hợp, 2016; Tăng cường kết, 2016; CLMV Nations, 2016).

In September 2017, the fourth meeting of the CLMV countries' tourism ministers took place in Ho Chi Minh City during the International Travel Expo, where tourism was assessed as the engine that drives their economies. The will to continue the 2012 CLMV project *Four Countries - One Goal* was emphasised. However, most attention was paid to the need to properly organise air transport between the CLMV countries, especially the places under the UNESCO umbrella (Ross, 2017). As part of the assessment of opportunities to undertake transport cooperation between India and CLMV and Thailand, 2018 identified tourism as a core component of joint activity (Strengthening Transport, 2018).

During the 2019 CLMV Tourism Ministers' Meeting, on the margins of the ACMECS Tourism Summit, the ACMECS Tourism Action Plan for 2019-2023 and the CLMV Tourism Action Programme for the period 2019-2021 were approved in Chiang Rai, Thailand. The plans were mainly shaped around: developing the east-west tourism corridor and the so-called southern corridor, air, land and sea communications (Việt Nam Tham, 2019).

With the growth of inbound tourism, the level of airline activity has increased in most CLMV countries (most significantly in Cambodia and insignificantly in Myanmar). Historical circumstances and the majority government ownership of airlines in the CLMV are believed to limit their growth and efficiency (Law, 2022). Opportunities for outbound tourism from CLMV countries to neighbouring countries, including Thailand, have also increased, as exemplified by the development of medical tourism (Chitthanom: 54-77).

### Other organisational activities

After a declarative period of joint activity, ministerial-level agreements, seminars, workshops, conferences, became the basis for the implementation of concrete tourism development measures in the countries of the association under review.

In September 2012, the tourism ministers of the CLMV countries, at a conference in Ho Chi Minh City, reviewing the implementation of their 2010 commitments, established closer cooperation to develop the region's tourism sector from 2013 to 2015. They also assessed the cooperation to date in supporting business activities and training human resources. The CLMV's cooperation with Japan, Korea and also the Asian Development Bank (ADB) was appreciated (A new push, 2012).

In December 2013, a meeting of tourism ministers of CLMV countries was organised in Bokor, with the goal of increasing the number of tourists in the CLMV by 100 per cent by 2015. The four ministers signed a joint CLMV tourism cooperation plan for 2013-15, which focused on exchanging information on tourism planning and marketing, cooperating on joint development of tourism products, assisting each other in human resource development, establishing standardisation of tourism services and improving quality, cooperating on tourism investment promotion, cooperating with external international organisations and organising annual meetings of tourism ministers.

Arrangements for joint tourism products, construction of tourism infrastructure, cooperation between tourism and banking and telecommunications, among others, were brought about by the 2016 Yangon Tourism Forum (Chheang, 2013:53-54; Joint Statement, 2013; CLMV floating world, 2013; Tăng cường hợp, 2016; Tăng cường kết, 2016; CLMV Nations, 2016). In 2018, an ASEAN pro-development workshop was organised in Siem Reap, Cambodia, promoting the need for relevant agencies of CLMV countries to implement the MPAC 2025 (ASEAN Connectivity Master Plan).

A tourism capacity-strengthening workshop was organised at the ASEAN-Korea Centre in Busan (Korea), in collaboration with the Busan Tourism Organisation, with delegates from CLMV countries and Korean experts presenting best tourism implementation practices, and in Singapore, with the Secretary-General of ASEAN, during the Tenth CLMV Economic Ministers' Meeting, taking stock of the successive economic growths (especially in the tourism industry) in the member countries, an e-tourism seminar "Innovative Approaches for Small and Medium Tourism Enterprises in CLMV" was organised based on external stakeholders (ASEAN promotes, 2022; CLMV Tourism Capacity, 2018; The Tenth CLMV, 2018). The growth of tourism and the increased importance of diverse tourism activities in Southeast Asia, has put pressure to undertake organisational solutions and support forms of tourism. As part of The Initiative for ASEAN Integration (IAI), the project's priority areas were broadened in 2005 to include tourism, with a focus on ecotourism, among others. Meanwhile, the 2010 meeting of CLMV Culture Ministers in Nay Pyi Taw (Myanmar) set out principles for cultural cooperation, and the 2016 Tourism Forum in Yangon recommended, among other things, the development of cultural, historical, nature, local, river and maritime tourism (Moska, 2021; Joint Statement, 2010; Tăng cường hợp, 2016; Tăng cường kết, 2016; CLMV Nations, 2016).

## CONCLUSIONS

The association of the CLMV countries, without a classic organizational structure, operating with Myanmar, experiencing a political crisis, thanks to joint ventures and membership in ASEAN, is entering a period of dynamic economic development, the leading indicator of which is tourism. It should be noted that during a videoconference held on 24.08.2020, representatives of the economic ministries of the CLMV countries signed up to the CLMV Action Plan for Development 2021 - 2022, noting, among other things, the problems of local tourism related to the COVID-19 pandemic (Sluggish recovery, 2021; Economic Intelligence Center, 2022; Ministers endorse CLMV, 2020).

Real economic growth in all CLMV countries in 2022, compared to 2021, places them among the best performing countries in the world today. In this measure, after a period of economic recession due to the pandemic, Vietnam is returning to Asian markets as the leader of CLMV countries, recording 6.5 % GDP growth in 2022, thanks to the easing of COVID-19 restrictions, an increase in vaccination rates, the reopening of borders, and a dynamisation of exports as well as a reopening to foreign tourists. The measures implemented to rebuild tourism activity in Vietnam can be considered exemplary, a solution ready to be implemented in all CLMV countries (Moska, 2021; Moska and Moska, 2022; Moska, 2023). As mentioned earlier, over the period 2021-2022, ADB, with Japan's support, has committed around US\$5.5 million to support the development and rehabilitation of tourism in Southeast Asia.

Although unfortunately, CLMV countries can scarcely hope for a revival in the tourism industry, due to the negligible (only 10%) share of the local tourism market of people from outside the region and China, where restrictive pandemic solutions continue to be implemented (Vannak, 2019), determination in undertaking joint tourism ventures (including communication corridors, cross-border conditions, travel facilitation, tourism promotion) as well as the exceptional attractiveness of Southeast Asia determine the tourism development of CLMV.

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## CRISIS MANAGEMENT AS A DRIVER OF SUSTAINABLE TOURISM IN JORDAN: EVALUATING PERFORMANCE OF JORDANIAN TOURISM PUBLIC POLICIES DURING CRISIS - BEFORE AND AFTER COVID-19

**Malek BADER** 

Department of Sustainable Tourism, Queen Rania Faculty of Tourism and Heritage, The Hashemite University,  
Zarqa, Jordan, e-mail: malekbader@hotmail.com.

**Mairna MUSTAFA** 

Department of Sustainable Tourism, Queen Rania Faculty of Tourism and Heritage, The Hashemite University,  
Zarqa, Jordan, e-mail: mairna@hu.edu.j.

**Ramzi Al ROUSAN** 

Department of Sustainable Tourism, Queen Rania Faculty of Tourism and Heritage, The Hashemite University,  
Zarqa, Jordan, e-mail: ramzim@hu.edu.jo

**Hussein M. IBRAHIM** 

School of Archaeology and Tourism/ Department of Tourism Management, The University of Jordan,  
Amman, Jordan, e-mail: h\_ibrahim@ju.edu.jo

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**Abstract :** This paper evaluates the policies taken by Jordanian tourism sector before and after COVID-19; it is divided into two parts: the first dealt with the period 2011-2019 which followed the events of Arab Spring, the second focused on the post-COVID-19 period. A mixed methodology was used as for the Arab Spring case a quantitative approach that aimed at measuring the satisfaction of 54 travel agents about policies taken by public tourism sector was used. A Structure Equation Modelling analysis was conducted to test the relationship between specific satisfaction about promotional and economic policies as independent variables, and the general satisfaction as a dependent variable. As for the case of COVID-19, a different approach was used where the Tourism National Strategy 2021-2025 and reports on the influence of COVID-19 on Jordanian Economy were referred to make an evaluation of governmental performance. There was an obvious absence of the concept of “Crisis Management” in tourism national strategies (MOTA, 2003 ; 2010 ; 2015) ; where the focus was on diversifying the tourism product, enhancing the image of the country and increasing competitiveness

**Keywords:** crisis management, public policies, satisfaction, Arab Spring, political crisis, tourism in Jordan

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### INTRODUCTION

Since December 2010, revolutions known as “Arab Spring” took place in the Arab world, starting in Tunisia and Egypt and shortly after spread in some other Middle Eastern and North African regions. Fall of presidents and drastic political and social instability events in Tunisia, Egypt, Libya and Yemen were witnessed after decades of hard life conditions and corruption, while monarchies of Morocco and Jordan, which continued to be politically stable adopted gradual political reforms (Masetti and Körner, 2013). Deteriorations were recorded for economic indicators as GDP (Gross Domestic Product) and employment in Middle East and North Africa region (OECD, 2011). For the tourism industry; there was a decline in the volume of inbound tourists, revenues, and hotels occupancy rates. Jordan was one of the countries that were badly influenced by the instable political situation; especially for tourism sector, this was seen in the cancellation of trips by visitors from Europe and America, the drop in the number of tourist arrivals from 8,078,380 in 2010 to 6,812,438 in 2011 (15.7% decrease); and the decrease of package tours from 707,735 to 419,571 (Statistics of Ministry of Tourism & Antiquities [MOTA], 2010/2011); all were indicators for a real crisis. Considering that tourism is the largest export sector of the country, its second private sector employer, and a major producer of foreign exchange (MOTA, 2003), and that it accounts for approximately 10.50 % of the country's gross domestic product (GDP) (Central Bank of Jordan [CBJ], 2019), such decline in tourism indicators is critical to the Jordanian economy. There was a clear drop in some markets; these are mainly the tourists from the Gulf Council countries (particularly from Saudi Arabia), medical tourists (especially patients from Sudan, Libya, Yemen and Iraq). Moreover, the country is suffering from the pressure caused by receiving enormous groups of Syrian refugees (Khawaldah and Alzbou, 2022). It was only in 2015 when the tourism sector started to recover (as indicated from statistics by MOTA, 2016).

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\* Corresponding author

The location of the country in the region of the Middle East is exposing it to the influence of turbulent events since decades (e.g. Palestinian Israeli conflict, terrorism attacks on tourists during 1990s in Egypt, Gulf War 1990-1, Iraq War since 2003, and finally the Arab Spring); such location is causing a misperception and a negative image of the country as a tourism destination. The Jordanian Ministry of Tourism & Antiquities and Jordan Tourism Board have declared preparing an emergency plan (not formally published) to target markets as Gulf countries (Saudi Arabia and United Arab Emirates), Turkey and Far East (China, Japan and South Korea) (Jordan Times, 2015). Different promotional and economic policies were used to recover from this crisis and bring back tourists; these included launching online and offline campaigns to attract more of French, British, and German markets by linkages with European tour operators, advertisements on TV channels, taxis, and billboards. Promoting the country as a film destination was another action (i.e. the Martian movie was filmed in Wadi Rum, which was featured as Mars), promoting the usage of "Jordan Pass", which is a single ticket that allows tourists to access archaeological sites and museums while waiving entry visa fees for pass holders, waiving visa fees for packaged groups and individual travelers with a minimum stay of two consecutive nights, reduction of visa fees for all land borders, waiving the departure tax for both Aqaba International Airport and Marka Civil Airport (Abu Tayeh and Mustafa, 2018).

