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TOURIST ASSESSMENT OF NIGHTLIFE IN ZAGREB THROUGH TRIPADVISOR REVIEWS

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ABSTRACT

The night-time economy (NTE) refers to urban activities occurring between 6:00 PM and 6:00 AM, mainly focusing on activities related to nightlife venues (bars, clubs and coffee shops), creative industries (concerts and other musical events, theaters, festivals, cinema screenings, museums and galleries) and supporting activities such as hospitality, health services, transportation, delivery services, telecommunications, etc. It is very powerful in the context of tourism development, but precise statistics on the night-time economy are not readily available due to methodological challenges in its assessment. Still, its contribution to urban development is undoubted. Nightlife is an important aspect of the broader concept of the NTE and may have an important impact on the destination image. It is not easy to examine how tourists perceive nightlife experiences, but TripAdvisor offers significant insights into it, however, not many studies have analyzed tourists' TripAdvisor reviews on nightlife experiences. Croatia has a prominent tourist industry and its capital, Zagreb, is the national center of creative industries. The aim of this study is to analyze how tourists evaluate their nightlife experiences there. So far its nightlife has not been systematically researched so this study has the goal of understanding which environment-related factors influence such experiences, and which nightlife images tourists assign to this city. Based on this, recommendations for policy makers and NTE professionals can be drawn. The methodology applied was aspect-based sentiment analysis (ABSA) of TripAdvisor reviews of the city's clubs and bars in the three-year period (2022–2024), which was conducted in Python. Findings are classified into the following categories: social, sensory, cultural, safety and economic and the results show that the aspects of Zagreb nightlife mentioned most often are social- and sensory-related, being the factors that most strongly influence it. Safety-related reviews are not often considered while the economic-related dimension recorded the highest share of positive sentiment. Overall, the image that tourists assign to Zagreb's nightlife is related to friendliness, affordability and vibrancy. The contribution of the study is seen in findings which may be used for the improvement of Zagreb nightlife and NTE as well as in tourism policy making.

KEYWORDS

nightlife, night-time economy, tourism, TripAdvisor review analysis, aspect-based sentiment analysis, Zagreb

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1. INTRODUCTION AND THEORETICAL BACKGROUND

Although important for the urban economy, the concept of the night-time economy (NTE) has not been extensively researched. The existing literature offers several definitions of the concept but with differences. In general, it covers a wide range of activities occurring between 6:00 PM and 6:00 AM (Beer, 2011) but its scope is not precisely defined. Thus, Rowe and Lynch (2012) offer examples of NTE activities: shopping, restaurants, clubs, museums, theatres, art exhibitions and different events. Tišma et al. (2025, p. 177) write more generally about “the consumption of offerings from the hospitality and entertainment sectors, including transportation activities, retail activities, and other services such as food and beverage consumption”, while Rowe and Bavinton (2011, p. 812) offer an even broader definition in “the expanded provision, interaction and consumption of leisure activities and experiences”. With less precision, they speak about activities such as bars, clubs, pubs, music venues, leisure cities, entertainment zones and night markets. The type of activity is often dependent on the context (e.g. night markets are typical for Taiwan, entertainment zones for the US, leisure cities for Australia). There are also other activities taking place during the night (e.g. 24-hour gyms) and it is not easy to provide a definition which would fit all the contexts.

Zmysłony and Pawlusinski (2020, p. 194) write about “a range of activities, venues and consumer service providers clustered upon their nocturnal agenda” offering, to our knowledge, the most systematic coverage of the term dividing the activities that NTE entails into:

- NTE core activities (operating only or intensifying their performance from the late evening into the early hours of the morning – concert halls, music clubs, party precincts, cabarets, night clubs, pubs, bars, coffee shops, night-guided tourist tours, night markets, gaming centers, virtual reality arcades, book-making races, massage parlors, casinos, sex clubs);
- NTE complementary activities (extending their daytime performance into late evening hours – hotels, hostels, shops, tourist information centers, wellness and beauty spots, sports arenas, sport and fitness centers, waterfront leisure areas, gathering and socializing spots, fast-food and street-food spots, restaurants, cafes, festivals and outdoor events, theaters, cinemas, museums, galleries); and
- NTE supporting activities (the multi-sectoral performance of a city – public and private transport, hospitals, health care, goods delivery, shared services centers, cleaning services, police and public security, repair and maintenance, creative industries, building illumination).

While it is not always easy to differentiate between some of these activities (e.g. creative industries as NTE supporting and music-related as NTE core, etc.), in this study, we refer to nightlife as a component of NTE which Zmysłony and Pawlusinski (2020) identify as NTE core activities. Nightlife is seen as comprising “social activities and forms of entertainment that are available at night in bars, nightclubs, etc.” (Encyclopædia Britannica, n.d.).

Existing studies both report on the positive and negative effects of NTE on local economic development and sustainability. Thus, for example, its expansion introduces financial, social and infrastructural burdens, creating a dilemma regarding urban sustainability, rising rental prices etc. (Chen et al., 2019; Nofre, 2020; Roberts & Gornostaeva, 2007; Son et al., 2023). Further studies also note the negative impact of NTE such as noise pollution, waste generation, increased CO₂ emissions, traffic congestion, violence etc. (Holmes et al., 2015; Koleczko & Garcia Hansen, 2011; Nghiê-m-Phú et al., 2024; Webster et al., 2018). Positive ones can be measured through its direct impact (employment opportunities and the economic output of nightlife establishments), indirect impact (supply to nightlife establishments), induced impact (nightlife employees’ spending within the city), ancillary impacts (additional spending associated with nightlife activities, e.g. transportation), and fiscal impacts (tax revenues generated by NTE). The annual economic study performed by UK Music (2021) reports on the spill-over effect of concerts (additional value for the UK economy) held in different venues which in small ones amounted to £48,349 GVA in medium ones £252,521 GVA, and in large venues £425,000 GVA, with over 60% remaining locally. Similarly, the city of New York has more than 25,000 nightlife establishments, supporting 299,000 jobs and generating \$35.1 billion in total economic output, alongside around \$697 million in tax revenue annually (Haptas & Martinez, 2023). Besides its positive economic impact, studies show that NTE, specifically music, has positive impacts on health and the quality of life (Bygren et al., 1996; Fancourt et al., 2014).

Although there are a number of challenges related to research on NTE (e.g. harmonization of the NTE contribution measurement), existing studies offer a strong theoretical background demonstrating the importance of the field. The topic, although self-evident, has only recently entered academic and professional research more extensively (e.g. Eldridge, 2019; Eldridge & Smith, 2019; Goldmedia Gruppe, 2019; Nofre et al., 2020), while only a few studies evaluate tourist TripAdvisor reviews of nightlife (e.g. Bi et al., 2024; Chu et al., 2022; İnan, 2024; Nghiem et al. 2025; Nghiê-m-Phú, 2020; Pinke-Sziva et al., 2019; Seočanac & Dimitrovski, 2022; Soltani-Nejad et al., 2024).

Night-time economy is powerful in creating (tourist) experiences, and eventually also influencing the city's image. The increasing number of studies in the experience economy accentuate the importance of cultural activities in design, since experiences are inherent to culture which has the necessary tools (e.g. color, form, melody, rhythm, harmony, etc.) for eliciting emotional responses (Jelinčić & Šveb, 2021). Already Pine and Gilmore (2011), the fathers of the experience economy, have written about the need for multisensory stimuli for emotional elicitation, which make up the positive evaluation of experiences. Due to the growth of user-generated content like TripAdvisor, specific methods have been introduced into academic research, one of them being aspect-based sentiment analysis (ABSA) which enables a deeper understanding of how visitors articulate their experiences. Hua et al. (2024) identified two decades of ABSA trends and research development while the work of Marrese-Taylor et al. (2013) applied ABSA to identify specific experiential aspects in tourism services. Taecharungroj and Mathayomchan (2019) analysed TripAdvisor reviews of attractions in Phuket and demonstrated that reviews can effectively reveal key sentiments expressed by visitors. Similarly, Marine-Roig (2017) showed that TripAdvisor reviews provide a valuable source for assessing destination image as user-generated content captures visitors' perceptions of atmosphere, authenticity and overall satisfaction. This is particularly evident in the context of nightlife or "nightlife-scape" as defined by Nghiêm-Phú (2020) and further explored by Seočanac and Dimitrovski (2022).

The study by Seočanac and Dimitrovski (2022) detected the physical layout, presence of other tourists, atmosphere, staff and music as environmental factors influencing the tourist experience, researched both before and after the COVID pandemic. In the context of tourism recovery after the pandemic, a valuable study is that of Leelawat et al. (2022) which analyzed Twitter comments to identify tourist sentiments in Bangkok, Chiang Mai and Phuket in Thailand. This work did not focus specifically on nightlife but emphasized that in the recovery of Thai tourism, in addition to promoting food, nature and destinations, it is also necessary to promote urban nightlife. Their study also used sentiment analysis in the research of tourist experiences (positive, negative, neutral). Our study has applied a similar approach but we conducted further analysis assessing sentiments of nightlife divided into five aspects, and in that way it is more thorough. Another work researching Budapest, implicitly also speaks about the physical layout and atmosphere when researching the mainly negative experiences in the context of overtourism, such as dirt and litter, public urination, street crime and homelessness (Pinke-Sziva et al., 2019), as having important impact on tourists' nightlife experience.

As said, nightlife is a crucial aspect of the night-time economy. The aim of this article is to offer the tourist assessment of the Zagreb nightlife experience by analyzing their reviews to see how they perceive the atmosphere which may offer a deeper understanding of the factors impacting on nightlife experience. Therefore, the first research question is: which environment-related factors influence the experience of Zagreb nightlife? Nightlife experience is certainly one of the aspects influencing the destination image, which can quite possibly be different from the day-time image. Additionally, the study compares the findings to offer a general view of Zagreb nightlife as part of its destination image. The second research question is: what image do Zagreb tourists assign to the city based on nightlife? This temporal determinant is seen as a significant theoretical contribution to the field of tourism, while the implications of the study are seen for policy makers in terms of strategic NTE and tourism planning as well as for industry professionals. We selected the 2022–2024 timespan for our analysis as it represents the recovery and normalization of tourism after the COVID-19 pandemic, allowing for the examination of tourist perceptions and behaviours in a context where travel activity had largely been resumed.

2. STUDY CONTEXT

Zagreb is the capital of Croatia, the national social, economic and cultural center as well as the hub of creative industries. Although precise statistics on cultural and creative industries are not available due to methodological challenges in their measurement, the estimate is that over 90% of creative companies are registered in Zagreb with music being the most relevant sector in terms of profit and branding (Grad Zagreb. Institut za razvoj i međunarodne odnose, 2013). The city of Zagreb is the founder of 40 public cultural institutions (Grad Zagreb. Institut za razvoj i međunarodne odnose, 2023) this being the largest number in Croatia with 2,153 civil society organizations have been registered as of July 2025 (Republika Hrvatska. Ministarstvo pravosuđa, uprave i digitalne transformacije, n.d.), while in the same period, 748 private companies were registered in the fields of art, entertainment and recreation (according to the national classification of such activities). Apart from art- and culture-related companies, these also include casinos, sports clubs, fitness centers, entertainment and theme parks, along with other recreational activities which are part of the NTE. The search for companies registered in the narrower classification of art- and culture-related activities resulted in 233 being found (Hrvatska gospodarska komora, n.d.).

When it comes to concert venues, the city houses 37 of them and they offer music performances in various musical genres: four of them are concert halls, nine are mixed-use facilities, and 24 are nightclubs/bars (Tišma et al., 2025). As of July 2025, there were 2,069 companies in Zagreb registered as food and beverage services (Hrvatska gospodarska komora, n.d.). It is not easy to quantify all the establishments operating during late-night hours (e.g. gastronomic ones), since the owners hold the sole responsibility in determining their working hours and a complete list is not available. In the context of Croatia, night is defined in Article 5 of the *Noise Protection Act (Zakon o zaštiti od buke, 2021)*, which states that it lasts from 23:00 to 7:00. The only available list in the city of Zagreb is the one related to the so-called tourist zones. Namely, the working hours of hospitality venues in those zones may operate for extended hours, but must obtain compliance with noise protection requirements for night-time operations. According to the city of Zagreb list there are 217 such establishments that meet the requirements for night work (City Office for Economy, Environmental Sustainability and Strategic Planning, personal communication, October 22, 2025). However, the statistics on how many of them operate in the NTE outside tourist zones are not available.

The only research on Zagreb NTE (Tišma et al., 2025) focused on an analysis from the perspective of industry professionals on the needs of some night-club owners. This research called for a systematic approach to managing and developing Zagreb's NTE connecting all relevant stakeholders to improve the quality of life of its citizens, public safety, strengthening creative industries and creating a perception of Zagreb as a center of cultural tourism. Moreover, the research estimates the share of tourists in Zagreb NTE, which is between 20–30% from the perspective of club-owners, while the SWOT analysis performed sees the continually increasing number of tourists as an opportunity for NTE development.

Table 1. Tourist arrivals and overnight stays in Zagreb 2023–2024

Season	2023	Index 2023/2022	2024	Index 2024/2023
Arrivals	1,307,153	+21%	1,428,750	+9%
Overnight stays	2,541,030	+13%	2,690,085	+6%

Source: authors, based on the Croatian Bureau of Statistics (2025).

Tourism is of great importance for the development of the city, and Zagreb's contribution is also significant in the national context. Namely, Zagreb is the

only Croatian continental area with a significant number of tourist arrivals, and according to this indicator it out-performs some coastal areas. Tourism data in the period 2023–2024 show an increase both in the number of tourist arrivals as well as in overnight stays (Croatian Bureau of Statistics, 2025), however the average length is short (around two nights per arrival). This leaves little time for a thorough consumption of the NTE economy. Table 1 presents statistics for tourist arrivals and overnight stays in Zagreb in the period 2023–2024.

There are no specific research studies and statistics related to tourists' perception of nightlife in Zagreb but some generic data can be drawn from the regular TOMAS research performed by the Institute for Tourism on tourist attitudes and spending in Croatia. This research (Marušić et al., 2023) shows that 61.7% of Zagreb tourists in the summer season claim to be traveling for leisure, and 18.7% of them participate in clubs/dancing/nightlife activities while staying in the destination. The number of those traveling outside of the summer season for leisure is lower (43.9%) but more of them participate in nightlife (20.5%) than in the summer season.

The satisfaction level of Zagreb tourists both in the summer season and out of it, along with personal safety in the city, is rated very highly (91% and 93% respectively), while satisfaction level with nightlife is rated highly (75.1% and 76.8% respectively). Other elements of tourism destination supply, possibly related to NTE are rated in the following way:

- arts and culture – very highly (91.9% summer season and 72.1% out of it);
- gastronomic offer – very highly (87.4% summer season and 84% out of it);
- atmosphere – very highly (85.8% summer season and 94.5% out of it); and
- local public transport – highly or very highly (79.9% summer season and 88.7% out of it).

Summarized results on the attitudes of Zagreb tourists to these individual elements related to NTE are presented in Table 2.

Table 2. Summarized results on attitudes of Zagreb tourists on individual elements related to the night-time economy (NTE)

Season	Reason for travel (%)		Satisfaction level (%)	
	Leisure	Participation in nightlife	Personal safety	Nightlife
Summer season	61.7	18.7	91.0	75.1
Out of the main season	43.9	20.5	93.0	76.8

Source: authors, based on the Marušić et al. (2023).

Improperly disposed garbage is rated as the highest disturbance in the perception of 8.1% of Zagreb tourists in the summer season, while for those coming out of this season it is the second highest disturbance with 4.1% (Marušić et al., 2023).

Further research which has grasped some topics related to NTE as perceived by tourists is the Zagreb Visitor Survey 2017/2018. According to this research, these tourists show high satisfaction levels with the gastronomic offer and the compactness of the city, as it is easy to visit and navigate on foot, while the results of this research confirm the high rates for personal safety. The most common source of information for visitors both before and during their visit to Zagreb is TripAdvisor (Donnell & Anderson, 2018) but no research on the 'nightlife-scape' (the environment in which the tourists experience nightlife) has been performed.

When it comes to Zagreb's city image, no comprehensive research exists, to the best of our knowledge. One small-scale study, however shows that young tourists perceive the city as appropriate for the younger population with the Zagreb Advent as their most visited event; their disinterest in visiting museums and galleries during day-time is noted but, on the other hand they show interest in visiting them within the framework of night-time events such as *The Night of Museums* (Trojan, 2025). Another small-scale study (Draganić, 2021) confirms that visitors consider Zagreb to be a historical and cultural city, known for its various museums and the events that take place there.

3. METHODOLOGY

3.1. DATA COLLECTION

The source of the data collected in this study are the reviews found on TripAdvisor, which examine tourists' experience. This platform has been selected for research for three reasons: (a) it is a common platform used for studying tourism-related topics (Wang & Kirilenko, 2021), (b) previous research (Donnell & Anderson, 2018) demonstrated that it is the most common source of information for visitors, and (c) the platform has a dedicated section for nightlife. Nightlife has not been commonly researched using TripAdvisor until recently (Nghiem-Phú, 2020; Seočanac & Dimitrovski, 2022), so this study adds it to the existing academic corpus. Although in the category "things to do in Zagreb" there is no mention of nightlife, the free search in TripAdvisor using the keywords "Zagreb nightlife" finds this category within the "types of attractions" menu, with 138 places sorted by traveler favorites including bars and clubs. Although the NTE concept covers more activities than bars and clubs, this study is

limited to these since they are categorized in this way by TripAdvisor. Other categories (e.g. museums), although offered as an attraction, were not researched as it would be impossible to differentiate the reviews related to daytime and night-time. Further on, a separate category "concerts & shows" has been left out of the research as well since it relates to one-time events which are not in the regular Zagreb tourist offer, or shows which are not necessarily performed in Zagreb but rather in its vicinity or even in nearby countries. Reviews were collected in July 2025 while the analysis encompassed reviews published between 2022 and 2024.

The reviews were distributed across a total of 49 venues out of the 138 listed under the "Zagreb nightlife" section on TripAdvisor. Of the 89 excluded venues, some did not have reviews falling within the targeted time frame, others had no reviews at all, while a few venues were not associated with nightlife-related activities. It is important to note that several venues in the "Zagreb nightlife" section were categorized as "Pub Crawls" – guided tours through multiple venues in a single session. As a result, the analysis includes experiences from more than 49 venues, but these could not be identified through the review content.

Within this time frame, a total of 750 reviews were recorded and of this number, 138 were excluded resulting in 612 reviews in total. The exclusions were made on the basis of several criteria: if the reviewer's profile indicated residence in Zagreb or in its immediate vicinity; if the content of the review clearly suggested that the writer was a frequent visitor to the nightlife venue (e.g. "I come here every weekend" or "This is my usual spot"); or, in cases where it was not possible to determine from the review itself, the language in which it was written, or the stated place of origin to judge whether the reviewer was a tourist, the criterion applied was the exclusion of writers whose names strongly suggested that they were locals.

Out of 612 included reviews, 402 (65.69%) did not provide information on the tourists' country of origin. Among the reviews where the origin was specified, the United Kingdom accounted for the largest proportion with 6.7%, followed by Italy (3.27%), Germany (2.29%), and the US (2%). Besides these countries, reviews originated from an additional 40 countries worldwide, though each of them represented less than 2% of the total.

In terms of language, a total of 16 were identified. English is dominant, accounting for 511 reviews or 83.5% of the total, followed by Italian with 3.27%, Spanish with 2.78% and German with 2.61%. Reviews written in other languages each account for less than 2%.

When looking at the type of visit, the data reveal that the most common form of travel was with "friends", recorded in 291 reviews (47.55%), followed by "solo" visitors, who contributed 187 reviews (30.56%), underscoring the appeal of Zagreb's nightlife and urban

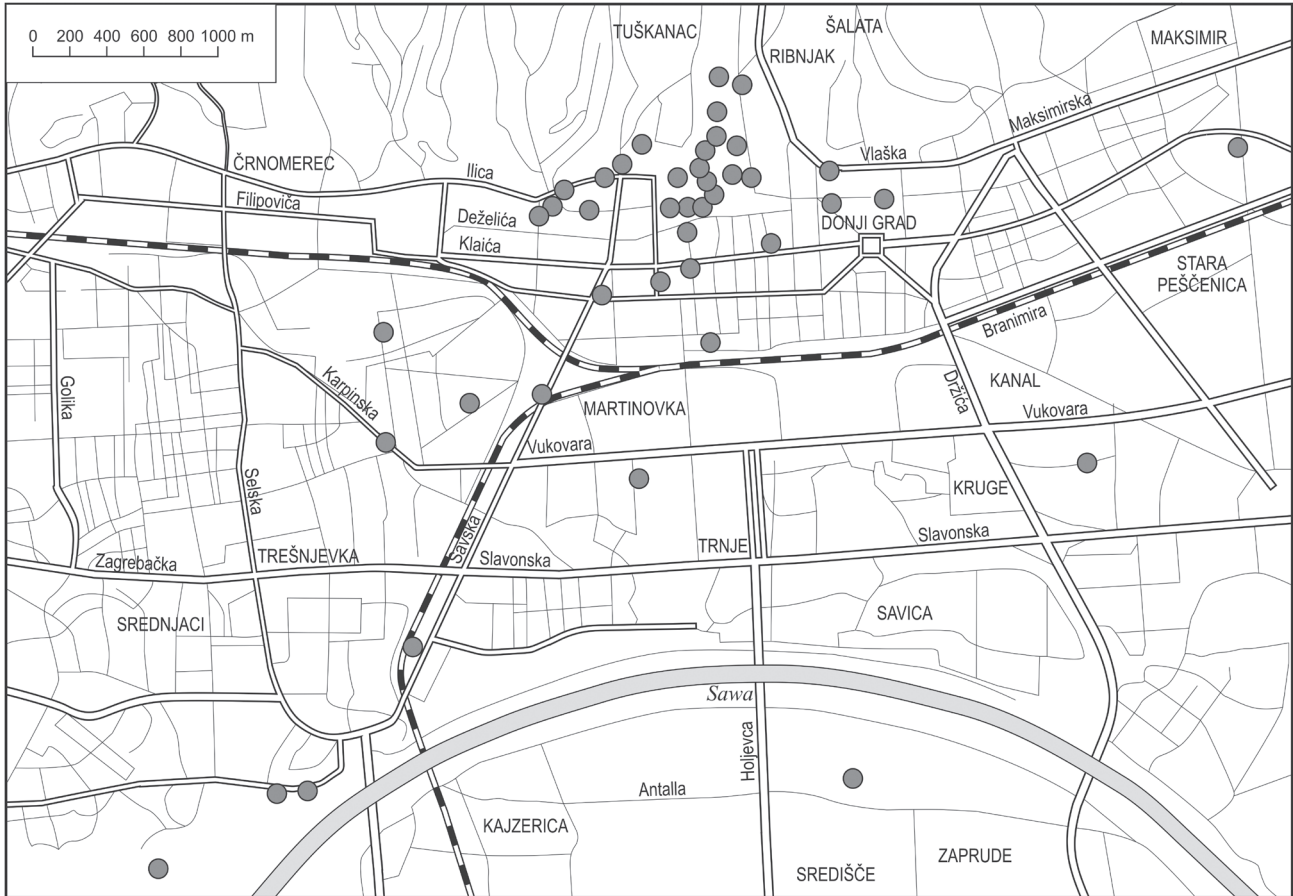


Figure 1. Spatial distribution of the nightlife attractions offered on TripAdvisor
Source: authors

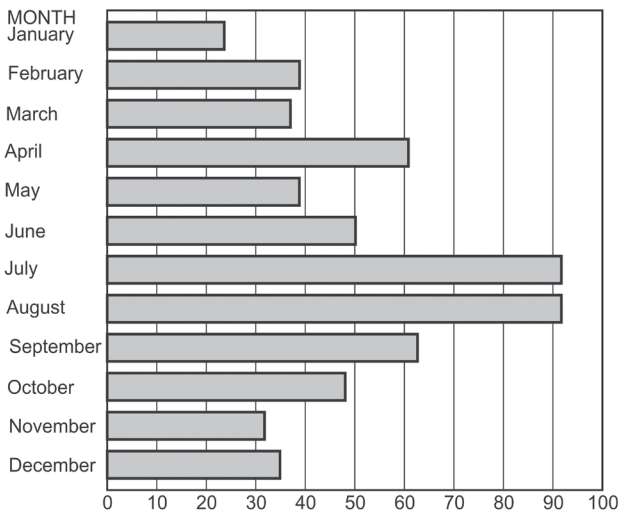


Figure 2. Number of TripAdvisor reviews by month (all years combined 2022–2024)
Source: authors

When it comes to spatial distribution of the nightlife attractions available on TripAdvisor, most venues are concentrated in the city center, while seven are in the wider central area. Five nightlife venues are situated outside the city center, and one is positioned on the Medvednica mountain, north of the city. They are presented on Figure 1.

The monthly distribution of reviews in Figure 2 shows notable variation in visitor activity. A significant rise is observed in April corresponding with Easter holidays but the highest concentration occurs during the summer months, indicating that Zagreb is an attractive tourist destination. The low share of reviews in November and December, particularly in comparison with the first quarter, was unexpected given that Zagreb is an exceptionally popular destination during the Advent season (Sredanović & Šulc, 2022).

3.2. METHOD

culture for individual travelers as well. “Couples”, as a type of visit accounted for 69 reviews (11.27%), but “family” visits were only 23 (3.76%). Business travel was the least common category with 10 (1.63%). In addition, 32 (5.23%) did not specify the type of visit.

The aspect-based sentiment analysis (ABSA) (Hua et al., 2024) was conducted in a Python (version 3.11) environment using a combination of libraries (pandas, re, scikit-learn, TextBlob, matplotlib and openpyxl). After the initial preparation the reviews column in

Excel was standardized through a text preprocessing procedure which included transforming all characters into lowercase, removing numbers, punctuation and special symbols, and with the tokenization and elimination of frequent stopwords. To identify the main thematic groups term frequency-inverse document frequency (TF-IDF) was used. The *k*-means clustering algorithm was applied, which identified thematic clusters and the most frequent words in each one were then interpreted as dimensions of nightlife experience. Based on these clusters, keyword dictionaries were constructed for five aspects: social, sensory, economic, cultural and safety. Each review was mapped onto one or more aspects depending on the occurrence of these keywords. For sentiment analysis within each aspect, TextBlob was implemented. The results were aggregated for each aspect. Figure 3 presents the whole process of the analysis workflow.

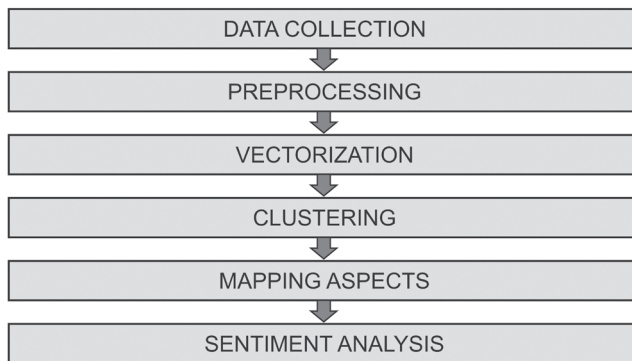


Figure 3. Analysis workflow
Source: authors

4. RESULTS

Figure 4 presents the results of the ABSA analysis. In the 612 reviews, a total of 1042 results were recorded. Some reviews contained multiple aspects, which were aggregated into the following categories: social (442), sensory (368), cultural (107), safety (17) and economic (108).