The formal website of Jordan Tourism Board gave access to live streaming cameras to experience views of distinguished locations; through videos, broadcasting tourists' commentaries about their experience in Jordan; also posting travel bloggers to recommend Jordan as a travel destination (Jordan Tourism Board, JTB 2017). Agreements with charter flights firms by Jordan Tourism Board were signed to bring weekly flights from Europe to Jordan, A summer brochure "Jordan: the family destination" was launched and distributed in airports and at border crossings, enhancing attributes and tourism services in some historical sites, and supporting with marketing information technology training for small businesses, also reducing taxes on hotels (UNWTO, 2017). That is in addition to organizing and participation in different events and exhibitions (e.g. events news posted on Eturebonews website on different dates).

### **Crisis in Tourism Context**

A crisis is "a change, which may be sudden, or which may take some time to evolve, that results in an urgent problem that must be addressed immediately" (Efficiency Unit, 2009). The Arab Spring influence on tourism sector is a multi-type crisis; it's economic since tourist arrivals and revenues decreased; and reputational since it had dramatically caused the misperception of the country as an unsafe destination due to its location. This signifies the need of "Crisis Management" approach, which "seeks to prevent or lessen the negative outcomes of a crisis and thereby protect the organization, stakeholders, and/or industry from damage" (Coombs, 2022: 4). Crisis management is: "the preparation and application of strategies and tactics that can prevent or modify the impact of major events on the company or organization" (Şen, 2015).

According to Faulkner (2001), crisis management takes the following phases: the pre-event phase (contingency plans and assessment studies are developed); prodromal phase (plans are activated after the occurrence of the crises; emergency phase (actions conducted to protect people and property); intermediate phase (media communication and rebuilding affected areas and infrastructure); and resolution phase (evaluation of crisis management process). The above-mentioned phases include different policies or actions that were discussed and expanded in literature (e.g. proactive crisis management (Mustafa, 2021, Hayes and Patton, 2001; Retchie, 2004; Carlsen and Liburd, 2008), integrating crisis management with strategic planning processes (Al Rousan et al., 2023; Retchie, 2004; Evans and Elphik, 2005), adapting a comprehensive research agenda and market recovery (Carlsen and Liburd, 2008); communication in crisis (Retchie, 2004; Marianna, 2011), preparing detailed contingency plans (Evans and Elphik, 2005), integration of stakeholders (Retchie, 2004; Blackman and Retchie, 2008; Marianna, 2011). It can be indicated in the case of Jordanian tourism crisis that formal authorities concentrated on taking communication and containment actions to recover from drastic deterioration in tourism arrivals and revenues; unfortunately, no clear strategic planning approach nor a post-crisis research or SWOT were declared or formally published when deciding these actions. Such actions are referred to as policies, which are defined as public responses to perceived public problems, of these are promotional policies which promote desirable behaviours, regulatory policies which discourage undesirable behaviour, and redistributive or macroeconomic policies which aim at changing individual behaviours by transforming the economic context in which people act (Lowi et al., 2007). For the purpose of this study promotional and economic policies were the selected as they fit the context of crisis. The effectiveness of these policies undertaken by public authorities can be evaluated not only by tourism levels (revenues, volumes of tourists.... etc), but also by the level of satisfaction by private enterprises about them; inbound travel agencies were selected since they were the mostly influenced businesses by the crisis of Arab Spring.

### **Satisfaction Theoretical Framework & Hypothesis:**

Many definitions were given to the concept of satisfaction; generally, it is a feeling generated from an evaluation of the Ouse experience (Parker and Mathews, 2001); Mittal et al., (2023) defined it as the judgement that a provided product is of a pleasurable level of consumption. It was also recognized as the "consumer's response to the evaluation of the perceived discrepancy between prior expectations and the actual performance of the product as perceived after its consumption (Al Rousan et al., 2023, Hunt, 1991) while Fornell (1992) and (Dalla Pozza, 2014:11) stated that satisfaction is "an overall post-purchase evaluation". The concept of satisfaction is found in the contexts of purchase, consumption, information and business consumption; overall, satisfaction represents the response of the end user (Giese and Cote, 2002). Overall, satisfaction is an evaluation process, regardless of the context or targeted group. Most of satisfaction research focused on motivation, carrying capacity, social impacts, perceptions and behaviour (Latu and Everett, 2000). Very few studies analysed the relationship between specific and overall satisfaction in different contexts; for example: measuring attribute

and overall satisfaction with destination experience (Chung and Petrick, 2012), the relation between transaction-specific satisfaction, overall satisfaction and repurchase intentions (Jones and Suh, 2000), the specific satisfaction and dissatisfaction-based evaluations of destination by sun and sand tourists' and their relations to both overall satisfaction and intention to return to the destination (Alegre and Garau, 2010), and the specific site attributes and their relation to visitors' overall satisfaction with their experiences (Ibrahim and Al-Zboun, 2021; Yuan et al., 2018). The general finding by these studies is that specific-attribute satisfaction is a strong predictor of overall satisfaction. In this context, travel agents' satisfaction was measured in both specific and general levels regarding promotional and economic policies taken by Jordanian government to deal with tourism crisis caused by the events of "Arab Spring". The following model was proposed (Figure 1).

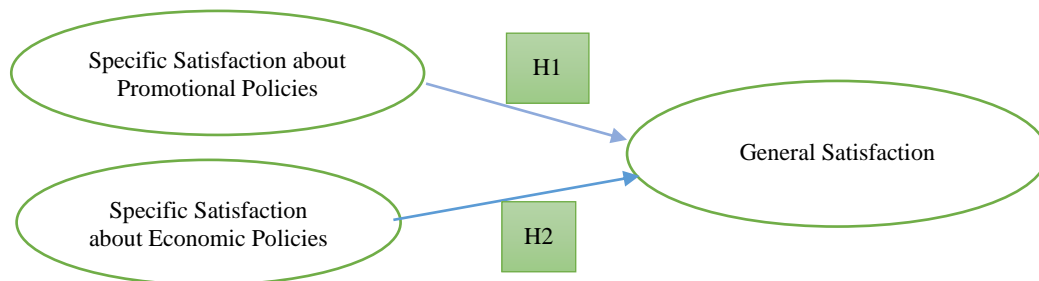


Figure 1. Specific Public Policies Satisfaction– General Satisfaction Proposed with hypothesized relationships (in this model it was hypothesized that satisfaction about specific policies adapted by tourism public sector would contribute to the general satisfaction about its performance)

The following research hypotheses were formulated to test the relations among variables in the proposed model; these were:  
Hypothesis 1:

**H<sub>0</sub>:** Specific Satisfaction about Promotional Policies do not have a positive significant effect on General Satisfaction.

**H<sub>1</sub>:** Specific Satisfaction about Promotional Policies have a positive significant effect on General Satisfaction.

Hypothesis 2:

**H<sub>0</sub>:** Specific Satisfaction about Economic Policies do not have a positive significant effect on General Satisfaction.

**H<sub>1</sub>:** Specific Satisfaction about Economic Policies have a positive significant effect on General Satisfaction.

According to Market Directions (2019), there are inconclusive results by survey design research on scales to be used in measuring satisfaction; though, the most common scale used to measure such concept is the classical Likert scale, which has numeric values describing the range of possible attitudes held by respondents from very dissatisfied to very satisfied. The use of such scale helps in discovering performance problems, taking actions, and looking for performance improvements. Therefore, this scale was used in this context, the following section explains the methodology and instrument used.

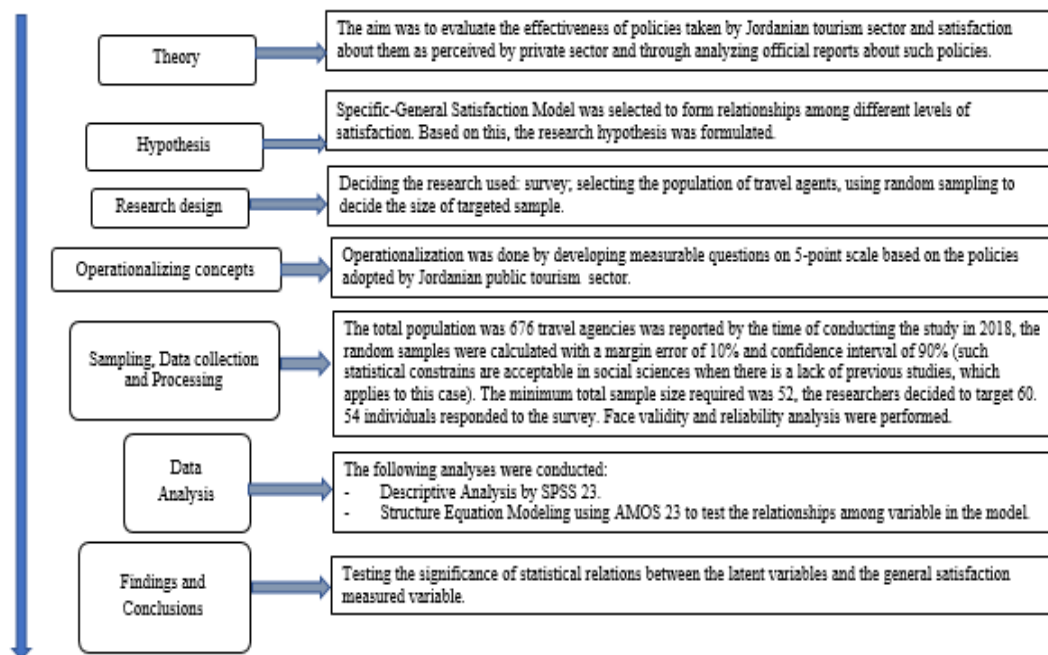


Figure 2. The steps followed in this research to evaluate the satisfaction about different policies taken by tourism public sector to deal with crises and test relation between specific satisfaction and general satisfaction

## METHODOLOGY

A random sample of 60 travel agents was targeted in April and May 2018 to fill a questionnaire that was designed for this study, travel agencies of types A (running Inbound, Outbound and Domestic Tours) & B (Running Inbound Tours)

were selected as a population since these were mostly affected by the crisis in terms of tourist volumes (Type C & D organize domestic and pilgrimage tours respectively); both types A and B have the total of 210 (out of 676 in Jordan for all types in 2018) according to the statistical data provided by the Jordan Society of Tourism and Travel Agents (JSTA, 2018). By calculating the sample size needed with a confidence level of 90% and a confidence interval of 10, it came out to be 52 (such statistical constraints are acceptable in social sciences when there is a lack of previous studies). 54 travel agents responded to the questionnaire, data collection took place at the cities of Amman, Zarqa, Jerash and Irbid during October 2018. The characteristics of the sample respondents are shown in Table 1. A flow chart of Methodology used is presented in Figure 2. The research instrument (written in Arabic) was designed to include the following 2 sections: the demographic section (age, gender, and educational level); the second section was of variables measuring the satisfaction on policies taken by tourism public sector (Table 2), it included 17 variables (16 were for specific policies and 1 for overall satisfaction), these were measured on a five-point scale (1: Not satisfied at all; 2: Somehow dissatisfied; 3: Neutral; 4: Moderately satisfied; and 5: Very satisfied); Table 2 shows the descriptive analysis for these variables.

### Analysis & Results

For the specific policies, these were grouped into promotional and economic; the internal consistency for the group of variables was measured through reliability analysis; the overall Cronbach's alpha value was 0.814 for the 5 variables forming economic policies' group ( $M = 3.1972$ ,  $SD = 0.97101$ ), and 0.895 for the 11 variables forming promotional policies' group ( $M = 3.0519$ ,  $SD = 0.87748$ ). It is noticed that specific policy observed variables had mean scores between 3 (Neutral) and 4 (Moderately satisfied); though, some variables had lower mean scores (between 2 (Somehow dissatisfied) and 3 (Neutral)), such results indicate a general low level of satisfaction (Table 2).