The social aspect was the most prevalent, accounting for 42.42% of the total, followed by the sensory aspect at 35.32%, while the economic makes up 10.36%. The cultural (10.27%) and safety (1.63%) aspects together represent less than 12%. The results show a strong predominance of positive evaluations, with an overall average sentiment across all aspects of 90.2% positive, 2.9% negative, and 7.4% neutral.

Pizam and Tasci (2019) see the sensory aspect as a core element of the 'experience-scape', emphasizing how sound, smell, taste etc. shape evaluation of a place. Nghiêm-Phú (2020) demonstrated that visitors interpret

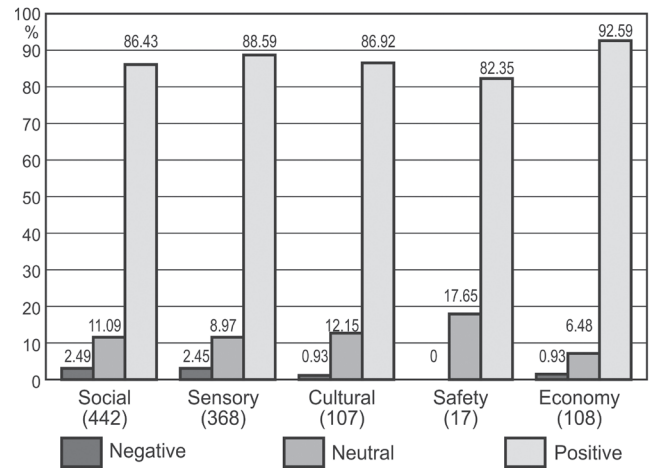


Figure 4. Distribution of tourist sentiment aspects
Source: authors

the environment through a multisensory lens where music, design, lighting, smell, taste etc. represent key drivers. Social dimensions refer to staff, service quality, hospitality behavior and social interaction within the environment (Hanks & Line, 2018). Cultural aspects reflect symbolic and identity-based experience shaped by local customs and values and the degree to which visitors feel welcomed (Pizam & Tasci, 2019). In our research, taste is mostly linked to beverages (and then subsequently categorized in the sensory aspect) but sometimes it is also linked to experience related to the authenticity of Croatian wines and dishes (in that case categorized in the cultural aspect). Safety is recognised as an essential environmental dimension particularly in leisure and night-time settings (Siguaw et al., 2019). Keywords associated with comfort, security and safe atmosphere are justified as belonging to the safety dimension. Economic considerations like price and value-for-money are well-established components of consumer experience. Keywords referring to price, value and affordability represent an economic aspect supported by the influence of price on visitor satisfaction (Prum et al., 2024; Ye et al., 2014).

When examining the keywords present within the aspects, the most frequently mentioned elements in the social aspect refer to staff (staff, service, waiter), appearing in 31.78% of the reviews. These are followed by references to the broader social environment (people 19.55%, friends 18.38%, and friendly 13.07%). In the sensory aspect, beverages were by far the most represented (drink, beer, wine, cocktail, etc.), accounting for as much as 60.06%. This is followed by references to the atmosphere of nightlife locations (atmosphere, vibe, etc.) with 18.82%, and music (music, sound, etc.) with 11.53%. In the economic aspect, the most dominant keywords were price (48.82%) and cheap (22.83%). The cultural aspect, which conveys identity, most frequently included keywords such as taste (42.28%), local (25.79%) and authentic (22.64%). Finally, the safety aspect was

predominantly associated with comfort (50%) and safety (44.44%).

The results in Table 3 show that environment-related factors, which have the most relevant influence on the experience of Zagreb nightlife relate to the staff service, beverages offered, tasty products, comfort and good prices. While no particular review directly mentioned the image of Zagreb nightlife, the results of the analysis imply an image of a city with a friendly and vibrant atmosphere at affordable prices.

Table 3. Frequency of keywords present within individual aspects of the aspect-based sentiment analysis (ABSA) analysis

Category	Keywords	Percent (%)
Social aspect	Staff (staff, service, waiter)	31.78
	People	19.55
	Friend	18.38
	Friendly	13.07
Sensory aspect	Beverages	60.06
	Atmosphere	18.82
	Music	11.53
Economic aspect	Price	48.82
	Cheap	22.83
Cultural aspect	Taste	42.28
	Local	25.79
	Authentic	22.64
Safety aspect	Comfort	50.00
	Safe	44.44

Source: authors.

Analysis of possible differences between sentiments towards Zagreb NTE during the summer season and out of season showed that the reviews are more positive in summer when it comes to social, sensory and economic-related dimensions. The reverse situation is found for the cultural and safety-related dimensions whose positive reviews prevail out of season. Concretely, the summer months of July and August contain 184 reviews, and the remaining months of the year 428. In the social aspect, during July and August, 90.44% of comments are positive, 7.35% are neutral, and only 2.21% are negative. In contrast, for the other months, 84.57% of comments are positive, 12.54% are neutral, and 2.98% are negative. This shows that the social aspect is rated more favorably in the summer months. Regarding the sensory aspect, in July and August the share of positive comments is 90.32%, compared to 88% in the remaining months while the economic aspect is also rated more positively

in July and August (96.3%) than in the other months (91.36%). The situation is different when looking at cultural and safety: in July and August, the share of positive comments related to safety is 72.73%, compared to 85.71% in the remaining months. The cultural aspect is also rated lower in July and August (84.21%) than in the other months (87.5%).

5. DISCUSSION

The results show that Zagreb's nightlife is perceived very positively by tourists, with high levels of satisfaction across the observed aspects. In particular, the social and sensory dimensions were rated more frequently than cultural, safety and economic ones. The social dimension is the most prominent, accounting for 42.42% of all mentions, which underlines the importance of staff–visitor interaction and inclusiveness. The sensory dimension accounts for 35.32% and emphasizes the significance of music, drinks, entertainment and atmosphere. Interestingly, it was rated even more positively than the social dimension. The cultural and economic-related dimensions, although represented less (108 and 107 mentions respectively), still achieved a high positive sentiment. Safety was mentioned less often but nevertheless revealed high levels of satisfaction. The economic dimension recorded the highest share of positive sentiment (92.59%).

As shown in comparable studies of nightlife, sentiment-based approach allows access to naturally occurring visitor feedback and to identify patterns that are often difficult to capture through traditional survey methods. Our findings are in line with those of Seočanac and Dimitrovski (2022) whose review analysis similarly identified the social and sensory aspects as the most influential components. In their study, interaction, atmosphere and music emerged as dominant factors shaping visitor satisfaction, which corresponds closely to our results. However, their analysis did not incorporate the economic aspect of nightlife evaluation. By including it and demonstrating that affordability plays a substantial role in shaping tourists' perceptions of Zagreb's nightlife, our study offers a more comprehensive framework for understanding the nightlife 'experience-scape'.

Research conducted by Nghiê-m-Phú (2020) on the sensory aspects of nightlife in Bangkok, Kuala Lumpur and Singapore shows that drinks (or beverages in our case) appear, on average (across all three locations), with a frequency of 77.67%, whereas in Zagreb this proportion is 60.06%. Conversely, in the Indonesian study, "hear" as a sensory aspect is present on average with 23.22% (17% in Singapore), while in our study this

could correlate to music, which accounts for 11.53% of the sensory aspect. This comparison suggests that beverages play a somewhat less dominant role in the sensory experience of nightlife in Zagreb than in the Southeast Asian contexts examined by Nghiêm-Phú, although they still represent a key element of visitor perception. However, this may be due to the fact that part of the beverage-related keywords were categorized in the cultural aspect as explained before. At the same time, auditory stimuli appear to be less prominent in Zagreb's nightlife reviews compared with Nghiêm-Phú's cases. Scent and tactility within the sensory aspect show a correlation both in the Zagreb case and in the study conducted by Nghiêm-Phú.

When compared to the broader tourist experience of Zagreb the nightlife findings display a strong degree of alignment regarding satisfaction levels with Zagreb NTE, which is rated highly (75.1% in the summer season and 76.8% out of it) (Marušić et al., 2023). Tourists often describe Zagreb as affordable, friendly and culturally rich, and these attributes are clearly mirrored in the nightlife sector.

Although our research did not reveal many reviews on the safety dimension, it has still been rated positively, which also aligns with the Marušić et al. (2023) research in the city and is rated very highly (91% in the summer season and 93% out of it). When compared to the research, however, it is important to stress that only around 20% of Zagreb tourists participate in its nightlife. Interestingly, more tourists participate in the nightlife (20.5%) out of season than in the summer months (Marušić et al., 2023). This contradicts our research, which showed that the majority of reviews are recorded during the summer months (July and August). Along the same line, ratings of the Zagreb atmosphere in general are higher in the out-of-season period (Marušić et al., 2023), which may be connected to the Zagreb Advent (Christmas market offerings throughout the city), which thrives on NTE. Our research showed, however, that social, sensory and economy-related dimensions of the environmental factors influencing NTE have been somewhat more positively evaluated in summer, but those related to cultural and safety-related dimensions were somewhat better evaluated in the out of season period.

The reviews analyzed in our research focused exclusively on the bars and clubs, since TripAdvisor categorized them in that way, while excluding other possible NTE venues. However, it is essential to note that, according to the results of previous research (Marušić et al., 2023), possible enhancements in the satisfaction with the Zagreb's art and culture offerings in the out-of-season period are sought since tourists' satisfaction levels are lower than in the summer season (72.1% and 91.9% respectively).

6. CONCLUSION

Our study aimed to analyze how tourists evaluate their nightlife experiences in Zagreb. This served to understand which environment-related factors influence Zagreb nightlife experiences, and which nightlife image tourists assign to this city. We analyzed TripAdvisor tourist reviews applying sentiment-based analysis (ABSA). The findings respond to the research questions as follows: first, the factors that most strongly influence Zagreb's nightlife experience are social (people, staff, interactions), sensory stimulation (music, beverages, atmosphere) and affordability. The cultural aspect and safety also play a role, but to a lesser extent. Second, the images that tourists assign to Zagreb on the basis of nightlife are friendliness, affordability and a vibrant atmosphere. The night 'experience-scape' captures the combined sensory, social, cultural, economic and safety aspects that shape how tourists experience cities after dark, which helps explain the complexity of night-time environments and provides a basis for analysing how tourists interpret and assess the nightlife.

The results of our study regarding the first research question, therefore, are in line with the existing studies focusing on the factors influencing the experience of the nightlife (Pinke-Sziva et al., 2019; Seočanac & Dimitrovski, 2022). Thus, sensory and social elements are detected as the most important, corresponding to physical layout, presence of other tourists, atmosphere, staff and music detected by Seočanac and Dimitrovski (2022). In the same way, physical layout and atmosphere in the study of the Budapest NTE (Pinke-Sziva et al., 2019) correspond to our research while it is also in line with the previous research (Pine & Gilmore, 2011) stressing the importance of multisensory stimuli for a positive evaluation of experience with the importance of music, drinks, entertainment and atmosphere. Although individual factors related to each of the senses (such as color, melody, form, rhythm, scents, aromas etc.) were not analyzed, since the TripAdvisor reviews do not necessarily provide this type of information, it is evident that factors related to the senses (in this case the senses of hearing, taste and smell, but highly probably also sight and touch) are important in evaluating the experience. This is in line with the previous research of Jelinčić and Šveb (2021).

Regarding the second research question on the city's night-time image, the results of our study are generally in line with this image, which is positive. Concretely, it is in line with Trojan's study (2025) confirming young visitors' satisfaction with nightlife and the appropriateness of the events for younger generations. Thus, friendliness, affordability and a vibrant atmosphere go hand-in-hand with this research. The day-time image of the city known for

its various museums and events (Draganić, 2021) is difficult to be compared with the results of our research, though, since the NTE-aspect of the museums' work has not been taken into account, while such events are not mentioned in the TripAdvisor Night-life category. The fact that Zagreb is seen as a cultural and historical city for its museums (Draganić, 2021) is not in line with young visitors' interests (Trojan, 2025) but if packaged in the NTE concept, it can be of interest.

While this research has limitations, it is, to the best of our knowledge, the first one to offer a view on the tourists' assessment of Zagreb nightlife, from which recommendations to be used for industry professionals and policy makers can be drawn. The most relevant ones can be summarized as follows:

- industry professionals should carefully plan environment-related factors influencing the nightlife experience – music, drinks, entertainment and atmosphere (sensory aspect) since they are the “core” factors for a positive evaluation of NTE;
- multisensory factors should be used in designing NTE attractions for their positive assessment and overall image of the city;
- cozy and friendly interaction in the night-time venues with staff is the essential environment-related factor influencing the nightlife experience, which informs industry professionals of the type of staff they should be looking for when hiring;
- prices of the night-time venues should be determined carefully since affordability plays one of the major roles in the NTE and Zagreb night-time image;
- further promotion of the NTE is to target visitors with friends as well as solo visitors as they make up the largest share of Zagreb NTE visitors;
- day-time attractions should be packaged in the NTE attractions to be of attraction to young visitors.