Table 1. Characteristics of the respondents in the sample

Characteristics		Frequency
Gender	Male	39
	Female	15
Total of valid answers		54
Age	21-30	21
	31-40	20
	41-50	9
	51 or more	4
Total of valid answers		54
Education	High School	6
	Community College or BA Degree	44
	Masters or PhD	4
Total of valid answers		54

Table 2. Means and standard deviations of observed variables in study

Specific Policy Satisfaction Variables	N	Mean	Standard Deviation
<b>Promotional policies</b>			
Encouraging domestic tourism through marketing and promotional campaigns in Jordan	51	2.7255	1.15028
Encouraging inbound tourism through marketing and promotional campaigns in Jordan	54	2.7593	1.09777
Promoting Jordan abroad as a safe tourism destination	54	3.1111	1.36902
Launching wide promotional campaigns on space channels	53	2.8113	1.22563
Concentrating on family tourism through publishing special promotional material for this type of tourism	54	2.8704	1.15000
Different multimedia used on the website of JTB to show feedback of tourists who visited Jordan	53	2.9623	1.22415
Organizing trip to gulf countries to attract markets	53	3.2453	1.09027
Promoting Jordanian festivals as Amman Citadel and Jerash festivals	54	3.2963	1.26833
Holding conferences and workshops abroad to attract tourists	51	3.1765	1.42416
Signing contracts with airlines abroad to bring more tourists	54	3.1667	1.28489
Making Jordanian tourism product familiar to investors through different economic services	54	3.2963	1.31220
<b>Economic policies</b>			
Reducing entrance fees to archaeological sites	53	3.132	1.3873
Reducing visa fees in land borders	54	3.1481	1.25002
Using Jordan pass for entering touristic sites	54	3.2593	1.16854
Weaving visa fees for travelers staying for 2 nights or more	53	3.4906	1.15397
Reducing taxes for hotels	54	2.9444	1.41976
<b>General Satisfaction Level</b>	54	3.2963	1.00244

A Structure Equation Modelling (SEM) was conducted using Amos 23.0 to test the relationships among variables in the model of specific policies and general satisfaction (Figure 3 and Table 3). All the observed variables were of standardized regression coefficients above or close to 0.50 and of significant p-values; the regression coefficient between the latent variables of promotional policies satisfaction and general satisfaction was .575, while it was -.249 between economic policies satisfaction and general satisfaction with being nonsignificant for both relations. The measures of goodness of fit were as follows: the chi-square/df (or CMIN/DF as put by AMOS 23.0) gave a value of 2.771 (Chi-square = 371.292, Degrees of freedom = 134 (CMIN/DF is usually satisfactory when  $< 2$  in small samples ( $N < 100$ ))), p value was  $< 0.05$ ; NFI "Normed Fit Index" = .501, TLI "Tucker-Lewis Index" = .541, RFI "Relative Fit index" = .430, and CFI "Comparative Fit Index" =



.598. These measures are usually considered satisfactory when  $> 0.90$ , though, such values are acceptable since these measures are sensitive to sample size (which is 54 in this study); the same can be said about RMSEA "Standardized Root Mean Square Residual" = .183, which is considered satisfactory when  $< 0.05$ , this measure is positively biased, such bias is greater for small sample size. It can be indicated that the model still fits the data and explains the relationships among the theoretical concepts.

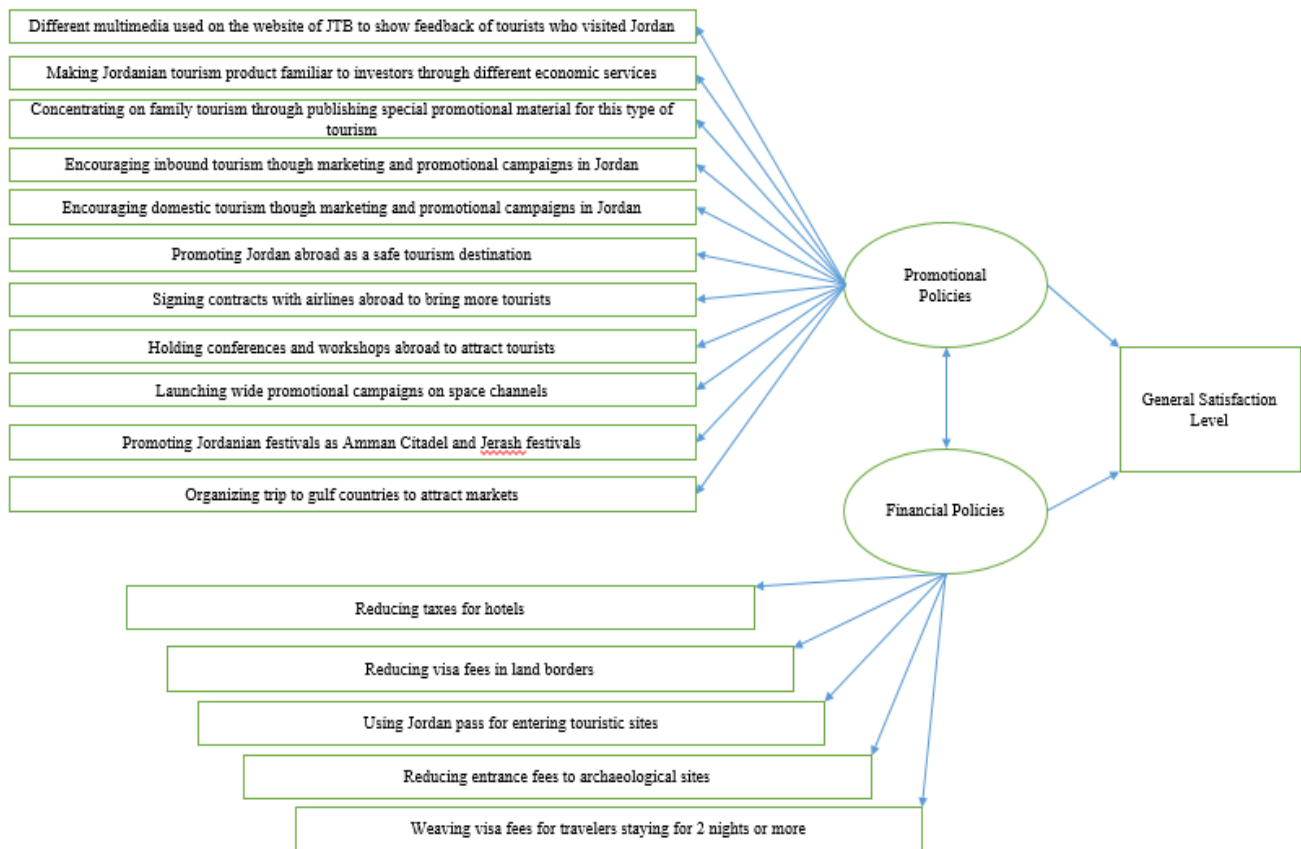


Figure 3. The Proposed Model of Regressing Specific Satisfaction about Policies (Promotional & Economic) variables on the variable of Overall Satisfaction

Table 3. The linear regression estimates and the significance levels for the model: Specific Policies Satisfaction (Promotional (PI) & Economic (EI)) on Overall Satisfaction (Note: (\*\*\*) mean that the p-value is less than .001)

Observed Variables	Path	Latent Variable	Standardised Regression Weights	Standard Error	Critical Ratio	P
Different multimedia used on the website of JTB to show feedback of tourists who visited Jordan	<---	PI	.618	.162	4.844	***
Making Jordanian tourism product familiar to investors through different economic services	<---	PI	.661	.166	5.316	***
Concentrating on family tourism through publishing special promotional material for this type of tourism	<---	PI	.634	.163	5.041	***
Encouraging inbound tourism through marketing and promotional campaigns in Jordan	<---	PI	.627	.162	4.969	***
Encouraging domestic tourism through marketing and promotional campaigns in Jordan	<---	PI	.538	.159	4.021	***
Promoting Jordan abroad as a safe tourism destination	<---	PI	.618	.161	4.874	***
Signing contracts with airlines abroad to bring more tourists	<---	PI	.729	.176	6.066	***
Holding conferences and workshops abroad to attract tourists	<---	PI	.707	.176	5.694	***
Launching wide promotional campaigns on space channels	<---	PI	.672	.168	5.398	***
Promoting Jordanian festivals as Amman Citadel and Jerash festivals	<---	PI	.564	.157	4.363	***
Organizing trip to gulf countries to attract markets	<---	PI	.483	.153	3.602	***
Reducing taxes for hotels	<---	EI	.697	.170	5.734	***
Reducing visa fees in land borders	<---	EI	.663	.165	5.377	***
Using Jordan pass for entering touristic sites	<---	EI	.634	.161	5.083	***
Reducing entrance fees to archaeological sites	<---	EI	.704	.172	5.772	***
Weaving visa fees for travelers staying for 2 nights or more	<---	EI	.489	.151	3.715	***
General Satisfaction	<---	PI	-.212	.720	-.311	.756
General Satisfaction	<---	EI	.618	.711	.813	.416

## DISCUSSION OF RESULTS

Besides the low satisfaction levels of observed variables, it could be indicated from the results of Structure Equation Modelling that statistical relations between the latent variables and general satisfaction were insignificant ( $-.212$  for promotional policies (minimal), and  $.618$  for economic policies (moderate)), thus both null hypotheses were accepted. This means that such policies undertaken by tourism authorities did not significantly contribute to the general level of satisfaction reported by respondents. The focus by MOTA and JTB was on developing an emergency plan to raise the international profile of the country through targeting specific markets as those in Gulf countries, Turkey, and Far East, that is besides weaving taxes and fees. There is a general dissatisfaction among Jordanian tourism businesses that authorities are not taking enough effective procedure to deal with decline in tourism levels caused by Arab Spring events (Jordan Times, July 21st 2015), this was evidenced in a study by Magablih and Mustafa (2018) where a sample of 77 individuals in management positions in Jordanian tourism establishments gave their responses on levels of readiness by tourism authorities to deal with the decline in tourism caused by events of Arab Spring; a general negative perception was reported on different actions taken by public sector authorities as relates to planning and cooperating with tourism services. This was also clearly indicated in the low levels of satisfaction reported by respondents to the survey of this study.

Referring to previous studies (e.g. Mitroff, 1994; Faulkner, 2001; Ritchie, 2004), adopting a proactive approach is of relevance when dealing with crises; according to Sönmez et al. (1998), any destination should incorporate crisis management planning into the overall tourism planning, marketing, and management strategies; in addition to targeting markets and increasing promotion efforts, a team of officials and professionals from different sectors should be involved in monitoring destination image, gathering information on impacts, and creating strategies. A comprehensive approach should be adopted by the Jordanian tourism authorities to incorporate crisis management planning into the formulation of overall national marketing/management strategies, this should be done with a full involvement of other stakeholders, this becomes extremely important since the concept of "Crisis Management" is not part of the Jordanian tourism national strategies of (2004-2010; 2011-2015; and 2015-2025) (MOTA, 2003; 2010; and 2015); where the priority is given to diversifying the tourism product, enhancing the image of the country, increasing competitiveness and development of human resources.