The findings present valuable guidelines, which may have practical implications in the NTE industry, as well as theoretical ones, informing future research as well as policy makers. However, this study is not without limitations. First, the reviews were unevenly distributed across the venues in Zagreb which may have biased the representation of the overall nightlife experience. Some venues were overrepresented, while others had only a few reviews, reducing the ability to generalize findings across the entire city. Also, it was not always possible to determine with high precision whether the reviewers were tourists or locals. Although specific criteria were applied to filter out reviews from locals, there remains a degree of uncertainty regarding the actual profile of some reviewers. The reviews did not provide information on the exact time of the visit, so it was not possible to determine whether the experience occurred during the hours of the night-time economy or not. This issue is significant for venues that function both as daytime hospitality

establishments and as nightlife locations. This lack of time-specific information limits the study's ability to fully capture the dynamics of nightlife. Finally, some well-known nightlife venues in Zagreb were not listed on TripAdvisor, which means that the dataset may not fully reflect the city's nightlife offer. However, the study offers the only assessment of the Zagreb's nightlife by its tourists so far. Future research may want to look into other methodologies for capturing more precise data in that respect. Besides, the sole research process employed in this study revealed a number of existing gaps related to NTE statistics in Zagreb (and Croatia), which are either non-existent or incomplete; this is the same for legal regulations which fail to recognize the concept of NTE which is why this study can be seen as a starting point, which may lead to enhancements in that respect as well.

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CURRENCY CONVERSION EFFECTS: INSIGHTS INTO TOURIST ATTITUDES TOWARDS CROATIA'S ENTRANCE TO THE EURO AREA

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ABSTRACT

This study examines tourists' attitudes toward prices in the Republic of Croatia following the transition from the Croatian kuna to the euro. It investigates how the currency change influences destination choice, perceptions of price stability, and overall tourism attitudes that shape a destination's competitiveness. A survey ($N = 939$) was conducted during the currency transition period to assess tourists' expectations of price changes and the broader impact of the conversion on Croatian tourism. The survey results show that while most respondents trusted the euro as a stable currency and did not view currency differences as a barrier, more than four fifths expected tourism prices in Croatia to increase after the changeover, and payment behaviour was shifting toward card-based and digital methods. These expectations of higher prices, particularly for tourism-related services, raise concerns about the future perception of Croatia's affordability and competitiveness. At the same time, the increased use of electronic payment methods suggests a move toward more seamless and modern transactional practices in the tourism sector. Overall, the research provides empirical insights into how currency conversion shapes tourists' perceptions, behaviours and offers a foundation for further inquiry into the real impact of the common currency on tourism dynamics in euro area member states.

KEYWORDS

Croatian tourism, euro adoption, euro area, tourist attitudes, currency change, euro effect

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1. INTRODUCTION

The Republic of Croatia has undergone significant changes in the 21st century. These include membership of the United Nations, entry into NATO and the European Union (EU), a visa-free regime for the USA, avoiding double taxation (Dwyer et al., 2017) and the joining of the Croatian territory with the help of the Pelješac Bridge. A fundamental change in 2023 was when Croatia introduced the second most-used currency in the world, the euro, thereby entering the euro area (EA) and becoming part of Schengen (European Central Bank [ECB], n.d.a; Vlada Republike Hrvatske, 2023). The European Commission (2023) believes that these political, economic, and geographical changes have affected and will likely continue to affect travellers arriving from the EU and the EA, which means free passage at borders, no need for currency exchange, and the removal of trade frictions.

Croatia, besides joining the Schengen Zone, has also fully integrated into the Economic and Monetary Union (EMU). This union represents the process of coordinating economic and fiscal policies among EU member states, establishing a single market that enables the free movement of goods, capital, and labour, and ultimately adopting a single currency, the euro, as a sign of full monetary integration (Eichengreen, 1993; European Commission, n.d.a). While all EU member states are part of the EMU to some degree, only those that have adopted the euro form the EA. The first 11 countries introduced the euro on January 1, 2002, followed by Greece in 2001, Slovenia in 2007, Cyprus in 2008, Slovakia in 2009, Estonia in 2011, Latvia in 2014, Lithuania in 2015, and finally Croatia in 2023 (European Commission, n.d.b). On January 1, 2023, the Republic of Croatia abolished the Croatian kuna, adopted the euro as its official currency, and thus became the 20th member state of the EA.

The importance of tourism for Croatia is underscored by the fact that during the COVID-19 pandemic, the country ranked among the most vulnerable in Europe according to the criterion of tourism's direct contribution to gross domestic product (GDP) (Bogdan et al.,

2021). Croatia's tourism industry is structurally oriented toward EA markets, which together generate most of its arrivals and overnight stays (Bukovšak et al., 2017; Jerković, 2022), as presented in Table 1. In 2023 alone, Croatia recorded more than 19 million arrivals and over 92 million overnight stays, reflecting the strong influence of eurozone source markets and the advantages brought by Schengen and euro adoption (European Commission, 2023). Foreign tourists accounted for more than 90 million overnight stays, of which the most numerous were Germans, followed by Slovenians, Austrians, Poles, Czechs, Italians, Britons, Slovaks and the Dutch (Croatian Bureau of Statistics, n.d.; Croatian National Tourist Board, 2023). The data also suggest that during the COVID-19 pandemic, domestic tourism did not change to the extent that foreign arrivals and overnights did, which explains the extreme crisis in the tourism industry for the country which is primarily oriented to foreign markets (Mikac & Kravarašćan, 2021).

We must also consider that tourism revenues amounted to €10,539 billion in 2019 (Ministarstvo turizma Republike Hrvatske, 2021), while in 2023, despite a similar number of tourist arrivals, they increased to €13,113 billion (Ministarstvo turizma i sporta Republike Hrvatske, 2024). This upward trend suggests a rise in the value of tourist spending, which may also imply higher prices for tourism services. For this reason, it was essential in this study to examine how tourists themselves perceive this change and whether they believe that the introduction of the euro is one of the factors that, in their view, may have contributed to the increase in prices.

Previous studies have shown that tourism is highly sensitive to changes in the exchange rate environment. Fluctuations in bilateral exchange rates and in dominant currencies such as the U.S. dollar significantly influence tourism flows by altering relative prices and transaction costs (Ding & Timmer, 2023). Similarly, stable exchange rate regimes have been found to enhance tourism demand in the long run, as they reduce uncertainty and improve destination competitiveness (De Vita, 2014). From a broader economic perspective, tourism and international trade are both strengthened

Table 1. Arrivals and overnights 2018–2023

Year	Total number		Foreign tourists		Domestic tourists	
	Arrivals	Overnights	Arrivals	Overnights	Arrivals	Overnights
2019	19 566 146	91 242 931	17 353 488	84 147 631	2 212 658	7 095 300
2020	7 001 128	40 794 455	5 545 279	35 379 064	1 455 849	5 415 391
2021	12 775 794	70 201 959	10 640 809	62 847 827	2 134 985	7 354 132
2022	17 774 958	90 040 177	15 323 749	82 287 512	2 451 209	7 752 665
2023	19 492 931	92 376 832	16 854 869	84 263 604	2 638 062	8 113 228

Source: Croatian Bureau of Statistics (n.d.).

by stable monetary environments that lower transaction costs and increase confidence between countries (Santana-Gallego et al., 2016).

These macro-level findings resonate with Tkalec's (2024) evidence that EU membership has enhanced Croatian tourism through improved perceptions of economic stability and integration. However, while such studies highlight the macroeconomic significance of monetary stability, little is known about how travellers personally perceive and respond to currency transitions. Tourist attitudes toward destinations undergoing such changes remain insufficiently explored, particularly regarding how they interpret price adjustments, value for money and perceived monetary stability following the currency adoption. The Croatian case, as the most recent "natural experiment" within the EA, provides an opportunity to empirically examine the "euro-effect". Accordingly, the central research problem of this paper lies in understanding whether and how the introduction of the euro has influenced tourists' attitudes toward Croatia as a destination, specifically in relation to perceived monetary stability, price expectations, destination competitiveness and the use of digital payment methods.

2. LITERATURE REVIEW OF THE EURO AS A CURRENCY AND ITS IMPACT ON TOURISM

2.1. TOURISTS' PERCEPTIONS OF THE EURO

Wenhao (2004) distinguishes between national and international currencies. While national currencies operate within domestic boundaries, international currencies serve as widely accepted means of exchange and holders of value beyond their country of origin. The euro functions as such a transnational currency, facilitating travel, trade and economic exchange across the Eurozone. The European Central Bank (ECB) emphasizes that the euro contributes to stability, sustainable growth and the improvement of citizens' lives within the European Union. The ECB has consistently monitored public attitudes toward the EMU, the euro, and the ECB itself. Over the past two decades, support for the single currency has remained high, between 40% and 60%, reaching its peak in 2019. In contrast, trust in the ECB declined sharply after the 2008 financial crisis but gradually recovered to neutral levels by 2019 (Bergbauer et al., 2020; Hobolt & Wrátil, 2015). Despite these fluctuations, the euro has maintained its symbolic position as a stable and reliable currency, second only to the U.S. dollar in global usage (Papadia & Efstathiou, 2018).

Although general support for the euro remains high, regional differences in trust and perception persist.

For instance, Slovenians showed notable scepticism toward the ECB during their transition period (Bergbauer et al., 2020). These variations underline that monetary integration is not perceived uniformly across populations and that individuals internalise such changes through their own experiences of trust, stability and economic security.

Building on this, the present study seeks to explore whether similar perceptual mechanisms apply to international tourists visiting Croatia. In the first phase, respondents were asked to evaluate an ECB statement describing the euro as a currency that ensures stability and supports sustainable growth. This measure was used to assess whether tourists share this perception of monetary stability and economic trust. Accordingly, the first hypothesis was formulated:

H₁: Tourists perceive the euro as a currency that enhances monetary stability and strengthens economic security.

However, not all individuals perceive monetary stability and trust in the same way. Previous studies emphasise that perceptions of the euro are shaped not only by institutional performance but also by individuals' financial circumstances, familiarity with the currency and broader economic expectations. Research by the ECB (n.d.b) shows that individuals with higher income, education and financial literacy tend to express stronger confidence in the euro and in the ECB, whereas less affluent groups display greater scepticism toward monetary authorities. Cross-national analyses further demonstrate that support for the euro is more stable in long-standing EA countries than in newer adopters or non-members, reflecting differences in institutional familiarity and adaptation (Bergbauer et al., 2020). In addition, trust in the euro varies with personal economic security: those who feel economically stable and expect favourable conditions report higher support, whereas individuals who anticipate financial risk express lower confidence (Hobolt & Wrátil, 2015). Together, these findings suggest that perceptions of monetary stability may vary across socio-demographic groups, an assumption that this study also tests in the context of tourists' attitudes toward the euro. For this reason, we additionally examine whether demographic characteristics and previous travel experience influence tourists' perceptions of the euro.

2.2. UNDERSTANDING THE LINK BETWEEN CURRENCY CHANGES AND TOURISM DYNAMICS

Tourism competitiveness is built on a destination's ability to use its resources effectively and to create products that are attractive and accessible to visitors. Pricing plays a central role in this process: destinations often compete by keeping their prices lower than those of their rivals, which can trigger a downward spiral

of cost-based rivalry and reduced value (Falzon, 2012; Mangion et al., 2005). Exchange-rate movements are among the most powerful forces shaping such dynamics. When a currency depreciates, a destination becomes more affordable to foreign visitors; when it appreciates, the opposite occurs: foreign demand tends to fall, while residents are more inclined to travel abroad (Brahim, 2022; Forsyth & Dwyer, 2009).

Exchange rates, in that sense, act as invisible hands guiding tourism flows. Forsyth and Dwyer (2009) argue that exchange-rate fluctuations directly influence travellers' choices by altering relative prices between destinations. Historical examples illustrate this well. According to Işık et al. (2019), a depreciation of the euro against the Turkish lira increases Spain's relative tourism advantage over Turkey in the long run, while appreciations of the euro do not have a significant negative effect. Similarly, a strong Swiss franc has been shown to reduce Switzerland's competitiveness compared with its eurozone neighbours (Blattner, 2002). In the 1980s, intense price competition among Mediterranean destinations such as Spain, Greece, Turkey and the former Yugoslavia resulted in declining demand for Italy, a phenomenon described by Formica and Uysal (1996) and later confirmed by Falzon (2012).

Price competitiveness, closely tied to both inflation and exchange-rate stability, remains one of the strongest determinants of tourism performance (Rookayyah et al., 2024), particularly across the Mediterranean region (Falzon, 2012). Yet, competitiveness extends beyond prices alone. It includes a combination of economic indicators such as GDP growth, visitor satisfaction, and mobility (Dupeyras & MacCallum, 2013; Soldić Frleta, 2018). Tourists, as decision-makers, often weigh perceived value rather than absolute cost, evaluating how much quality, convenience and authenticity they receive for the price they pay (Nicolau & Masiero, 2013; Seyidov & Adomaitienė, 2017). However, despite evidence from the literature that currency valuation shapes tourism flows at the macro level, it remains unclear to what extent tourists themselves consider currency factors, such as the recent euro adoption in Croatia, to be important when forming their travel intentions.

Figure 1 illustrates the systemic relationship between currency value, price, purchasing power and tourism competitiveness. The diagram illustrates how exchange-rate fluctuations create balancing effects within the tourism economy, showing that depreciation increases competitiveness through stronger purchasing power, while appreciation reduces it through higher prices (Rookayyah et al., 2024). This relationship aligns with macroeconomic insights from Sinclair and Stabler (1997), who show that instability in foreign currency receipts and relative prices can influence tourism demand, investment and destination competitiveness.

While these economic relationships explain how exchange rates and price movements shape destination competitiveness, they do not necessarily determine how individual tourists perceive or respond to currency differences. From a behavioural perspective, the perceived value of travel experiences often outweighs objective price considerations.