### The COVID-19 Period and After

Jordan was one of the countries that economically suffered from COVID-19 epidemic, according to the IMF forecasts from 14th April 2020, GDP growth was expected to fall to  $-3.7\%$  in 2020 (as cited by Nordea, 2020). In Jordan, tourism contributed with  $12.4\%$  to the total GDP of the country (the total GDP of Jordan in 2017 was 33,349.5 million JD (1 JD [Jordanian Dinar] = 1.41 United States Dollar) (Mustafa et al., 2022). This sector generated 4,108.2 million JD as receipts, and 53,488 jobs as a direct employment (Jordanian Ministry of Tourism and Antiquities [MOTA], 2019). Such indicators are expected to strongly decline this year due to COVID-19 crises. The International Air Travel Association [IATA] estimates that there will be a decline by  $52\%$  (US \$700 million) in revenues of Jordanian airlines compared to 2019. This would put 34,400 Jordanian jobs and US \$1.1 billion of Jordan's GDP at risk (\$2.2 billion of Jordanian GDP and 70,000 jobs are supported by air transport) (Times Aerospace, 2024). In order to deal with this situation, the Jordanian authorities implemented several safety measures; these were: suspension of international flights, closure of all educational establishments, restaurants, and archaeological sites, cancellation of public events and gatherings, activation of defence law which took place on March 17 to enforce curfew, closing businesses and restricting people movement. There was also the continuous release of news and updates to inform the public on progress of coping with the crisis, awareness campaigns were launched on media, medical staffs were increased in health establishments, only food and some export-oriented industries were allowed to continue part of their operations (IMF, 2020). Despite the urgent need to implement them, such procedures had their negative effects on the small and medium-sized enterprise (SME) segment which form 95 percent of private sector businesses and contribute with  $40\%$  to GDP, also on informal employment which forms 52 percent of total workforce. This took the form of losing cash flow, difficulty in covering operational costs and firing employees (Harb et al., 2022).

In May, a new stage of crisis management started; significant efforts were taken by the Jordanian authorities to make people return cautiously and gradually to normal life, where the Ministry of Health (as well as other ministries) launched a number of platforms to communicate with public and increase the awareness on the epidemic and safety measures to keep the spread of COVID-19 in its minimum levels (see for example the official websites of the Ministry of Health <https://corona.moh.gov.jo/en>; and the Ministry of Tourism & Antiquities [www.mota.gov.jo/Default.aspx](http://www.mota.gov.jo/Default.aspx)). The Ministry of Health and local companies launched the "Aman" (Safety) application that worn individuals when they encounter others who have COVID-19. The Central Bank of Jordan [CBJ] declared a number of measures as a containment of the negative impact of the epidemic on economy; for example: allowing banks to postpone payments of loans by clients, injecting additional liquidity, reducing interest rates on its refinancing program and expanding the coverage by the Jordan Loan Guarantee Corporation on Small and Medium Enterprises loans, including credit facilities dedicated to tourism sector (IMF, 2020). The government also organized the return of Jordanians who were abroad and were not able to return due to suspension of international flights, several luxury hotels were turned into COVID-19 isolation centers as a form of quarantine. There was also a three-month pause for business owners by Ministry of Finance (Ersan, 2020). Manual and fixed thermal scanners were installed at airports to test temperatures of travelers and detect symptoms of COVID-19 contaminations (Nahhas, 2020). Before reopening of tourist sites and facilities, sterilization operations took place at them to offer healthy places later, actually, the temporary absence of humans allowed unknown biodiversity various species to appear in these sites (Al-Tawaha, 2020).

Adopting such safety procedures and acquainting World Travel and Tourism Council [WTTC] with them led to receiving the "Safe Travels" stamp by Jordan; which came after adopting three phases of actions; the first was the full lockdown of all tourism sites and facilities, this was followed by the phase of gradual reopening of the sector, and the

present stage which is seen through reopening facilities for domestic tourism. 4,700 Jordanians made benefit from the “Urdun Jannah” program (Jordan Times, July 5, 2020). This program was developed to encourage domestic tourism through supporting local airlines with JD1 million for air flights between Amman and Aqaba (with a cost of JD 40 for two-way trips) (1 Jordanian Dinar [JD] = 1.4 United States Dollar), this support is also to be given to tourism service providers in governorates and to hotels and camps in Petra (Aqaba Development Corporation, 2020). The Jordanian government also launched the website [salamtak.gov.jo](http://salamtak.gov.jo) for medical tourism which includes information that relates to prices, hospitals and transport. A phase started where bookings on Royal Jordanian flights were made from 11 countries, this will be followed by returning Jordanians through land borders (Jordan Times, July 5, 2020).

On the other hand, MOTA (2020) developed a comprehensive strategy which focused on dealing with the COVID-19 crisis through a 4-stage approach: response, recovery, reoperation and reforms. It also made some decisions and took important procedures that aimed at supporting the tourism sector which witnessed a big loss during COVID-19 pandemic. According to estimates made by MOTA, the tourism sector losses by end of 2020 would exceed 85% of tourism contribution to GDP (Gross Domestic Product). Unfortunately, that was what happened, and the losses were huge. Almost 100 travel agencies closed, 800 restaurants and local cafes, 80% of hotels rated 3 stars and below and some 14,000 employees all lost their sources of income (MOTA, 2020). Consequently, USAID in coordination with MOTA conducted a study to understand the impact of the coronavirus crisis on the tourism sector in Jordan and in that study, it was revealed that Jordan received 4.5 million international tourist arrivals in 2019; however, these were projected to decrease to 1.8 million in 2020, before rising to 3.5 million in 2021. In 2019, inbound tourists spent \$5.8 billion in Jordan; however, it was projected that less than \$2.4 billion would be received in 2020, a decline of just over 58 percent. It was projected that \$4.7 billion would be generated in 2021, an increase of 94 %. In 2020, the contribution of the tourism sector in TDG was estimated to be \$1.1 billion. This compares to \$2.5 billion in 2019, a decline of more than 55 percent. There were almost 97,000 tourism-related jobs in 2019; this number was projected to fall to around 52,500 in 2020, down 46 percent (ILO and Fafo, 2021).

According to a report released by BEST, MOTA with the help of the USAID took the necessary procedures to overcome the obstacles that COVID-19 pandemic put in the way of improving the tourism sector in Jordan. The following procedures and measures were taken:

- In response to an urgent request from the Ministry of Tourism and Antiquities (MOTA) to assess the impact of the COVID-19 pandemic on tourism in Jordan, in June 2020 BEST developed models for projecting visitor arrivals and expenditure to Jordan over the period 2020–2030.
- BEST supported MOTA’s urban planning efforts and provided recommendations for enhancing the visitor experience and services at several religious and heritage sites. This included a visitor journey and site improvement plan and interpretation for the biblical site of Machaerus; a tourism development report on Shobak Castle, focusing on immediate interventions needed to enhance the site experience; and recommendations for developing a visitor center for Karak, enhancing the visitor experience at Um Ar-Rasas, and restoration of the Aqaba Castle.
- To help prevent the spread of the coronavirus and elevate health, safety, and personal hygiene standards across the tourism sector, BEST worked with the MOTA to update the standard operating procedures (SOPs) and Guidelines Manual for cultural heritage sites to incorporate new health and safety measures addressing COVID-19 protocols and guidelines.
- The tourism recovery plan created by BEST provided a foundation for public-private consultations to further develop and agree to a recovery plan with a common vision and the confidence and support of the tourism industry and the government, as the need for public-private dialogue was identified as critical.
- The Tourism Research and Planning Directorate (TRPD) at the MOTA was established in early 2020 to consolidate statistics and data-gathering, and introduce research, reporting, and analysis for better decision-making. Prior to its establishment, the ministry had a statistics department but there was no integrated research and planning function. From the start of the extension, BEST provided support to the ministry to set up efficient operations and an organizational structure for the new directorate.

In the report of the Economic and Social Council of Jordan 2020, it was stated clearly that the tourism sector in Jordan, as it is all over the world, was badly affected by the COVID-19 pandemic. This was due to the complete closure that the country witnessed to reduce the impact of the fatal virus. The report also showed that the restrictions on travelling either by land or air caused a critical decline in the number of tourists visiting the country and hence resulting in a little contribution of tourism in the national income. Compared to 2019, the income of the tourism section declined 80% in 2020.

The response to the COVID-19 crisis in the Middle East and north Africa was rapid. Jordan as a small country with a humble health ability compared to other countries responded rapidly to the pandemic and kept the rate of infection and death low through the health procedures taken, but this resulted in big losses in all the economy sectors especially the tourism sector. The government adapted a clear policy toward controlling the spread of the virus which was implemented in most of the Arab countries (OCED, 2020). According to the Centre for Strategic Studies in the Jordanian University 2021, the government has managed a range of responses to the crisis. Prime Minister Dr. Bisher Khasawneh announced in December 2020 a package estimated at 260 million dinars (8.0% of GDP) that included an increase in the number of beneficiaries of the National Aid Fund (Takaful 3 Program) by 100 thousand families with an amount of 100 million dinars. He also directed the government to provide direct financial support for the sustainability of the sectors with the aim of preserving 180,000 jobs with an amount of 140 million dinars. In addition to that, he guided the government to provide about 20 million dinars to help the tourism sector that was badly affected by the pandemic.

## CONCLUSION

Before COVID19, the Ministry of Tourism and Antiquities depended heavily on communication and containment actions to recover from declines in tourism arrivals and revenues; there was no clear strategic planning approach, nor a

post-crisis research or SWOT were followed in deciding these actions. The case was different after COVID19 pandemic where more proactive and comprehensive approach was adopted by the Jordanian tourism authorities to incorporate crisis management planning into dealing with the situation to rebuild the image of Jordan as a destination, and to support enterprises of tourism industry in their economic recovery. There was an obvious absence of the concept of "Crisis Management" in tourism national strategies (MOTA, 2003; 2010; 2015); where the focus was on diversifying the tourism product, enhancing the image of the country and increasing competitiveness, the case was totally different in the Jordanian Tourism National Strategy (2021-2025), where the 4R's Model of Crisis Management was adopted besides focusing on heritage protection, tourism product and human resources development, and implementing reforms to enhance levels of investment and competitiveness.

### Limitations and further research

While there are several limitations to this study, those constraints may affect how the results are understood. The first limitation relates to the study's context (Jordan), which restricts the generalizability of the findings to different countries and should be taken into consideration for purposes of future research. Therefore, it is impossible to assert that the findings are applicable outside of specific circumstances. The location of this study is a middle east where the effects of tourism growth have not yet been completely felt by the locals. As a result, their judgments of the benefits and drawbacks of tourism are influenced by their general knowledge. Additional research might be done to attempt to quantify the advantages of tourism growth that residents are anticipating to better understand how residents' perspectives vary over time especially after recovering from pandemic. This limitation adds value as a base for future research.

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## THE WEST IN THE FACE OF CRISES SINCE THE NINETEENTH CENTURY. RETURNING TO THE LAND AND TO LOCALITY IS ONE OF THE TRADITIONAL RESPONSES TO CRISES

Anthony TCHEKEMIAN\*

University of French Polynesia, Department of Letters, Languages and Human Sciences – UPF,  
Tahiti, Polynésie Française, e-mail: anthony.tchekemian@upf.pf

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**Abstract:** Responses to epidemics and climate change since ancient times, as well as their interpretations, are recurrent in times of crisis. Confronted with what may appear to be a series of global crises - health, environmental, economic and even democratic - the ideas on the virtues of what is local and rural are becoming increasingly important. We propose to put this return to locality 'in historical perspective'. The first part of the paper presents the major events, in France, and explains the major changes in the agricultural world between the 18th and 19th centuries. The second part highlights the aesthetic, artistic, utopian and literary reactions to the ravages of industrialisation in France and England. The third part deals with the integration of nature in the city since the 18th century, and then the nostalgic aspirations for working the land since the 19th century. Finally, in these times of pandemic, we conclude this study on the current movements of degrowth, ecology and return to the local, in favour of food and collective gardens.

**Keywords:** crises, health, agriculture, urban, localism, community gardens

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### INTRODUCTION

As the coronavirus pandemic continues, we believe we are facing a "new" phenomenon, on an unprecedented scale, since it is unknown, unanticipated, brutal, spreads rapidly, and has disruptive and devastating effects. The polysemous term "crisis" is thus associated with the term "coronavirus" and its collateral effects, whether it be in economic, financial, social, health or even political fields<sup>1</sup>. The word "crisis" comes from the Greek *krisis*, which refers to separating, the decisive phase of a disease or making a critical decision. The Greek word gave the Latin word *crisis*, then the French "*crise*". Etymologically, "crisis" implies a revelation that calls for action. A crisis relates to situations 'considered abnormal over a given period' and for which "the existing regulatory tools turn out to be inadequate" (Tardy, 2009: 13). It can be sudden and violent, leading to a "break in rhythm or a reversal of trend in some process of evolution" (George and Verger, 2006: 104). Moreover, the perception of its brutality can be enhanced by media coverage (Rossmann et al., 2018).

The management of the crisis triggered by the coronavirus pandemic 2019 (Covid-19)<sup>2</sup> - characterised worldwide by the dramatic drop in production and transport activities, the closure of national borders, the interruption of air traffic and billions of people having to be placed on lockdown – has never been seen before in the history of humankind (Nau and Flahault, 2020). This is a turning point at the beginning of the 21st century. According to economists, "the current health crisis amplifies in an unprecedented way the risks of shortages inherent in the functioning of the Global Value Chains (GVC)<sup>3</sup> that have developed over the last few decades" (Florentin and Laville, 2020). Indeed, the health crisis calls into question the capacity of production systems, particularly the agricultural and industrial systems, to cope with disasters.

The protection measures implemented at the state level encourage a return to the local level. Under the influence of Fernand Braudel, researchers have been able to reject the concepts of specific events or ruptures, and have preferred to observe long-term trends. However, "crisis" retains a heuristic value. Rather than opposing it to continuity, it would be preferable to consider them as complementary (Quétel, 2020). The post-crisis era is therefore one of change and reproduction. For example, health recommendations are more or less the same across Europe and our current health systems are largely the product of this experience; London has experienced numerous outbreaks of plague, after which

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\* Corresponding author

<sup>1</sup> It suffices to cite the historic agreement reached by the European Heads of State and Government in July 2020, which intends to create a plan to support their economies hit by the coronavirus health crisis: a 750 billion €, "*financed for the first time by a joint loan, and with a budget for the period 2021-2027 of 1,074 billion €*" (according to Emmanuel Macron on Twitter). Moreover, "*epidemics facilitate the expansion of authoritarianism*" (Bret, 2020). The pandemic has provided pretexts for leaders wishing to close their borders: some have imposed severe restrictions on travel abroad, blocking movements of migrants. Demonstrations by oppositions were banned for 'health reasons'. States strictly control information under the pretext of hunting down fake news.

<sup>2</sup> The coronavirus pandemic discovered in 2019 (COVID 19) was caused by the SARS-CoV-2 coronavirus (severe acute respiratory syndrome 2 coronavirus).

<sup>3</sup> Globalization has led to a fragmentation of value chains. The various design, production and service operations involved in the manufacture of a product may be located over a large number of countries, and the final product may be destined for consumers living across the world. According to the OECD, "*70% of today's international trade is [...] based on Global Value Chains (GVC)*". See OECD website, "Global Value Chains and Trade", "The Implications of Global Value Chains for Trade Policy", accessed on 21 July 2020. <https://www.oecd.org/fr/echanges/sujets/chaines-de-valeur-mondiales-et-commerce>

barrier measures (such as not shaking hands, kissing, disinfecting mail and coins with vinegar) and protective measures (such as masks) were recommended (Bastie, 2020; Vittori, 2020). Confronted with what may appear to be a series of global crises - health, environmental, economic and even democratic - the ideas on the virtues of what is local and rural increasingly spread: permaculture becomes fashionable, wealthy urban dwellers fled to the countryside to spend the lockdown in their second homes, or families consider leaving cities, thereby causing rural real estate prices to soar. However, in times of crisis, returning to the locality is not new. This brief historical overview, citing adequate past responses, can then be complemented by other references, sometimes contradictory, but ultimately challenging. In other words, this article aims at putting this return to locality in historical perspective from the eighteenth century, by examining various political, artistic and social expressions of this trend.



Figure 1. The Four Horsemen of the Apocalypse, according to Albrecht Durer, in 1498 (woodcut, 39.9 x 28.6 cm, Apocalypse, plate 3) (Source: Web Gallery of Art- public domain)

### 1. In France, artists' reactions to industrialization

From the eighteenth century onwards, French agriculture underwent decisive technical, structural and cultural changes, with, for example, improved tools, the end of fallow land, four-year crop rotation, cereal monoculture, new crops and the specialisation of agricultural areas. However, at the end of the nineteenth and beginning of the twentieth centuries, France was not yet a leading industrial country (in 1945, half of the French were peasants) and there was growing concern about competition from countries like Britain, Germany, the United States and Japan. French agriculture increased its production by 0.5% per year (Morrisson, 2007), thus making it possible to feed the entire population, rising from 21.5 million inhabitants in 1700 to 26 million in 1790, i.e. a demographic growth of 40% (Armengaud, 1993: 165). In the 18th century, the great evils heralding the end of time, symbolised by the Four Horsemen of the Apocalypse - conquest, war, famine and death - were fading away (Figure 1). At the same time, urbanisation developed and "city-dwellers demanded more products and capital from agriculture; crafts and industry experienced a certain boom. These socio-economic movements will contribute to the gradual integration of agriculture into an economy of exchange" (Boulet, 2020).

Simultaneously, therefore, a vein of institutional agrarianism can be observed in France, with the foundation of the Ministry of Agriculture in 1884 and the defence of small peasant property by the Méline laws<sup>4</sup>. Against a backdrop of economic depression at the end of the nineteenth century (1875-1889), Royalists, Bonapartists and Republicans agreed on the preservation of rural communities in a context of international competition and the "degeneration" of industrial

<sup>4</sup>The Méline law of 11 January 1892 aims to protect French peasants from imports of low-priced agricultural products. It brought to a close the episode of free trade inaugurated with the Free Trade Treaty of 1860, but also the Great European Depression (1873-1892). Among other consequences, it was to delay the modernisation of French agriculture for the duration of the Third Republic. The double customs tariff comprised an ordinary rate and a preferential rate for states which granted France equivalent customs advantages. Cf. Herodote website, "11 January 1892. Méline fait voter la loi protectionniste du double tarif", accessed on 9 July 2020. <https://www.herodote.net/almanach-ID-2999.php>



towns seen as hotbeds of social unrest (the Commune of 1871, then the Fourmies shootings on May 1st 1891). These theories were taken up by Marshal Pétain's National Revolution, after the debacle of May-June 1940. In challenging times, it is always reassuring to look back to some mythologized countryside, some bygone era. The return to the land, in a newly industrialized and modernized world, subjected to economic crises, was already an observable trend among political elites in the nineteenth century. Artists were also sensitive to these developments. Thus, agriculture, a pillar of the French economy, behind that of industry, remained a dominant subject for French artists. In France, from 1853 onwards, as a reaction to industrialization and academic representations of the ideal landscape, the Barbizon School<sup>5</sup> initiated the first movement for the conservation of nature: its members produced a series of paintings on the Fontainebleau Forest. That wooded area, southeast of Paris, thus acquired a historical, cultural and artistic value.

This was followed by other "artistic forest series" (an expression used at the time), then by the creation of biological, botanical and hunting forest reserves. For example, one of the founders of this school, the painter Jean-François Millet, is famous for his rural and realistic scenes with evocative titles: *Des glaneuses* - *Gleaners* (1857, Figure 2), *L'Angélus* - *The Angelus* (1857-1859), *L'Homme à la houe* - *The Man with the Hoe* (1860), *Les Planteurs de pommes de terre* - *The Potato Planters* (1861), *Bergère avec son troupeau* - *Shepherdess with her Flock* (1863), *Le Semeur* - *The Sower* (1865), *L'appel des vaches* - *The Call of the Cows* (1872) etc. These representations were inspired by the artist's childhood. They illustrate ways of life (peacefulness, serenity, harmony, nature) and working conditions in the fields (bending or stooping down, standing up planting, picking), in a world that was still predominantly rural.



Figure 2. Work by Jean-François Millet, *Les Glaneuses* (The Gleaners), made in 1857 (oil on canvas, 83.5 × 110 cm, Musée d'Orsay, Paris) (Source: Orsay Museum (public domain))



Figure 3. Work by Léon Lhermitte, *La Paye des moissonneurs* (The Harvesters' Pay), made in 1882 (oil on canvas, 215 x 272 cm, Musée d'Orsay, Paris) Source: Orsay Museum (public domain), Hervé Lewandowski

Similarly, the painter Léon-Augustin Lhermitte was inspired by daily, rural lives. His works, *The Harvest* (1883), *The Gleaners* (1887), *Friend of the Humble - The Supper at Emmaus* (1892), *The Harvesters' Pay* (1882, Figure 3), depict the lives of characters he saw in his childhood<sup>6</sup>, and highlight the economic difficulties of the peasantry.

Thirty years separated these two painters who glorified the aesthetics of peasantry. Jean-François Millet was born in 1814, and died in 1875; Léon Lhermitte was born in 1844, and died in 1925. The two never met<sup>7</sup>, but they chose to represent the rural world. Although Millet remained famous, Lhermitte fell into oblivion. In the continuation of Millet, worthy to be mentioned is the work of Jules Bastien-Lepage, *Les foins*, (Haymaking) painted in 1877, which depicts the simple yet overburdened life of a couple of peasants<sup>8</sup>, glorifying rest after work in a welcoming natural environment.

At the end of the nineteenth century, the personal relationship to nature was admirably captured by classical impressionists (e.g. Monet, Renoir, Degas, etc). This French artistic movement expressed the impressions created by objects and light. In *The Sower* (1888, Figure 4), Vincent Van Gogh expressed the throes of industrial societies by illustrating the dark blue ploughing coming from the horizon with factory chimneys in the background, on the outskirts of the city of Arles. In order to sympathize with the alienation of the poor, he painted the mean earth of the workers' plots.

<sup>5</sup> The school is a group of artists based in a few villages on the edge of the Fontainebleau forest, such as Barbizon, Marlotte, Chailly... From 1824 onwards, painters stayed there to carry out studies based on nature, and then met there regularly. This history of landscape painting is half-way between romanticism, where nature supports and protects, and impressionism, where it is the laboratory (Saule-Sorbe, 2013).

<sup>6</sup> In his paintings Léon Lhermitte described the life and characters of his native village of Mont-Saint-Père. Moreover, in the *Cabaret*, *The Harvesters' Pay* and *The Harvest*, he depicted the same characters recognizable from one painting to another. Cf. Musée d'Orsay website, "Commented works", accessed on 9 July 2020. [https://www.musee-orsay.fr/fr/collections/oeuvres-commentees/recherche/commentaire/commentaire\\_id/la-paye-des-moissonneurs-297.html?no\\_cache=1](https://www.musee-orsay.fr/fr/collections/oeuvres-commentees/recherche/commentaire/commentaire_id/la-paye-des-moissonneurs-297.html?no_cache=1)

<sup>7</sup> From 18 November 2016 to 26 February 2017, for the first time, the Musée des Beaux-Arts in Reims brought the two painters together in a posthumous exhibition entitled "Lhermitte in the wake of Millet?"