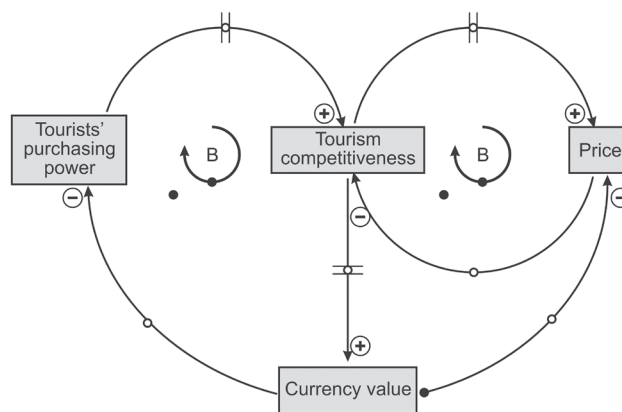


Figure 1. The influence of currency valuation on tourism market dynamics
Source: authors

However, currency fluctuations rarely tell the full story. As Pratt (2014) notes, devaluation may bring short-term gains through higher inbound demand and employment growth in tourism-related industries, but these benefits often fade and may even harm other sectors such as education or construction. Long-term competitiveness requires more than favourable exchange rates; it depends on innovation, sustainability and the overall value experience offered to travellers (Crouch, 1994).

For Croatia, the introduction of the euro as the official currency (Mahović Komljenović & Lulić Stipetić, 2022) marks a major shift in its monetary and tourism landscape. By removing the exchange-rate barrier, Croatia now competes equally with other eurozone destinations such as Slovenia, Italy and Greece (Tkalec, 2024). Tourists can easily compare prices across these markets, albeit previous research suggests that currency differences alone seldom determine destination choice. Factors such as motivation, prior experience and perceived value tend to outweigh purely financial considerations (Masiero & Nicolau, 2012; Seyidov & Adomaitienė, 2017). Even when conversion costs exist, emotional or experiential motives often prevail (Dellaert & Lindberg, 2003; Nicolau & Masiero, 2013).

Thus, while exchange-rate shifts and currency regimes influence the macroeconomic framework of tourism competitiveness, they appear to play a secondary role in the individual tourist's decision-making process. Currency may shape the economic background against which tourism evolves, but it

rarely acts as a psychological barrier. It can influence flows and trends, much like other contextual factors that frame tourists' behavioural intentions (Dwyer & Forsyth, 2011; Khasawneh & Alfandi, 2019), without directly determining them. That is why, through H_2 we sought to examine whether tourists perceived this currency change during the transition period as a barrier that could influence their destination choice:

H_2 : Differences in currency are not perceived as a significant obstacle when choosing a travel destination.

2.3. PERCEIVED AND ACTUAL PRICES: SHAPING TOURIST ATTITUDES

Price perception, unlike the currency difference itself, plays a central role in shaping tourists' attitudes toward destinations, especially during monetary transitions. Although macroeconomic analyses suggest that the introduction of the euro in Croatia had only a mild effect on prices, approximately 0.4 percentage points (Falagiarda et al., 2023; Hrvatska narodna banka, 2023), public discourse and media coverage contributed to widespread expectations of price increases. In tourism behaviour, perceived reductions in purchasing power can be more decisive than objective inflation indicators, as consumers tend to base their travel decisions on the affordability they experience rather than on macroeconomic data (Garača et al., 2018).

The psychology of pricing provides an important interpretive lens for understanding these processes. Parsa and Njite (2008) argue that high prices can create negative emotional responses among tourists, especially when perceived as unfair or unexpected, leading to decreased satisfaction and weaker loyalty. In contrast, balanced pricing that ensures perceived fairness contributes to sustainable growth and repeat visits. From a behavioural perspective, the perception of inflation does not always align with reality. Pufnik (2018) observed that in many eurozone countries, perceived inflation (subjective sense of price growth) diverged from actual inflation after euro adoption, particularly when consumers expected rounding or hidden price increases. This psychological phenomenon can create negative attitudes toward both the currency and the destination economy, even in the absence of objective inflationary pressure. Consumers process price signals based on everyday experiences: restaurant bills, accommodation rates, retail purchases and construct their perception of inflation accordingly. Thus, if travellers expect higher prices, they are more likely to perceive them as such once the conversion occurs, regardless of statistical data.

Comparative evidence from earlier euro-adopting countries illustrates these dynamics. In Slovenia, perceived inflation rose modestly after the introduction of the euro in 2007, despite stable inflation data; stronger

effects were observed in Estonia and Lithuania (Pufnik, 2018; Rudež & Bojnec, 2008). Jemec (2010, as cited in Pufnik, 2018) attributes Slovenia's relatively mild reaction to proactive communication campaigns that educated consumers about price expectations and discouraged opportunistic rounding. Estonia, however, experienced a sharp increase in perceived inflation after 2011 despite government controls, highlighting the degree to which perceptions can override policy measures.

These perceptual mechanisms have concrete implications for tourism markets. Previous research shows that adaptation to new market conditions may temporarily increase service prices and slow tourism growth (Bukovšak et al., 2017). As prices rise, price-sensitive travellers often redirect demand toward more affordable Mediterranean competitors such as Greece or Turkey, thereby reducing Croatia's relative competitiveness (Mirdala, 2015; Nikas et al., 2019). Ledesma-Rodríguez et al. (2012) further demonstrate that currency changes can amplify these diversion effects by redistributing flows among destinations according to perceived affordability.

Croatia, as the most recent entrant to the EA, presents a valuable case for testing these perceptual effects in the tourism sector. Although the actual inflation following euro adoption has remained modest, the symbolic nature of currency change and the influence of public narratives may shape tourists' subjective expectations of rising prices. Therefore, this study investigates whether tourists anticipate a rise in prices in Croatia after the transition from the kuna to the euro:

H_3 : Tourists expect prices in Croatia to increase following the currency change from the kuna to the euro.

Understanding this hypothesis also requires acknowledging the psychological mechanism of loss aversion (Kahneman & Tversky, 1979). Consumers tend to experience losses, such as price increases, more intensely than equivalent gains, such as price reductions. While statistical inflation treats price changes symmetrically, human perception is asymmetrical: price increases are more salient and emotionally charged, shaping a lasting impression of "everything becoming more expensive". This asymmetry can influence destination competitiveness, particularly during times of economic transition, even when the objective impact is limited. In this context, perceived inflation becomes not only an economic indicator but also a psychological signal influencing tourists' attitudes and behaviour. Measuring such perceptions is therefore crucial for understanding how the euro adoption may affect Croatia's tourism competitiveness and visitor satisfaction in the short and medium term. Also, to assess the broader context of value perception, we tested whether demographic

characteristics influence tourists' expectations of post-euro price changes.

Additionally, short-term studies of previous euro adoptions have indicated that businesses often rounded prices upward, especially in the service and hospitality sectors, thereby transferring additional costs to consumers (Rátz & Hinek, 2006; Rudež & Bojnec, 2008). Such perceptions can temporarily reduce a destination's attractiveness, even when real inflation remains stable (Jerković, 2022). Building on this logic, we assume that tourists who expect price increases will adjust not only their attitudes, but also their intended travel behaviour:

H₄: Tourists who expected price increases were more likely to anticipate visiting Croatia less frequently after January 1, 2023.

2.4. WILL THE CHANGES IN 2023 AFFECT THE ATTITUDE TOWARDS CROATIA AS A TOURIST DESTINATION?

As already said in the Introduction, most foreign tourists visiting Croatia come from EA countries. Therefore, adopting the euro represents a crucial step for Croatia's tourism sector, particularly given its dependence on European markets and cross-border travel flows.

Empirical studies provide strong evidence that the introduction of the euro has stimulated tourism flows among EMU members. Ledesma-Rodríguez et al. (2012) estimate that the euro increased international arrivals (1995–2008) by around 21%–43%, while their later work (Santana-Gallego et al., 2016) demonstrates how the common currency generates both tourism creation within the EMU and tourism diversion from non-member countries. Addressi et al. (2019), using a synthetic-control approach, similarly confirm a positive, but heterogeneous, effect on bilateral tourism flows, strongest among countries with deeper economic ties (such as Belgium, Italy and Spain). Beyond the eurozone, stable and predictable exchange rates also support international travel demand, as shown by Ding and Timmer (2022). Together, these studies highlight the central role of currency integration and exchange-rate stability in enhancing tourism connectivity and competitiveness across Europe. Together, these studies underscore the significant role of currency integration and exchange-rate stability in enhancing tourism connectivity and competitiveness across Europe.

At the same time, several authors suggest that the euro contributes not only to monetary stability but also through the perception of Europe as a single, easily accessible tourism area (Bieger & Leasser, 1999; Blattner, 2002). The World Tourism Organization (1998) already predicted that a shared currency would boost tourism by simplifying travel, while Rátz and Hinek (2006) described the euro as an instrument of European identification that encourages mobility of

both people and capital within the EMU. These effects are particularly visible in the Schengen area and EA, where tourists experience seamless movement across borders (Jerković, 2022). The introduction of the euro has simplified financial transactions for travellers (Bukovšak et al., 2017; Falagiarda et al., 2023) and increased transparency and comparability of prices (Brahim, 2022; Rudež & Bojnec, 2008). It also eliminated exchange offices and conversion fees, improving the perceived efficiency of travel and strengthening confidence in Croatia as part of a single monetary area (Blattner, 2002; Rátz & Hinek, 2006). Before its adoption, it was widely expected that Croatia's competitiveness would improve as it joined a market defined by a strong and stable currency (Jerković, 2022) within an already established market. Therefore, we examine H₅ to assess whether tourists indeed perceive the euro as a factor that strengthens Croatia's competitive position:

H₅: Tourists believed that the introduction of the euro would enhance Croatia's competitiveness as a tourist destination.

However, experiences within the EA show that the effects of currency integration are not uniform (Cizkowicz et al., 2015). Core EMU members such as Germany, France and the Netherlands adapted more smoothly, while peripheral economies including Greece, Spain and Portugal faced challenges linked to higher prices and the loss of cost advantages (Giannellis & Koukouritakis, 2017; Mirdala, 2015; Nikas et al., 2019). These pressures affected overall economic competitiveness, although not always tourism flows; for instance, Greece recorded no significant changes in tourist arrivals after adopting the euro (Bukovšak et al., 2017). As a peripheral southeast European economy (Celi et al., 2022), Croatia similarly needs to balance price stability and tourism competitiveness within the EMU framework.

Currency appreciation generally increases destination costs, while exchange-rate volatility discourages travel planning (Crouch, 1994; Ongan et al., 2017). Within the eurozone, these risks are minimised, making the common currency a signal of reliability and stability (Addressi et al., 2019; Rookayyah et al., 2024). However, joining the EMU also reduces a country's monetary autonomy, limiting tools that could otherwise support tourism demand (Damijan, 2023; Kandžija et al., 2017; Karnowski & Rzońca, 2023; Pratt, 2014). This may be particularly relevant for smaller economies such as Croatia, which must now align its monetary framework with the ECB (Jerković, 2022).

2.5. DIGITAL PAYMENT FOR SERVICES IN TOURISM

After the COVID-19 pandemic, digital payment methods became increasingly important across sectors, including tourism (Ramos & Sol Murta, 2023; Susanto et al., 2022).

Yet despite technological progress, parts of Croatia's tourism sector remain predominantly cash-based, signalling a lag in adopting digital transactions. As travel behaviour increasingly emphasises convenience, safety and technological integration, cashless systems have the potential to become a significant component of the modern tourism experience. This trend is supported by Liébana-Cabanillas et al. (2021), who demonstrate that perceived usefulness, subjective norms and personal innovativeness exert a strong direct influence on intention to use peer-to-peer mobile payment systems. Furthermore, research conducted in tourism contexts indicates that tourists' perceived risk significantly reduces both trust and intention to use digital payment systems, while trust positively affects usage intention and mediates the relationship between perceived risk and behavioural intention (Banerjee & Jhavar, 2025). Consistently, broader studies grounded in extended technology acceptance model (TAM) and theory of planned behaviour (TPB) frameworks confirm that higher trust and lower perceived risk significantly increase consumers' intention to adopt online payment systems (Yang et al., 2015).

In line with these studies, the introduction of the euro as a common and stable currency may further strengthen tourists' trust in Croatia's financial environment and reduce perceived transactional risk, thereby encouraging a more frequent use of digital payment methods such as debit and credit cards, PayPal, Crypto or Revolut. The unified currency simplifies price comparison, enhances perceptions of safety, and minimizes uncertainties associated with exchange rates, all of which facilitate the integration of cashless and mobile payment options during travel.

H_6 : The adoption of the euro will lead to more frequent use of digital payment methods among tourists visiting Croatia.

The extent to which euro adoption has accelerated this transformation remains an empirical question. This study therefore examines whether tourists' payment behaviour is evolving toward digital modes as part of the broader process of technological transformation in tourism. According to Kim et al. (2022), the digitalization of financial services can increase destination competitiveness and enhance operational efficiency for tourism businesses, particularly in countries newly integrated into the EA.

3. METHOD

To examine all six hypotheses, we employed a quantitative research design and developed a structured questionnaire. The survey was constructed based on previous empirical and theoretical studies

addressing monetary integration, tourism competitiveness and consumer perceptions during currency transitions (Bergbauer et al., 2020; Dwyer & Forsyth, 2011; Kandžija et al., 2017; Ramos & Sol Murta, 2023; Rudež & Bojnec, 2008). Rudež and Bojnec (2008), for example, conducted a similar survey among foreign tourists visiting Slovenia after its EU accession and euro adoption, identifying benefits such as easier price comparison and reduced transaction costs, alongside negative perceptions related to increased service prices.

The questionnaire comprised five thematic sections, aligned with the study hypotheses, and a final section that collected socio-demographic data (age, gender, education, occupation). The questionnaire was first developed in English and then pre-tested among bilingual experts to ensure linguistic and conceptual clarity. We circulated the draft to 50 experts from the fields of tourism and monetary policy, who provided feedback on comprehensibility and appropriateness. Based on their comments, the questionnaire was adapted and reformulated. The final version was then programmed into the 1KA online survey platform. The full questionnaire is available to interested readers upon request.