<sup>8</sup> The subject of this painting is inspired by a poem, 'Les foins' ('Haymaking'), written in 1878 by André Theuriot, a friend of Bastien-Lepage: "Midday!... the mowed meadows are bathed in light. On a heap of fresh grass as his bed, the mower lies and sleeps with his fists clenched. Seated next to him, the tanned tedder is dreaming, her eyes open, languid and exhilarated by the loving smell from the hay." (Lamberti, 1987: 88).

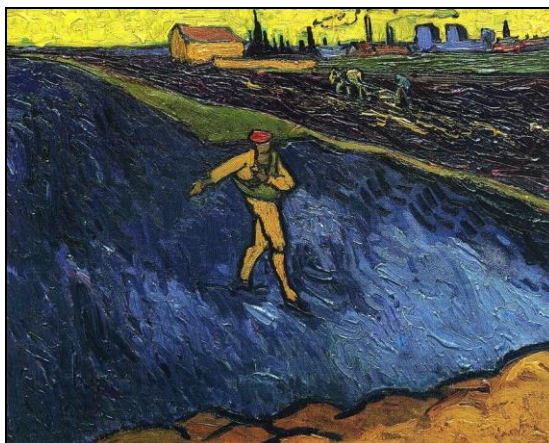


Figure 4. Work by Vincent Van Gogh, *Le sèmeur (The Sower)*, made in 1888 (oil on canvas, Hammer Museum, Los Angeles) (Source: Hammer Museum (public domain))

## 2. British aesthetic socialism and garden cities against industrialization

During the Victorian era, Great Britain was the world's leading power and London became the industrial capital of a vast, colonial empire that spanned the globe. The city then appeared as a modern, rich and powerful metropolis. The subsequent expansion of the suburbs was partially offset by the establishment of the metropolitan underground network (Figure 5); the world's first "metro" was inaugurated in London in 1863, and its electrification began in 1890.

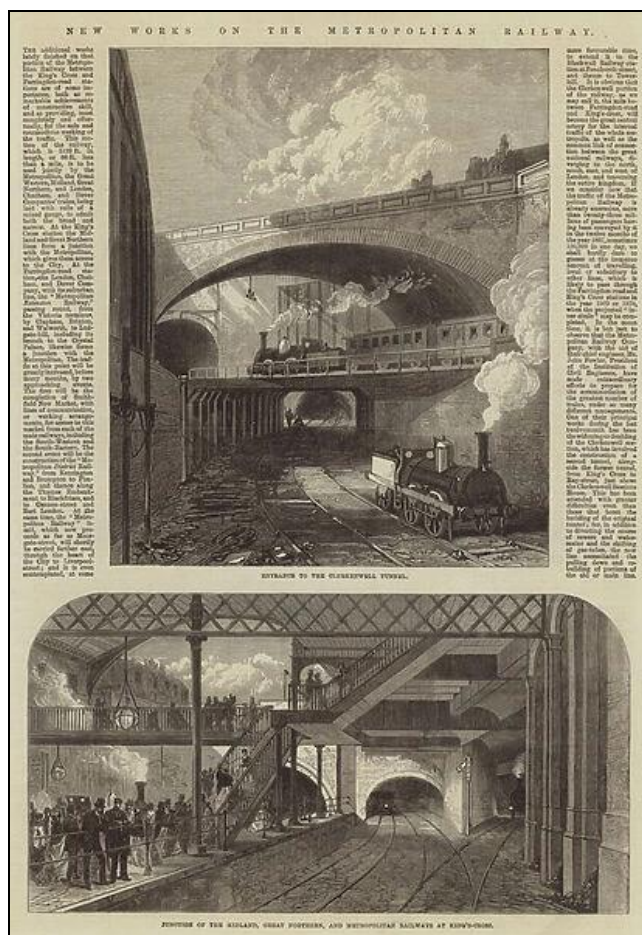


Figure 5. The development of flyover railways in London, Clerkenwell Tunnel entrance, near Ray Street and Farringdon Road (engraving by the English school, illustration for *The Illustrated London News*, 8 February 1868) (Source: London Transport Museum, Look and Learn / Illustrated Papers Collection (public domain))

The glorious façade had its downside. Indeed, the English capital became the most populated city in the world, with an impressive demographic growth (Figure 6): almost 1 million inhabitants in 1801, 1.6 million in 1831, 2.4 million in 1851, then 6.7 million at the end of the nineteenth century (Bedarida, 1968: 271). Because of overpopulation and industrialization, the authorities feared the return of epidemics similar to the cholera of 1832 which had plunged the British Isles and France into fear. In addition, the Great Stink of 1858 made the government aware of the dreadful sanitary situation (Figure 7). Fear of physical



degeneration was then fuelled, in the context of colonial expansion. Consequently, the authorities decided to build sewers in London, which took place on a wide scale between 1859 and 1865. A "sanitary revolution" was underway (Papin, 2005).

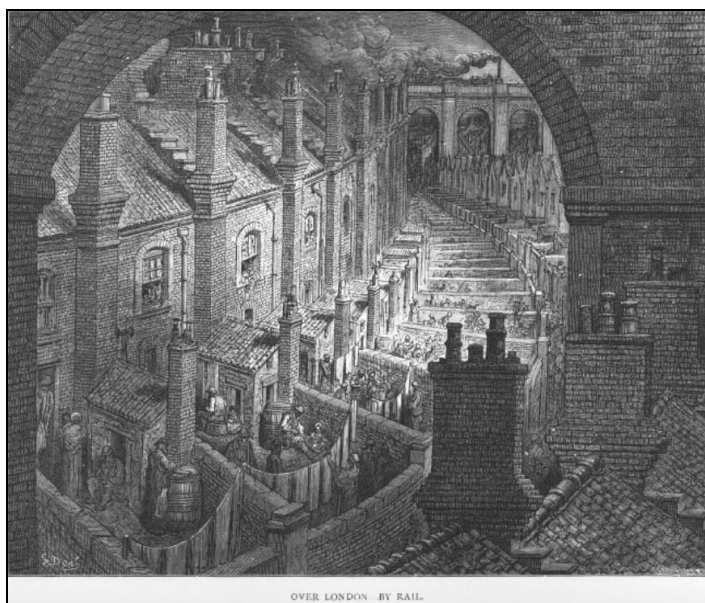


Figure 6. "Above London by train", work by Gustave Doré, one of the painters of the Barbizon School, entitled, in *Pilgrimage in London* (1872), exposing the districts of the East End of London where the poor were crammed together in horrendously unsanitary conditions (Source: The British Library Board, Wf1/1856 (public domain))



Figure 7. The silent highwayman: Death rows on the Thames, claiming the lives of victims who have not paid to have the river cleaned up, during the Great Stink) (Source: Cartoon from *Punch Magazine*, 35, 137; 10 July 1858 (public domain))

Ecological anxiety in the nineteenth century is not to be understood as it is today, but real concerns existed. Our civilisation, marked by the Industrial Revolution that began in England in the eighteenth century, with the development of the steam engine and the use of coal, went hand in hand with the drift from the land and unplanned urbanisation. In this context, and while Marxism put forward a critique of class relations in the industrial society, utopian thinkers, writers and artists suggested a counter-model, rural and nostalgic, responding to the evils of industrialization, illustrated by the pollution that followed the development of London. Following Augustus Pugin's reflections on the nobleness of Gothic art and the virtues of natural settings, English artists of the Victorian era united to form the Pre-Raphaelite Brotherhood. Pre-Raphaelism, born in 1848 in the United Kingdom, not only suggested a return to a pictorial form that predated Raphael; it also proposed a return to nature, to the English countryside with its cottages, green meadows and rolling hills. Likewise, it yearned for a return to work on the land, to rural values and to medieval-inspired craftsmanship as opposed to industrial production. This movement had strong Christian overtones.

Indeed, Pre-Raphaelites believed that industrial ugliness, as it defiled the land with coal and strained social relations, ran counter to the will of the Creator. They then idealised the Middle Ages as a kind of Golden Age, in which peasant communities lived in harmony with nature, which is sheer fantasy.

Thus, in reaction to the ravages of industrialization, the aesthetic socialism of William Morris (1809) and John Ruskin (1907: 110) developed, making it possible to "characterise human social life at the time, against economic liberalism and capitalism"<sup>9</sup>. William Morris (1834-1896), an artist and socialist activist, one of the precursors of ecology, belonged to this trend. To him, besides its alienating effects on human beings, industrialization brought in its wake pollution and destruction of the environment. His novel *News from Nowhere* (1890) describes a utopian society that broke free from capitalism after a Marxist revolution. This community now thrives in the countryside, in a healthful environment, with wholesome activities. This makes for healthy and "well-knit" characters.

The return to the land is described as utterly beneficial. Still, the importance of pre-Raphaelism, to which Morris was associated, should not be overstated as it remained mainly confined to the educated elite. Moreover, it eventually abandoned its social aspirations and turned back to an idealized medieval age, more chivalrous than artisanal.

The Industrial Revolution brought about a dramatic break from a rural past. In the heart of large cities, natural areas were either a luxury reserved for official buildings and stylish residences, or vast leisure places created to appeal to fee-paying tourists. Moreover, many new parks were created by Victorian municipalities. In the suburbs, gardens surrounded detached or more often semi-detached houses and grew depending on whether the area was residential or not. In the larger suburban belts, they ended up merging with the gardens of the farms bought by city dwellers (Baridon, 1998). Nature's progress into the city was strongly linked to industrial development. Machines appeared in everyday life. The trend was

<sup>9</sup> Cf. article entitled "William Morris ou Le socialisme esthétique comme critique de la modernité", published on the website of the Institut de Recherche sur les Mouvements sociaux - IRESMO, 4 January 2015, accessed on 9 December 2020. <https://iresmo.jimdofree.com/2015/01/04/william-morris-ou-le-socialisme-esth%C3%A9tique-comme-critique-de-la-modernit%C3%A9/>



perceived as a breakthrough, because it transformed the vision of nature: the first factory chimneys were built in the countryside, railway tracks ran across plains and through hills, night work was carried out thanks to gas light. The history of modern green areas is especially conspicuous in cities because of their role in contemporary urban planning.

From the beginning of the twentieth century, many urban planning principles were developed by planners such as Ebenezer Howard (1850-1928). This English socialist is the founder of the garden city movement. That was originally a very precise concept developed at the end of the nineteenth century. The main characteristics of Howard's scheme were: « (1) the purchase of a large area of agricultural land within a ring fence; (2) the planning of a compact town surrounded by a wide rural belt; (3) the accommodation of residents, industry, and agriculture within the town; (4) the limitation of the extent of the town and prevention of encroachment upon the rural belt; and (5) the natural rise in land values to be used for the town's own general welfare » (Howard, 2010). Here is visual representation of the concept, entitled « The three magnets » (Figure 8).

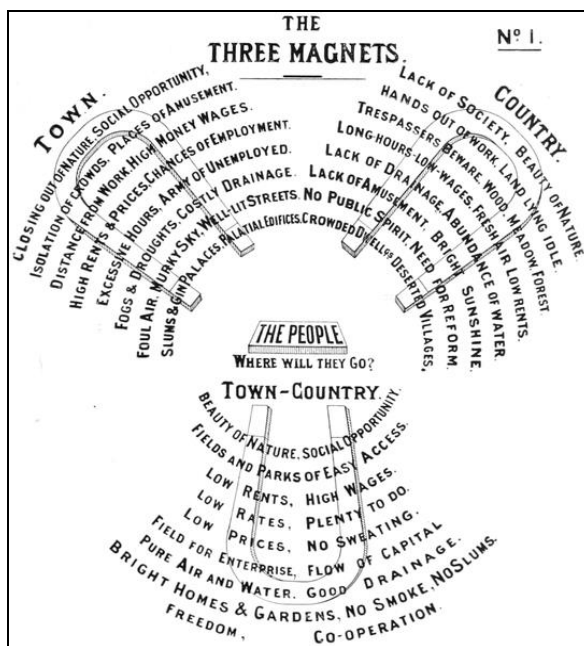


Figure 8. The Garden City Concept by Ebenezer Howard's "Three Magnets" diagram, published in the book *Tomorrow: A Peaceful Path to Real Reform* in 1898 (Source: *A Peaceful Path to Real Reform* in 1898 (public domain))

Urban reorganization was intended to solve the problems of congested cities caused by the industrial revolution at the end of the nineteenth century. The "garden city" proposed a combination of the advantages of urban and rural life. The first one was created in 1903 in Letchworth. The concept of a Green Belt is a legacy of these principles. It appeared in England first around London following a proposal by the Greater London Regional Planning Committee in 1935<sup>10</sup>. In 1947 the Town and Country Planning Act made it easier for local authorities to integrate such proposals. That meant the creation of undeveloped areas with fields and trees, in order to check the expansion of conurbations. Green belts therefore contain urban sprawl by providing natural spaces close to major cities like London. Subsequently, green belts were consolidated through various measures, with three objectives: slowing down the gradual development of denser urban areas, offering its inhabitants places to relax and maintaining local farming.

### 3. Nostalgia for working the land

However, while the countryside in the West has gone through profound changes, it has never been completely isolated. Local, regional, national and international trade has always woven its web, and labour migration has brought villages, towns and cities into contact with each other. In the nineteenth century, in France and England allotments<sup>11</sup> developed as a consequence of the drift from the land and the Industrial Revolution. These small plots were not only a source of additional income, or more precisely a source of food, but above all, they helped to maintain a link with nature in a moralizing perspective, thus warding off some of the consequences of rural exodus. "There was a real paradox, in a context of so-called ultraliberal capitalism based on resources in kind to supplement the structurally low wages applied to a population that had emigrated from the countryside in the first generation: a form of hybridisation based on nostalgic locality and international competition. This has made it possible to maintain connections and identities of terroirs and territories of origin also regarding food trends and heritage in general"<sup>12</sup>. That evolution had already manifested at the end of the nineteenth century, against the backdrop of the Great Depression, which could have been a source of anxiety. Four movements can be highlighted.

<sup>10</sup> Cf. website Politics.co.uk, Green Belt, accessed on 9 January 2022. <https://www.politics.co.uk/reference/green-belt/>

<sup>11</sup> Various forms of what are called today allotment gardens have existed in England since Anglo-Saxon times. The current system has its roots in the nineteenth century. Later, various Acts of Parliament gave it legal substance: 1908, 1919, and above all the Allotments Act of 1925 "which established statutory allotments". Cf. Nexton Abbot & District Co-Operative Allotment Association Website.

<sup>12</sup> Personal communication with Bachimon Philippe, Professor of Geography at the University of Avignon, UMR 228 ESPACE-DEV - Space for Development, in June 2020. Professor of Geography at the University of Avignon (UMR 228 ESPACE-DEV - Space for Development), June 2020.

The first one grew in France and England. It was oriented towards gardens, as a reaction to industrialization, through workers' housing estates, community life and paternalism<sup>13</sup>. Indeed, it was thought that manual labour would moralise factory workers. To keep them busy at weekends, physical and sporting activities<sup>14</sup> were introduced, especially in England. The rationale was that if the workers worked gardens, they would avoid going to the pub to spend their weekly wages, drinking alcohol on Sundays or celebrating "Holy Mondays"<sup>15</sup>, which moreover allowed the development of political activities and trade unionism (Beck, 2004). In France, from the Second Empire onwards, such movements were generally initiated by industrialists inspired by Christian principles and the alleged virtues of manual work.

In early twentieth century, some attempts were made to further this popular education. They followed the idea that authentic contact with nature can instil values and characteristics of its own. The virtuous, healthy and redemptive functions of nature can be highlighted (Tchekemian, 2016: 119): it is an educational space, a school of life and character formation. It is endowed with educational qualities attached to basic principles: rusticity, simple life, learning through tests, absence of a market logic, isolation and distance from the city and the habitual networks of socialisation. This connection with nature makes for the expression of the reflexive and introspective qualities of the individual confronted with his or her own character: for example, by reinforcing values of solidarity when individuals face hardships. In this approach, we find references from the scout movement<sup>16</sup> and Hebertism<sup>17</sup>. Rehabilitation programmes for disoriented or anti-social people were carried out in camps and centres created in fully natural settings<sup>18</sup>.

The second movement, which only concerns France, took place under Marshal Pétain's regime and the national Revolution during the Nazi occupation. The prevailing idea of the Vichy regime was that the defeat of 1940 had been caused by the spirit of self-indulgence and capitalism. The French had become alienated from their national ideology. They had given up on their traditional rustic values, their earthly roots in the land they had always worked, to the benefit of built-up areas. So they were no longer the same French people as before: now they turned to towns to toil and live. These cities were distant from the peasant image and values: they were cosmopolitan, controlled by Jews, and Freemasons, preys to financial speculation and Bolshevik agitation. Of course, these ideas were not new at all, but they were systematised by Marshal Pétain.



Figure 9. The return to the land advocated by the Vichy regime in the context of the National Revolution (colour print, 37 x 47 cm, Limoges, Imagerie du Maréchal, 1942) (Source: Heritage Libraries (Paris))



Figure 10. With the "marshal's gardens", which symbolise the motto "Work, Family, Fatherland", Pétain's government advocates a return to the land, despite the absence of the 700,000 peasants prisoners of war. (Source: History in question, 2020)

Indeed, since the nineteenth century, the criticism of stressful conditions caused by industrialization had also led to protectionism, nationalism and antisemitism: these movements<sup>19</sup> were born in the 1880s. Thus, Marshal Pétain recycled

<sup>13</sup> The schemes developed by Robert Owen (1771-1858) are among the best illustrations of this trend. His utopian communities of New Lanark (Scotland) and New Harmony (Indiana, USA), informed by socialism, are concrete examples of his theories.

<sup>14</sup> This education through sports activities also developed in France, informed both by warlike patriotism and the promotion of gymnastics societies, typical of extreme right-wing organisations. For example, the league of patriots, founded in 1882 by Paul Déroulède, first republican, then staunchly nationalistic.

<sup>15</sup> In France, during the nineteenth century, a habit called Holy Mondays consisted in being off work on the first day of the week. Then, during the first industrialization and the development of work on Sundays, Mondays off became autonomous days gradually used for political and trade union activities (Beck, 2004).

<sup>16</sup> A youth organisation founded in 1907 by Robert Baden-Powell, a serviceman, with the aim of educating morally and civically through community life.

<sup>17</sup> A physical education method instituted in 1907 by the French educator, Georges Hébert, advocating exercise in a natural setting.

<sup>18</sup> Interestingly, sylvotherapy has recently become a field of academic studies. It provides scientific evidence that contact with nature improves not only physical health and psychological well-being, but also cognitive functions. See D'Erm (2019).

<sup>19</sup> About the use of symbols as educational tools to convey ideals, see: Aghulon (1989); on French nationalism (1880-1900): Braudel (1992), Joly (2005); on antisemitism in the 1880s 1890s Sorlin (1967), Brinbaum (1998), Dornel (2004), Verdes Leroux (1969).



these ideas, taking advantage of the defeat of 1940. He was the landowner of a vast agricultural estate, the Hermitage, located in Villeneuve-Loubet (Bovas, 2012; Gasiglia, 2012), and he advocated a return to family and land values, unlike the wandering, stateless Jew "coming from nowhere". The Vichy regime's motto was "Work, Family, Fatherland", stamped on the coins of the time<sup>20</sup>. One of its slogans, "The land will not lie" (Figure 9) flourished on propaganda illustrations representing the Marshal alongside peasants. The agricultural sector is one of the major lines of the Vichy regime's policy. It attempted to bring modernity through numerous reforms in a backward-looking and idealised vision of a demographically declining rural world<sup>21</sup>. To turn France around, Marshall Pétain wanted to instil a taste for work and solidarity in young minds and to give them a moral conscience and civic awareness (Pecout, 2008). To do this, Vichy replaced military service in 1940 with the Chantiers de jeunesse (Working youth organisations), where "a life in contact with nature ensures a moral and virile education"<sup>22</sup> (Figure 10). Young people took part in work camps of general interest, serving as labourers in the fields and forests. Not only did they help women farmers, who were often alone on the farms, since the men were prisoners in Germany, but these young men were also to regenerate themselves morally, away from the corrupting cities.

Between November 1940 and August 1944, the agricultural magazine *La Terre française*, a weekly devoted to agriculture and rural crafts, and mouthpiece for Pétainist propaganda, was published. This magazine was a means for the Vichy regime to put across its ideas and implement the National Agricultural Revolution. Moreover, in 1942, ecological concerns<sup>23</sup> merged with Pétainism. The French agronomist and ecologist, René Dumont, a pacifist activist who taught at the National Institute of Agriculture, wrote many articles<sup>24</sup> in this agricultural publication associated with Vichy propaganda. Be that as it may, René Dumont became the first green candidate in the 1974 presidential election, at a time when environmental concerns were growing (Figure 11), away from the racialism embodied by the Vichy regime.



Figure 11. Agronomist René Dumont, green candidate in the 1974 presidential election

Source: Institut National de l'Audiovisuel<sup>25</sup>



Figure 12. Hippies cultivating the land, early seventies, Vermont (Source: AP Photo/Rebecca Lepkoff collection of the Vermont Historical Society)

The third movement takes us back to the 1960s and 1970s, in Western Europe and the United States, that is the "hippie" counter-culture, and its underlying ecological component. The first theorists of ecology, particularly Germans and Americans, developed the idea that it was necessary to return to things authentic, as the consumer society and the standardisation of lifestyles caused by market capitalism alienated people from their true selves. That economic ideology had created a world where production systems, the economy and the sectors of industry had changed considerably. The tertiary sector, including large supermarkets, had developed, against a backdrop of national and international competition.

<sup>20</sup> The 2 franc coin, from 1943, is an example, with a reverse side bearing the motto "Work, Family, Fatherland" and pubescent oak leaves, then an obverse side bearing the words "French State" and two ears of wheat on either side of a francisque (the double-edged axe used by Frankish warriors and symbol of Marshal Pétain).

<sup>21</sup> In its desire to reform France, the Vichy Regime promulgated no less than 16,786 laws and decrees between July 1940 and August 1944 (Le Crom, 2009: 102).

<sup>22</sup> Cf. virtual exhibition, Archives départementales de la Savoie (2005).

<sup>23</sup> The term "oecology" was coined in 1886 by a German biologist and philosopher, Ernst Haeckel, a disciple of Darwin. Later, Haeckel was, along with others, at the origin of so-called "deep ecology": a conservative and conservatory ecology, inherited from nineteenth century German Romanticism and the pagan "Völkisch" movement, placing nature above all else. An immaculate, unchanging, harmonious nature, which must be preserved, protected from the action of man, the disturber in the harmony of creation.