Data collection took place in the time of transition, between 13 December 2022 and 10 March 2023, using a snowball sampling strategy through networks of European tourism stakeholders, including regional and local tourism organizations, faculties, information centres, national and nature parks, and public institutions. Respondents were invited to participate voluntarily and anonymously, and all procedures complied with GDPR principles.

3.1. DESCRIPTION OF THE SAMPLE

The survey targeted all tourists and included only respondents who had travelled to countries where the euro is not the official currency, as individuals without such travel experience cannot reliably evaluate the implications of currency differences for tourism. Age was approximately normally distributed in the sample (mean [M] = 37.12; standard deviation [SD] = 11.99). Although the normality test was significant, which is common in large samples ($N = 939$), the Q-Q plot and the very low skewness value (0.04) indicate only a minimal deviation from normality. This is expected given the large sample size and the demographic profile of the respondents, who were primarily tourists with an average age of around 38 years. Most participants were between 25 and 54 years old, indicating a broad and relevant age spread among travellers (Urhausen, 2008).

Regarding the highest completed academic level, the largest proportion of respondents held

a bachelor's degree (40.7%, $n = 382$), followed by those with a secondary school qualification (32.2%, $n = 302$), a master's degree (20.8%, $n = 195$), a doctorate (5.5%, $n = 52$), and just elementary education (0.9%, $n = 8$). In terms of employment status, most respondents were employed (62.8%, $n = 590$), followed by students (23.5%, $n = 221$), business owners (8.7%, $n = 82$), retirees (2.4%, $n = 23$) and unemployed individuals (2.3%, $n = 22$).

Overall, it can be said that our sample corresponds to young tourists from Europe, predominantly in the 35 to 44 age range, highly educated and mostly employed. That is why we conducted parametric tests (except in H_6) in our SPSS analysis.

4. RESULTS

In summary, while euro adoption enhances transparency, reduces transaction barriers and strengthens Croatia's position within the European tourism market, it may also generate new perceptual challenges related to pricing and value. These hypotheses therefore test whether Croatia's integration into the eurozone has increased its perceived competitiveness, or whether expectations of higher prices have tempered those gains and influenced tourists' behavioural intentions.

4.1. EVALUATION OF PERCEIVED MONETARY STABILITY

According to the ECB calculation method, 58% of respondents ($n = 452$) expressed a positive perception of the euro as a currency, supporting its role as a symbol of monetary stability and economic security. This result is consistent with ECB (Bergbauer et al., 2020) findings and confirms that the sample reflects general trust in the euro, providing a relevant sample foundation for further testing of H_1 .

To test H_1 , a one-sample t -test was conducted to examine whether tourists perceive the euro as a currency that enhances monetary stability and strengthens economic security (Table 2). The results reveal that the mean score ($M = 3.70$, $SD = 1.24$) was significantly higher than the neutral midpoint of the scale (test value = 3), $t(938) = 17.36$, $p < 0.001$, with a 95% confidence interval (CI) [0.62, 0.78]. The effect size was moderate to large (Cohen's $d = 0.57$), indicating that tourists generally perceive the euro positively, associating it with stability, security and economic trust. Therefore, H_1 was supported, aligning with previous findings on the euro's symbolic and practical role as a stable transnational currency. This suggests that perceptions of monetary stability are internalised not only by EA residents but also by tourists when assessing economic trust and security.

Table 2. One-sample t -test for perceived euro stability from Q1 (H_1)

Statistic	Value
Sample size (N)	939
Hypothesis test value	3
Mean (M)	3.70
Standard deviation (SD)	1.24
Standard error (SE)	0.04
95% confidence interval (CI) for mean	[3.62, 3.78]
Mean difference from neutral ($M-3$)	0.70
$t(938)$	17.36
p	<0.001
Cohen's d	0.57
Hedges' g	0.57

Note: The test value for the one-sample t -test was 3 (neutral midpoint). Higher scores indicate stronger agreement that the euro ensures stability. The mean score was significantly higher than 3.

Source: authors.

To further explore H_1 , we conducted an additional analysis to examine whether demographic characteristics and prior travel experience influenced tourists' perceptions of the euro as a stable currency (Table 3). A multiple linear regression with gender, age, highest completed education, and experience of travelling to countries outside the EA as predictors of perceived monetary stability showed no significant collective effect ($R^2 = 0.002$, $F(4, 934) = 0.58$, $p = 0.674$). The predictors explained only 0.2% of the variance, and none had a significant unique contribution: gender ($\beta = 0.04$, $p = 0.24$), age ($\beta = -0.01$, $p = 0.77$), education ($\beta = -0.03$, $p = 0.42$) and travel experience ($\beta = 0.01$, $p = 0.74$). For additional insight, each predictor was analysed separately. An independent-samples t -test indicated that men ($M = 3.89$, $SD = 1.28$) reported slightly higher agreement than women ($M = 3.64$, $SD = 1.21$), $t(915) = 2.82$, $p = 0.005$ (two-tailed), but the effect was small (Cohen's $d = 0.20$). Age was unrelated to perceived monetary stability (Pearson $r(937) = -0.013$, $p = 0.680$). A t -test comparing respondents who had travelled to non-euro countries with those who had not revealed any difference in perceived monetary stability ($t(936) = 0.49$, $p = 0.627$); the effect size was negligible (Cohen's $d \approx 0.07$). Finally, a one-way ANOVA comparing perceived monetary stability scores across education levels was not significant ($F(4, 934) = 1.15$, $p = 0.333$), with a trivial effect size ($\eta^2 = 0.005$); Tukey HSD (honestly significant difference) and Games-Howell post-hoc tests found no pairwise differences. Overall, the results indicate that demographic characteristics and prior travel experience have no meaningful impact on how tourists perceive the euro's stability.

Table 3. Effects of demographic characteristics and travel experience from Q1 (H₁)

Predictor/variable	Test	Statistic	<i>p</i> -value	Effect size	Interpretation
Gender (male vs. female)	Independent-samples <i>t</i> -test	$t(915) = 2.82$	0.005	$d = 0.20$	Men rated Q1 slightly higher than women (small effect)
Age	Pearson correlation	$r(937) = -0.013$	0.680	–	No significant association
Travel outside eurozone	Independent-samples <i>t</i> -test	$t(936) = 0.49$	0.627	$d = 0.07$	No significant difference (negligible effect)
Education level	One-way ANOVA (5 groups)	$F(4, 934) = 1.15$	0.333	$\eta^2 = 0.005$	No significant differences across education groups
Regression model	Multiple linear regression	$F(4, 934) = 0.58$, $R^2 = 0.002$	0.674	–	Predictors jointly explain ~0.2% of variance in Q1; model not significant

Note: For gender, positive *t*-values indicate a higher mean for males; Cohen's *d* represents the standardized mean difference. Travel outside the eurozone was coded as 0 (*no*) and 1 (*yes*); effect size values are approximate due to unequal group sizes. In the regression model, predictors were gender (0 – *female*, 1 – *male*), age (continuous), education level (ordinal), and travel experience (0 – *no*, 1 – *yes*). No regression coefficients reached statistical significance.

Source: authors.

4.2. EVALUATION OF CURRENCY BARRIERS IN DESTINATION CHOICE

A one-sample *t*-test was conducted to examine whether tourists perceive currency differences as an obstacle when choosing a travel destination (Table 4). The mean rating ($M = 2.19$, $SD = 1.20$) was significantly lower than the neutral midpoint of 3 ($t(938) = -20.75$, $p < 0.001$), indicating that respondents generally do not perceive a different currency as a significant barrier. The effect size was large (Cohen's $d = -0.68$, 95% CI $[-0.75, -0.61]$), confirming a strong tendency toward disagreement with the notion that currency differences hinder destination choice.

These results support H₂, indicating that currency differences are not a major factor in destination choice. This suggests that tourists may place greater emphasis

on elements such as accessibility, price levels, cultural offerings and overall experience value, while currency considerations play a relatively minor role. In Croatia's case, where the euro now aligns the country with most key source markets, this further reduces the relevance of currency-related concerns in the travel planning or decision-making process.

4.3. LINKING PRICE EXPECTATIONS WITH FUTURE TRAVEL BEHAVIOUR

For H₃, a one-sample *t*-test was conducted to examine whether tourists expect prices in Croatia to increase following the currency change from the kuna to the euro (Table 5). The mean response ($M = 0.79$, $SD = 0.98$) was significantly greater than zero ($t(938) = 24.63$, $p < 0.001$), indicating that respondents overall expected prices

Table 4. One-sample *t*-test for perceived currency barrier from Q2 (H₂)

Variable	Mean (<i>M</i>)	Standard deviation (<i>SD</i>)	95% confidence interval (CI) for mean difference	$t(df)$	<i>p</i> -value	Effect size (<i>d</i>)
Currency barrier	2.19	1.20	$[-0.89, -0.73]$	$-20.75 (938)$	<0.001	-0.68

Note: Test value = 3 (neutral midpoint). Lower mean values indicate that respondents rarely perceive a different currency as a barrier when choosing a destination.

Source: authors.

Table 5. Expected price increase after euro adoption from Q4 (H₃)

Variable	Mean (<i>M</i>)	Standard deviation (<i>SD</i>)	95% confidence interval (CI) for mean difference	$t(df)$	<i>p</i> -value	Effect size (<i>d</i>)
Expected price change (Q4)	0.79	0.98	$[0.73, 0.85]$	$24.63(938)$	<0.001	0.98

Note: The one-sample *t*-test compared responses to the test value of 0 (no price change). Scores above zero indicate expected price increases. The mean score was significantly higher than zero, demonstrating a substantial expectation of rising prices; therefore, the result supported the hypothesis.

Source: authors.

to rise. The effect size was large (Cohen's $d = 0.98$, 95% CI [0.73, 0.85]), confirming a strong directional tendency toward perceiving price increases. A chi-square goodness-of-fit test further showed that the distribution of responses differed significantly from a uniform distribution ($\chi^2(4, N = 939) = 2232.41, p < 0.001$), with the vast majority of respondents (81%) selecting "Increase".

To further examine whether price expectations varied by socio-demographic characteristics or previous travel experience, additional analyses were conducted (Table 6). A multiple linear regression with gender, age, education and prior travel outside the EA as predictors of price expectations revealed a significant model ($F(4, 934) = 200.33, p < 0.001$), explaining 46.2% of the variance ($R^2 = 0.462$). However, only prior travel experience emerged as a significant predictor ($\beta = -0.67, p < 0.001$). Respondents who had travelled to non-euro countries were less likely to expect price increases compared to those without such experience. Other demographic variables, including gender, age and education, showed no meaningful effects. Separate t -tests and ANOVA results confirmed no significant group differences, with all effect sizes being trivial. Overall, expectations of price increases were broadly shared across demographic groups but moderated by international travel experience, with travellers familiar with non-euro currencies showing more restrained expectations of post-euro inflation.

Table 6. Chi-square (χ^2) goodness-of-fit test for distribution of expected price changes from Q4 (H_3)

Variable	$\chi^2 (df)$	p -value
Distribution of responses (Q4)	2232.41(4)	<0.001

Note: The response distribution deviated significantly from an equal distribution, with 81% of respondents selecting "Increase", indicating strong expectations of higher prices after euro adoption.

Source: authors.

To test H_4 , whether expectations of price increases are associated with anticipated changes in future travel frequency to Croatia, a cross-tabulation was conducted between perceived price change and general travel intention (Table 7). The Pearson chi-square test revealed a significant association ($\chi^2(24, N = 939) = 964.84,$

$p < 0.001$), indicating that tourists' price expectations are systematically related to how often they plan to visit Croatia in the future. The strength of the association was moderate to strong, as shown by Cramer's $V = 0.51, p < 0.001$.

Overall, the results strongly support H_3 , indicating that tourists widely expect prices in Croatia to rise after the euro's adoption, with prior travel experience only moderating the intensity of this expectation. At the same time, the significant association between expected price increases and reduced future visitation provides empirical support for H_4 , showing that perceived post-euro-effect inflation is linked to lower travel intention toward Croatia.

Table 7. Chi-square test results of expected price changes and future visitation intentions

Variable	$\chi^2(df)$	p -value	Cramer's V
Q4 (expected price change) × Q6 (future visitation frequency)	964.84(24)	<0.001	0.51

Note: Tourists who anticipated price increases were more likely to report neutral or reduced future travel intentions, indicating that perceived inflation may weaken destination loyalty even before actual price changes occur. Based on this association, the H_4 was partially supported.

Source: authors.

4.4. EVALUATION OF CROATIA'S PERCEIVED COMPETITIVENESS

The reliability of the six items (Table 8) measuring the perceived impact of the euro introduction on travel experience and destination competitiveness was assessed using Cronbach's alpha. The scale demonstrated excellent internal consistency, $\alpha = 0.981$ (based on standardized items), indicating that all statements measured a highly coherent underlying construct, namely, the perceived positive effects of euro adoption on travel and destination competitiveness. All items showed very high corrected item-total correlations (>0.90), confirming strong contributions from each item to the scale's internal consistency. Therefore, a composite variable (competitiveness composite) was computed as the mean of the six items for subsequent analyses.

Table 8. Perceived competitiveness of Croatia after euro adoption from Q5 (H_5)

Variable	Mean (M)	Standard deviation (SD)	95% confidence interval (CI) for mean difference	$t(df)$	p -value	Effect size (d)
Competitiveness composite	3.46	1.91	[0.33, 0.58]	731(938)	<0.001	0.24

Note: The one-sample t -test compared the composite score to the neutral test value of 3. The mean score was significantly higher than the neutral point, indicating that tourists perceive the introduction of the euro as a moderately positive factor for Croatia's tourism competitiveness. Therefore, H_5 was supported.

Source: authors.