<sup>24</sup> In these articles published in *La Terre française*..., Dumont gave a modern and productivist approach to agronomy: "German farmers are watching us, let us be proud of our reputation; let us show them a progressive agriculture, up to date with the latest techniques (Dumont, 1942). Then, in other conclusions of articles, he suggested the adoption of social measures: "every agricultural property should grant a plot of land on its own account to each of its permanent employees, allowing them to cultivate it on their free time, with the tools of the farm" (article of 21 August 1943); "the sharecropper must rise to a social level and reach the rank of farmer" (article of 18 September 1943). From July to October 1943, René Dumont was "special envoy" of *La Terre Française*, for a series of five articles on the south-west. The article of 21 August 1943 is entitled "The situation of the Languedoc vineyards", the article of 18 September 1943 is entitled "The agricultural evolution of the South-West and the obstacle of sharecropping".

<sup>25</sup> Source: INA website, René Dumont "I drink before you a glass of precious water", Official election campaign: presidential election 1st round, 19 April 1974 accessed on 14 June 2024. <https://www.ina.fr/ina-eclairage-actu/video/i09167743/rene-dumont-je-bois-devant-vous-un-verre-d-eau-precieuse>

Communal life, preferably close to the land, appeared in the wake of the hippie movement (Figure 12). Indeed, more than two-thirds of the sixty-nine communities listed in the guide *Diggers and Dreamers* 96-97 mention an interest in the environment. Thirteen of them make it the main reason for living together (Coates, 1995). The need for authenticity led many hippies to go back to old farming practices and ways of eating, which partly influenced the movement for the preservation of the plateau of Larzac in 1973. That could also be observed in the emblematic goat breeding in Ardèche from the late 1960s.

The last movement began in the 2000s in Europe when various alter-globalist groups opposed neoliberal economic globalisation and proposed alternative solutions. This current criticises the concept of 'sustainable development' in particular, opposing it to that of 'sustainable degrowth' (Aries, 2005; Harribey, 2007; Latouche, 2006). The alterglobalists' message claims to be both a response to the ecological emergency, but also to the crises and excesses of capitalism. The banking and financial crisis of 2008, which began in the United States with the subprime crisis, leading to a real estate crisis and then a worldwide recession, gave new momentum to the messages of alterglobalists. Since then, the financial, monetary, real estate, energy, food and economic crises have been a reflection of the effects of neoliberalism (Massiah, 2010). This last movement is not directly connected to the land. However it aims at promoting more respect for the environment.

#### 4. Small is Beautiful – Private gardens and short circuits

In this context, the idea that the solution was to be found in returning to the local level gathered momentum. This was notably supported by influential French anti-globalisation figures, such as Aurélie Trouvé, an economist and senior lecturer at AgroParisTech, or Pierre Rabhi (1938-2021), essayist, farmer and ecologist that settled in Ardèche, in the South of France. However, the great paradox, accepted by some anti-globalisation activists, rests on the assumption that going back to locality, to traditional crops, would make it possible to limit our impact on the environment; even though it would not necessarily be incompatible with globalised capitalism (Gendron, 2006; Harribey, 2007). This idea is in keeping with the slogan "Small is Beautiful"<sup>26</sup>, chimes in well with the creeds of the advocates of localism, minimalism and 'voluntary simplicity'. Contemporary French cartoonists and naturalists Simon Hureau (2020) and Fred Bernard (2020) embody this trend. Each authored a book (respectively *The Oasis* and *Diary of a motionless traveller in a small garden*) on the theme of gardens and nature in the neighbourhood. These spaces have become important for urban dwellers due to the lockdown. The authors advocate a return to one's roots, often to one's native village, by fleeing the city, sometimes along with a career change, by returning to the observation of nature and growing one's own fruits and vegetables. The authors are interested in gardening methods, through organised disorder (like the English garden) and the association of plants that support each other (kinship and permaculture), for what appears to be a phase of withdrawal into a residual micro-property. In this way, the analysis of the modalities or combinations of the concept of resilience, i.e. the capacity to face up to a risk or a crisis and to adapt to it, deserves our attention.

One aspect of this trend, exacerbated by the health crisis and the lockdown in spring 2020, has been dubbed "The revenge of the countryside" (Breville, 2020). In 2020, many well-off city dwellers left cities to spend the lockdown in their second homes in the countryside. Interestingly enough, a similar phenomenon was observed during various epidemics in previous centuries (Meier, 2020). About 451,000 Parisians are said to have left the capital in March-April 2020 (National Institute for Statistics and Economic Studies (Institut National de la Statistique et Etudes Economiques - INSEE, 2020). Several factors contributed to the phenomenon: the lockdown, the development of teleworking, but also the wish to reconnect with nature. The attachment of the French to the land, already mentioned, embodied in different ways at different times, seems viscerally steeped in mentalities. Thus, in 1945, a study conducted by the National Institute of Demographic Studies (Institut National d'Etudes Démographiques - INED) indicated that 56% of Parisians (and 72% of French people) aspired to live in a house with a garden: "the majority of French people would like to have their own piece of land, cultivate their garden and see their houses stand in the middle of flowerbeds and vegetables, away from the city," concluded the authors<sup>27</sup>. According to Bernard (2020) "gardens, culture and nature help to put up with the effects of the current pandemic"<sup>28</sup>.

The health crisis had unexpected consequences in this respect: it might have contributed to the development of "organic" food consumption and short circuits (Girard, 2020). The advocates of organic farming claim that it can lead to what it now calls "sustainable agriculture"<sup>29</sup>. This new type of consumption differs from the model of mass consumption of the Thirty Glorious Years, thus making more room for short circuits, organic food, and e-commerce. These changes had been anticipated by profound socio-cultural changes induced by the rise of environmental concerns and the emerging critique of supermarkets. Crises, like those of the coronavirus pandemic, are amplifiers, accelerators and indicators of pre-existing trends.

Since May 2009, the Ministry of Food, Agriculture and Fisheries has defined the short circuit as a method of marketing agricultural products which is carried out either by direct sale by the producer to the consumer or by indirect sale, provided there is only one middleman<sup>30</sup>. Beyond this reduction in the number of intermediaries, short circuits are now defined by a

<sup>26</sup> As a criticism of the western economy in the wake of the first oil crisis, this concept was developed in 1973 by Schumacher (1978). The expression « Small is Beautiful » means "that with fewer material means it is possible for humanity to achieve a qualitatively higher state; [...] that growth in itself should not be a criterion for judging the health of the economic system; [...] that some human problems are best dealt with at the local level and that small organisations, whether they be for profit, political, educational or other purposes, are often more effective than large ones in dealing with human problems" (Biros, 2014: 3). The Small is Beautiful creed nowadays is reviving some of the ideas of Thomas Jefferson and other American authors (Berthier, 2014: 149). This calls for reflexions on agrarianism.

<sup>27</sup> A similar survey with British people would have probably provided the same results.

<sup>28</sup> Fred Bernard invited on Arte, during the programme "28 minutes", broadcast on 3 July 2020.

<sup>29</sup> Although the term 'sustainable agriculture' did not yet exist in the 1990s, as it emerged in the early 2000s (Michel-Guillou, 2012).

<sup>30</sup> Direct selling from producers to consumers can take place on farms (basket, picking, market), collective sales (sales point or collective basket), at markets (of local producers), during sales on the road (relay point for delivery) or at home (via the internet), or by pre-organised sales (Associations for the Maintenance of Peasant Agriculture). Indirect selling (with only one middleman) concerns sales to restaurants (traditional, collective), and sales to a retailer (butcher, neighbourhood grocery shop, large and medium-sized stores). Cf. Ministère de l'Agriculture et de la Pêche (2009).

reduction in the geographical distances separating producers from consumers (Hinrichs, 2000) and by "defensive localism", a form of protectionism (Hinrichs, 2003). Short circuits also cater to consumer demand for authenticity, which is found through direct contact with producers. Sales in short circuits generally concern fruit, vegetables, meat, cheese, bread, wine, honey etc. These products can be prepared on the farm. Short circuit thus makes for the development of multifunctionality in agriculture.

The consumers' need for reassurance might underlie the revival of short circuits. Successive food crises have led to a lack of confidence in the way food is produced, distributed and marketed. Short circuits make it possible to trace the product, thus increasing the safety and quality of foods still unadulterated by processing, transporting and marketing. In this way, organoleptic quality and safety are monitored by drawing up a monitoring sheet identifying products, producers, origins, quality, etc. The origin of the product is put forward as the main argument for trustworthiness. In fact, traceability and origin are nowadays the key words in food reassurance, which corresponds to the demand for healthier products and subsequent local distribution systems. This proximity reassures consumers and products sound more authentic. This includes direct human contact with places, producers, methods (organic, reasoned) and authenticity, even though buying local does not mean buying organic. Furthermore, local consumption both favours fair prices to producers, bypassing supermarkets and their sometimes hefty profits; and, more importantly still, contribute to cutting carbon emissions and thus limiting the ecological footprint of agriculture.

## CONCLUSION

### To conclude: degrowth, ecology and the "return to localism" as solutions to crises

A recurring pattern seems to emerge over the last two centuries, marked by modernisation: in times of crisis, reconnecting with the land is promoted as a solution. Agrarianism was encouraged in France as a reaction to the Great Depression, while some aesthetic movements in France and in Britain decried industrialization and, directly or indirectly, praised some return to what is natural. Garden cities belong to this trend. Similarly the downsides of urbanization were partly offset by the creation of various types of gardens and green spaces in populated areas. In the twentieth century, this pattern took on new forms. In France, the Vichy regime tried to instil « peasant nationalism » into the collective mind of the defeated population. After the Second World War, various critiques of the dominant values (mostly capitalistic materialism) emerged with the rise of organic agriculture and the development of closer bonds with nature and with things local. The current pandemic might have reinforced this tendency.

Indeed, theories on the return to "traditional" production modes and more local consumption are widespread nowadays. In times of crisis, self-production and self-consumption appear *de facto* to be means of fighting against the exhaustion of the planet while questioning unthinking consumption, against a background of global depletion of resources. However, this analysis of the return to locality - informed by historical perspective, empirical methods, ideologies, as seen above - aims at showing that what may look new (epidemics, environmental transformations, etc.) also occurred in the past. Just as in other troubled times, food gardens are now endowed with all imaginable virtues. For example, they could help save money during crises, especially economic crises, sometimes seen as permanent since 2008. The success of Pierre Rabhi (2010), who is sometimes branded as an overly backward-looking mystic, is emblematic in this respect.

Whether it be public parks in the industrial era, allotment gardens in the twentieth century, to integration gardens in the 1980s, or collective gardens in the 1990s, the response remains the relationship between culture and nature, and the idea of not severing the crucial bond between man and nature (*cf.* the programmes of green candidates for elections: concrete and cement must be responded to with trees, so that children can see nature). As shown, the current suggestions to reconnect with locality and the land, as a solution to the global crisis, are not new: they therefore deserve to be deconstructed, analysed and put in a longer perspective. In these times of angst, the theme of returning to the land crops up again and again.

From a resilient perspective, community gardens, for example, certainly appear to be a response to the increase in prices observed since the start of the health crisis. However, before the crisis broke out, these gardens had already been envisioned as a means of providing access to a balanced, healthy and sustainable diet. Subsequently, would-be gardeners find that working the land creates social ties where they live; gardens improve their living environment and offer them an occupation that is experienced as relaxing and reconnecting with the earth. This type of food garden also helps to preserve the links and identities of the territory and terroir of origin with regard to food habits and heritage in general. Over the last twenty years, allotment gardens have been developing in the countryside, in peri-urban areas, possibly in collective self-management. In the end, there is more continuity than discontinuity in these twists and turns of history. A steady pattern, presented as salutary in many respects, emerges: the return to nature, to the land, to locality. This tendency is reassuring during sudden or painful transformations, which often trigger anxiety. It is even more so during abrupt crises.

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