A one-sample *t*-test was conducted to assess whether tourists believe that the introduction of the euro enhances Croatia's competitiveness as a tourist destination. The mean composite score ($M = 3.46$, $SD = 1.91$) was significantly higher than the neutral midpoint of 3 ($t(938) = 7.31$, $p < 0.001$), indicating a generally positive perception of the euro's impact. Although the effect size was small (Cohen's $d = 0.24$, 95% CI for d [0.17, 0.30]), the direction of the effect suggests that most respondents associate the currency change with improvements in destination competitiveness, which is consistent with their evaluations of specific advantages. Respondents indicated that the euro makes Croatia a more competitive destination by enabling easier price comparison, smoother digital and card payments and a more familiar monetary environment. These elements reduce friction in trip planning, increase transparency and lower "mental transaction costs", narrowing perceived differences between Croatia and established EA markets. Therefore, H_3 was supported.

4.5. EVALUATION OF DIGITAL PAYMENT BEHAVIOUR

Because the payment-frequency items were measured on an ordinal scale, changes before and after the euro introduction were analysed using paired-sample Wilcoxon signed-rank tests (Table 9). Results show a clear shift away from cash toward digital payment modes. The use of cash decreased significantly ($Z = -8.44$, $p < 0.001$), while both credit card ($Z = -6.72$, $p < 0.001$) and debit card usage ($Z = -9.05$, $p < 0.001$) increased notably. There was also a significant rise in Revolut usage ($Z = -3.52$, $p < 0.001$). Changes in PayPal ($Z = -1.96$, $p = 0.050$) and cryptocurrency use ($Z = -2.41$, $p = 0.016$) were minor and statistically weaker. Effect sizes (calculated as $r = |Z| / \sqrt{N}$) indicated moderate to large effects for cash ($r \approx 0.46$) and debit cards ($r \approx 0.52$), moderate effects for credit cards ($r \approx 0.40$) and Revolut

($r \approx 0.31$), and small effects for PayPal ($r \approx 0.16$) and cryptocurrencies ($r \approx 0.31$). After applying a Holm-Bonferroni correction, significant effects remain for cash, debit cards, credit cards and Revolut, while PayPal and cryptocurrencies would no longer meet the adjusted significance threshold.

The findings offer partial support for H_6 . A clear and statistically significant decrease in cash use, together with increases in debit- and credit-card payments, indicates a shift toward less frequent use of physical money after the euro introduction. However, evidence for broader digital-payment adoption is more limited, suggesting that a comprehensive transition to digital methods would require further investigation.

5. DISCUSSION

Overall, the findings reinforce patterns described in previous research on monetary integration, perceived inflation and tourism behaviour, while offering new insights into the specific context of Croatia, as a young tourism-intensive EU member integrating into the Schengen area and EA.

The results supporting H_1 indicate that tourists perceive the euro as a stable and reliable monetary framework. This aligns with previous research showing that the euro also carries a symbolic function as a marker of economic security and European integration. For Croatia, this perception may generate an additional reputational benefit through a "European umbrella effect", whereby euro adoption strengthens the sense of belonging to a predictable and institutionally mature European space and tourism market. This increased trust appears broadly shared across demographic groups, suggesting a widely consistent confidence in the euro's stability.

Table 9. Wilcoxon signed-rank tests for changes in payment method use from Q7 and Q8 (H_6)

Pair (after-before)	<i>N</i> (non-ties)	Direction of change	<i>Z</i>	<i>p</i> -value	Effect size (<i>r</i>)
Cash	330	Less cash use	-8.44	<0.001	0.46
Credit card	389	More frequent use	-6.72	<0.001	0.40
Debit card	309	More frequent use	-9.05	<0.001	0.52
PayPal	160	Slight increase	-1.96	0.050	0.16
Revolut	129	More frequent use	-3.52	<0.001	0.31
Cryptocurrency	62	Slight increase	-2.41	0.016	0.31

Note: Positive ranks indicate greater frequency of use after the euro adoption. Effect sizes were calculated as $r = |Z| / \sqrt{N}$ (non-ties). After applying the Holm-Bonferroni correction, statistically reliable increases remained for debit cards, credit cards and Revolut usage, while cash use showed a significant decrease. Small increases in PayPal and cryptocurrency use did not remain significant after the correction.

Source: authors.

At the same time, respondents did not consider currency differences to be a meaningful obstacle in destination choice, confirming H_2 . This finding aligns with behavioural studies showing that travellers rarely view currency regimes as psychological barriers (Masiero & Nicolau, 2012; Seyidov & Adomaitienė, 2017). However, this does not contradict macroeconomic research demonstrating that exchange-rate movements can influence tourism flows and destination competitiveness (Falzon, 2012; Forsyth & Dwyer, 2009; Sinclair & Stabler, 1997). The distinction lies in the level of analysis: while exchange rates objectively shape relative prices and long-term demand, tourists subjectively prioritise experiential value, accessibility and perceived affordability over currency differences themselves. Therefore, the results suggest that currency differences matter economically, but they are not consciously perceived as barriers in the tourist decision-making process.

Although currency differences are not perceived as a barrier at the micro level and tourists generally hold a favourable view of the euro, the picture changes when it comes to expectations of price increases and future travel intentions after the currency change. Results in H_3 discovered that tourists expressed a strong expectation that prices in Croatia would rise following the adoption of the euro. This pattern mirrors findings from other transitional EA economies, where perceived inflation often exceeded actual inflation due to rounding practices and psychological price effects (Rudež & Bojnec, 2008). Such expectations carry important behavioural implications. In this study, tourists who anticipated higher prices were more likely to indicate reduced future visits, partially supporting H_4 . This suggests that perceived, rather than actual, price movements may strongly shape destination evaluations, value-for-money assessments, and repeat visit intentions, consistent with the work of Dwyer and Forsyth (2011) and Santana-Gallego et al. (2016). These results point to a broader concern: in tourism, the challenge during monetary transitions lies less in monetary policy itself and more in how tourists interpret and anticipate price changes. Transparency in communication and maintaining clear value propositions therefore remain essential for safeguarding destination image. Future research should examine whether price increases in Croatian tourism were genuinely disproportionate, whether tourists' concerns reflect perceptual rather than actual inflation, and to what extent wider inflationary pressures or currency reform may have been used to justify additional price rises.

However, these positive perceptions coexist with a pronounced expectation that prices in Croatia would increase following the adoption of the euro, providing strong support for H_3 . This mirrors well-documented

patterns observed in other transitional EA economies, where perceived inflation often exceeded actual inflation due to rounding practices and psychological price effects (Pufnik, 2018; Rudež & Bojnec, 2008). Such expectations carry important behavioural implications. As demonstrated in this study, tourists who anticipated higher prices were more inclined to signal reduced future visits, partially supporting H_4 . This suggests that perceived, rather than actual, price movements may have a powerful influence on destination evaluations, value-for-money assessments, and ultimately on repeat visitation intentions, an effect consistent with findings by Dwyer and Forsyth (2011) and Santana-Gallego et al. (2016). These results highlight a broader concern: in tourism, the real challenge does not lie in monetary policy itself, but in how tourists interpret and anticipate price changes. Transparency in communication and maintaining clear value propositions therefore remain essential for managing destination image during monetary transitions. Given these dynamics, future research should examine whether price increases in Croatian tourism were genuinely disproportionate, whether tourists' concerns reflect perceptual rather than actual inflation, and to what extent the broader context of inflation and currency reform may have been leveraged to justify additional price rises.

Although tourists express negative expectations regarding price increases and indicate a reduced likelihood of future visits, when examining competitiveness (H_5) they generally believed that the introduction of the euro would enhance Croatia's tourism position. The six items measuring perceptions of Croatia's competitiveness indicated that travellers associate the euro with easier payments, simpler online purchases, improved price comparability, better control of expenses, increased attractiveness, and more frequent use of card-based payment options. These perceived advantages position Croatia more closely alongside established EA competitors by reducing minor transactional frictions and creating a more familiar and consistent monetary environment. However, the small effect size suggests that although the euro introduction is viewed positively, it does not fundamentally reshape Croatia's competitive position. Rather, it places Croatia on more equal footing with other European destinations, while long-term competitiveness continues to depend on broader experiential, cultural and value-driven factors that extend beyond this monetary alignment.

The findings in H_6 also show a shift toward digital and card-based payments following the introduction of the euro. Reduced cash use and greater reliance on cards and fintech tools indicate that monetary integration supports more modern payment habits. This reflects wider digitalisation trends and underscores the need for seamless, cashless options in line with tourist expectations.

6. CONCLUSION

This study provides new insights into how European travellers perceive Croatia's adoption of the euro and how these perceptions shape expectations regarding prices, competitiveness and future travel behaviour. The findings reveal a nuanced impact: while the euro enhances feelings of monetary stability, convenience and alignment with familiar EA environments, it simultaneously triggers notable concerns about potential price increases that may influence future visits. Such expectations, consistent with patterns observed in other EA transitions, highlight the psychological dimension of currency change, where perceived inflation can weigh more heavily than actual economic developments.

Croatia entered the EA from an already strong competitive position, shaped by geographic proximity to key EU markets, favourable value-for-money perceptions and long-standing ties with EA travellers. The euro adoption reinforces this position by reducing transactional frictions, improving transparency, and supporting the ongoing shift toward digital and cashless payment practices that modern travellers increasingly expect. Nevertheless, its overall effect remains moderate: the euro places Croatia on a more equal footing with other EA destinations but does not independently redefine the country's broader competitive landscape, which continues to depend on experiential quality, service standards and the strength of its tourism offer. At the same time, the pronounced expectation of rising prices underscores the importance of managing perceptions as carefully as economic realities. If tourists come to believe that Croatia has become considerably more expensive, this may erode its long-standing image as a relatively affordable Mediterranean destination. Ensuring transparent communication about actual price developments, reinforcing narratives of value-for-money, and investing in seamless payment systems will therefore be crucial for sustaining competitiveness in the EA.

Overall, the findings suggest that the euro's impact lies less in changing destination choice and more in shaping perceptions of affordability, convenience and integration within the European tourism space. By actively managing these perceptions, Croatia can reinforce its position as a reliable, modern and competitively priced EA destination.

6.1. LIMITATIONS AND FUTURE RESEARCH

Although exchange-rate dynamics are well examined at the macro level, little is known about how tourists perceive price changes or the role of currency in their travel decisions. This study offers novel and initial insights, but several limitations must be noted.

The main limitation is the absence of respondents' nationality, which prevents cross-market comparisons and may mask differences between international visitors and Croatian residents. The study also relies on perceptual measures, meaning that expected price changes may not fully reflect actual trends. In addition, the use of non-probability snowball sampling limits the representativeness of the findings, and digital payment behaviour is based on stated intentions rather than observed transactions. As a cross-sectional study, it cannot capture changes in attitudes over time. Future research should therefore incorporate objective data, longitudinal designs and complementary qualitative methods.

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ROBOTICS, ARTIFICIAL INTELLIGENCE AND SERVICE AUTOMATION (RAISA) A MODEL FOR SMART AND SUSTAINABLE DESTINATION MANAGEMENT

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ABSTRACT

Technological progress in information and communication technologies (ICTs) has facilitated the implementation of automation and the integration of more advanced technologies in all industries. With the advent of robotics, artificial intelligence and service automation (RAISA) technologies, tourism service providers and market players have redirected their attention from traditional and conventional methods of service delivery to more modern and innovative approaches. Emerging technologies such as big data, mobile internet, the internet of things (IoT), and artificial intelligence (AI) have been fueling a rapid growth in innovations that facilitate a sustainable shift towards social robots. While AI is extensively studied in the field of tourism research, robotics and intelligent service automation have received less comprehensive research attention. The present study endeavors to investigate the prospective landscape of the travel and tourism sector using a rigorous qualitative secondary data analysis approach through web page content analysis on the awareness and usage of RAISA technologies in the global marketplace. The publication proposes four primary research objectives: investigating the advantages of RAISA, evaluating its usage and adaptability, examining the effects and difficulties of implementing the systems, and establishing a sustainable future with RAISA-enabled services. Research in these fields will facilitate the systematic and organized generation of knowledge, enabling the academic community to guarantee the advantageous implementations of intelligent automation in the tourism sector. This work presents a taxonomy for RAISA technologies in tourism and presents a persuasive case for how this interdisciplinary field should be included in conventional tourism research.

KEYWORDS

robotics, artificial intelligence, chatbots, virtual reality, service automation, smart tourism, destination management

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1. INTRODUCTION

Emerging technologies and advanced applications are supplanting traditional systems and methods, enabling more effective monitoring and surveillance of industrial operations (Sandhya & Varghese, 2024). The closely interconnected tourism sector comprises several participants providing a wide range of services, including transportation, hospitality, entertainment and distinctive memorable experiences to a discerning clientele (Jogarao, 2024). Statistical evidence supports the claim that the travel and tourism sector is experiencing rapid growth worldwide, mostly because of its versatile characteristics and ability to quickly adjust to technological progress (Agrawal et al., 2018). Emerging players such as online travel agencies (OTAs), meta-search engines and virtual travel service platforms are now revolutionizing the whole tourism value chain (Ahn & Seo, 2018). Numerous industrialized and developing nations worldwide heavily depend on essential platforms such as travel information search, reservation and booking, accommodation, transportation and banking services (Ivanov et al., 2019). In the realm of ICTs convergence, the integration of groupware, netware, and humanware seamlessly eradicates the boundaries that exist between hardware and software (Jabeen et al., 2022). Telecommunications, equipment networking and interoperability among organizations and activities heavily rely on wireless and mobile networks (Bulchand-Gidumal, 2022; Sandhya & Varghese, 2023). The digital transformation in the tourism industry started with the integration of the internet in the late 1990s, accelerated by the growing use of mobile devices and social media platforms (Frank et al., 2017). Information and communication technologies have revolutionized the management and promotion of tourism (Gonçalves et al., 2024) and their rapid adoption by tourists has made them an essential element of a destination's competitive advantage (Huang & Rust, 2018). Influential travel service platforms such as Google have enabled internet, hardware, financial, logistical and infrastructure companies to exert control over destination marketing, operation and management (Sandhya & Varghese, 2023). Booking.com and Expedia are strongly favored as OTAs for obtaining travel-related information, TripAdvisor, Uber and Grab for urban transportation, and Airbnb for accommodation (Askarpour et al., 2019). Globally, the use of technology has a pronounced influence on several industries, but it is especially evident in the context of products that possess a high degree of intangibility (Azarmi et al., 2017; Sapir, 2024).

Contemporary destinations worldwide are actively advocating the development of smart tourism, highlighting its numerous benefits ranging from efficiency to sustainability (Alexis, 2017). Integration

of state-of-the-art technology to stimulate business innovation and ultimately enhance the experiences of both tourists and locals is a fundamental aspect of it (Buhalis, Leung & Lin, 2023). The advent of internet accessibility has given rise to a multitude of opportunities, such as the intelligent, smart, digital, wired, cybercity or knowledge city; among these, "smart" has become the prevailing designation (Wu et al., 2023). The shared characteristic of these concepts is the portrayal of cities with knowledge centers that oversee information, technology and innovation (Bhatt et al., 2024). These elements promote more efficient management, sustainable development and an improved quality of life for residents (Ben-Ari & Mondada, 2018). Smart tourism is characterized by its main efforts to convert extensive data into valuable insights and offerings, which sets it apart as "smart" (Sandhya & Varghese, 2024). While the development of technological infrastructure is a crucial element in the advancement of smart tourism, and most industry and government efforts are now focused on this aspect, smart tourism is widely understood and acknowledged as a comprehensive approach to destination management (Gretzel et al., 2015). Research by Lestari et al. (2021) indicate that online destination management organizations (DMOs) are highly efficient tools for developing and advertising a destination image.

In the realm of destination operational and strategic management, the transformation of destination management organizations into destination integrated computerized information reservation management systems has been of paramount importance (Clough & Wu, 2024). These circumstances gave rise to the term "e-tourism", which served as the foundation for the e-destination concept and the digitization of the tourism value chain (Buhalis, 2000; Buhalis, Leung & Lin, 2023). Through the lens of digital ecosystems, the role of ICTs in tourism management can be elucidated (Bilgihan & Ricci, 2024). Alexis (2017) defines a digital tourism ecosystem as the dynamic interplay between living entities such as tourists or vendors and the computational environment, comprising inanimate objects like devices and connections. This concept can be used to characterize a particular geographical location, a distinct sector within the travel industry, or the phenomenon of international travel (Jin, 2024).

The transition of the service sector into a digital platform progressively expanded the range of opportunities and facilitated extraordinary growth prospects for the sector (Noor & Sim, 2024). Such applications empower tourists by giving them personalized recommendations based on their previous travel patterns on attractions, dining and leisure (Huang et al., 2022). They also enhance the on-site experiences by providing detailed information, location-based, and

custom-made interactive services (Ivanov, 2019), and enable the sharing of experiences with other travelers (Goel et al., 2022).

Digital transformation is essential for a thriving community, as the tourism industry often experiences a surge in entrepreneurial activity during times of economic expansion (Huang & Rust, 2018). The paramount objective of digitalization is to facilitate the advancement of more integrated online services that can stimulate economic growth (Buhalis & Law, 2008) involving cultivating a self-sufficient mentality by nurturing creativity, which in turn stimulates the establishment of more tourist entrepreneurial ventures (Frank et al., 2017). The effectiveness of entrepreneurship in leveraging the collective creativity of individuals varies among different tourism companies (Ben-Ari & Mondada, 2018) allowing for the application of creativity to investigate how a collective might produce novel tourism-related concepts and devise innovative solutions (Buhalis, Leung, Fan et al., 2023).

The primary objectives of this research are twofold. Above all, this article aims to establish a thorough foundation for the research conducted on robotics, artificial intelligence and service automation (RAISA) from 2015 to the present. Furthermore, the paper assesses the level of awareness and adaptability, the utilization of technology-enabled applications, identifies the practical obstacles and hurdles associated with these applications, and thus examines the research gap in this field to offer direction for future study.

2. TOURISM 4.0: DIGITAL TRANSFORMATION AND INTELLIGENT AUTOMATION IN THE SERVICE INDUSTRY

The first major technological advancement in the service industry occurred with the widespread availability of the internet in the late 20th century (Cohen & Hopkins, 2019). Companies started to establish an online presence so that clients could get information and make purchases without having to interact in person (Buhalis, 1998). This signaled the start of a change toward more practical and effective service delivery (Sandhya & Varghese, 2023). The service sector underwent yet another change with the advent of smartphones and mobile applications (Buhalis & O'Connor, 2005). Customers could book accommodation, travel and food delivery services with just a few phone taps owing to apps like Uber, Airbnb and food delivery services (Jose et al., 2023; Shanmugam et al., 2024). In the modern era, the service industry continues to thrive with the advent of new and innovative technologies being introduced and implemented to perform various functions (Alexis, 2017).

Chatbots and AI are now standard applications in customer support as they are capable of answering common questions and offer round-the-clock assistance, freeing up human agents to work on more difficult and analytical problems (Leung, 2024; Nica et al., 2018). Transactions are now more convenient and secure thanks to digital payment solutions like online payment platforms and mobile wallets (Azarmi, 2017). Businesses no longer need actual cash or credit cards because they can make and accept payments online (Štilić et al., 2023). Data storage facilities are being transformed by cloud computing, which enables businesses to access and manage their data more easily from any remote location (Kozinets et al., 2023). This has made remote work possible and strengthened stakeholder collaboration in the service sector (Berezina et al., 2019). Businesses can now provide smart services like connected automobiles and intelligent home automation owing to the internet of things (IoT). These developments improve client convenience and give service providers useful data (Zarezadeh et al., 2023).

Tourism 4.0 related technologies, including cloud computing, the mobile internet, robots, artificial intelligence, autonomous cars and even 3D printing, are anticipated to have a significant impact on the global tourism industry during the next five years (World Economic Forum, 2020). Information and communication technologies are used to support the visitor experience throughout their tourist activity process, encompassing the pre, on-site, and post-consumption phases, through virtual communities, social media networks and mobile technology (Gretzel, 2023). The potential for direct contacts between online service providers and customers is advanced by Web 4.0 technologies' capabilities including interactivity, online customer recommendations, online word of mouth and user-generated content (Solakis et al., 2022). As a result, the prospects for online communication have greatly risen due to the ICTs' quick advancement and growing importance in the tourism sector (Webster & Ivanov, 2023).

Emerging technologies such as robotics, nanotechnology, quantum computing, biotechnology, the IoT, and 5G are fundamental to Industry 4.0 and will undoubtedly influence customer service interactions (Kemer & Tyagi, 2023). An essential element of Industry 4.0 is the utilization of vast amounts of big data for the purpose of training artificial intelligence systems (Touni, 2020). These data can be categorized as either structured or unstructured information that records particular observations and can assist individuals in comprehending service-related issues, such as customer preferences (Ogle & Lamb, 2019). Data analytics enables artificial intelligence to detect historical behavioral patterns, make more accurate forecasts of future behavior, and offer suitable recommendations (Jörling

et al., 2019). Google Ads, for example, evaluates and provides advertising that it deems most appealing to consumers by tracking their browsing and buying patterns (Bhaumik, 2018; Kim et al., 2022; Sandhya & Varghese, 2023).

3. USAGE AND ADAPTABILITY OF TECHNOLOGY IN THE TOURISM INDUSTRY

Digital technologies fall into two categories: disruptive technologies and enabling technologies (Davenport, 2018). Basic technologies like the internet and web pages that make it easier for people to embrace other technologies are known as enabling technologies (Mendez Alva et al., 2021). The advanced technologies that give rise to a new market or a new avenue of business or research are referred to as disruptive digital technologies (Munawar et al., 2022). Social media, mobile apps, big data and artificial intelligence, self-service technologies and robots, virtual reality, e-commerce and social commerce, information systems and smart systems are considered disruptive technologies (Daugherty & Wilson, 2018). These technologies form an integral part of today's community and influence the behavior and decision-making capabilities of the population (Knani et al., 2022; Limna, 2022).

These 'new' visitors are better informed thanks to the internet, which also motivates them to look for great deals on both time and money (Solakis et al., 2022). Travelers who are demanding, sophisticated and experienced need to communicate with suppliers in order to have their unique wants and desires met (Wang & Uysal, 2024). The transition from traditional travel agencies to online booking platforms is one of the most obvious developments brought about by technological advancements (Ogle & Lamb, 2019). These days, travelers may use websites and mobile apps that offer a wide range of alternatives for flights, lodging and activities to plan and book their entire trip from their home (Webster & Ivanov, 2023). Travelers will find this change convenient, and businesses will be able to reach a wider audience and run their operations more effectively (Solakis et al., 2022) while due to their lifestyles, customers are less able to relax and take part in their own interests (Snäll, 2023). While rigorously packaged mass tours are on the decline, leisure time is increasingly being used for individually planned tourism and "edutainment", which is the investigation of particular interests for both professional and personal growth (Sandhya & Varghese, 2024). The widespread use of smartphones has ushered in a new era of travel applications that aim

to improve travelers' experiences in general (Frank et al., 2017). Real-time navigation, language translation and immediate access to reviews and suggestions are just a few of the capabilities that mobile applications provide (Ben-Ari & Mondada, 2018; Tan, 2023). Travelers can use chatbots to look up travel options and make travel reservations (Lukanova & Ilieva, 2019) through the customized content and destination commercials they encounter when browsing different websites (Wirtz et al., 2021). The price they pay would be decided by AI algorithms (Daugherty & Wilson, 2018). Automated passport control, self-service baggage drop-off and self-check-in machines at the airport make their travel easier and hassle-free by utilizing facial recognition (Lu et al., 2019; Saydam et al., 2022). Big data facilitates gathering information pre, during and post visits to draw behavioral patterns that can be used for personalization with the help of advanced customer relationship management systems ultimately increasing customer satisfaction and loyalty (Benckendorff et al., 2019; Ogle & Lamb, 2019; Sandhya & Varghese, 2024; Webster & Ivanov, 2023). Technological developments in virtual and augmented reality (AR) have created new opportunities for the travel and tourism sectors (Nica et al., 2018). Virtual reality (VR) gives prospective tourists a more realistic look at a place before they decide to make a reservation. Augmented reality, on the other hand, offers interactive experiences at historical monuments, museums and tourist attractions by superimposing digital information over the real environment (Naumov, 2019).

Social media platforms have developed into effective resources for tourists and travel-related businesses (Daugherty & Wilson, 2018). Travel trends are greatly influenced by user-generated content on Instagram, Facebook and Twitter, where users share images, recommendations and experiences (Wirtz et al., 2021). In response, companies use social media for customer feedback, marketing and engagement, building a vibrant and connected travel community (Saydam et al., 2022). Blockchain technology is gaining traction in the travel and tourism sectors by resolving issues with trust and security (Vashishth et al., 2024) while it can expedite procedures like reservation and payment transactions through transparent and decentralized systems, lowering the possibility of fraud and guaranteeing a safer atmosphere for travelers and service providers alike (Dhoundiyal & Mohanty, 2022). Businesses in the tourism industry must be flexible to remain competitive and satisfy the ever-evolving needs of travelers as technology advances (Frank et al., 2017). Accepting these technical developments helps to sustainably build the tourism sector in the digital era while also improving the overall travel experience (Benckendorff et al., 2019).

4. NAVIGATING CHALLENGES: IMPLEMENTING SOPHISTICATED TECHNOLOGIES IN THE TOURISM INDUSTRY

The tourism industry's adoption of cutting-edge technologies has completely transformed how trips are booked, vacations are organized, and new places discovered. But there are difficulties with this digital transition (Yu et al., 2019). To fully realize the potential benefits of implementing advanced technologies in the tourism sector, businesses, policymakers and technology developers must overcome a number of obstacles (Nie, 2023). The differing infrastructure levels among destinations present a major obstacle to the tourism industry's adoption of advanced technologies (Ivanov & Webster, 2019a). Major tourist destinations might have the required technology infrastructure, but more isolated or smaller places might find it difficult to offer the connectivity and support needed for more sophisticated systems (Dunis et al., 2017). This digital divide may make it more difficult for technology to be adopted uniformly throughout the travel industry (Ivanov & Webster, 2019a).

Sophisticated technology implementation frequently requires a large financial outlay. It could be difficult for small and medium-sized tourism businesses to set aside funds for the creation and integration of cutting-edge systems (Ivanov & Webster, 2019a). Further stresses on budgets are updates and continuing maintenance. For some industry players, the cost implications could be a barrier that keeps technological advancements from being widely adopted and restricts their access. Cyberthreats and high-profile data breaches put businesses at risk as well as travelers' faith in technology-driven services (Ivanov & Webster, 2019b). Finding the ideal balance between using data to personalize experiences and making sure security protocols are strong is still a big problem (Mishra et al., 2024). While younger generations are more likely to accept new technologies, older populations or those from areas where access to digital innovations is limited may show resistance (Frank et al., 2017). Businesses face a challenge in ensuring accessibility for all demographics while still providing cutting-edge services, which makes user adoption difficult (Dasgupta & Jamader, 2024; Ertel, 2017). Disparate data formats, incompatible systems and a lack of defined protocols can all impede the effectiveness and efficiency of technology adoption throughout the travel industry (Fagnant & Kockelman, 2015). Frequently, the swift advancement of technology surpasses the establishment of legislative structures (Stanojevic, 2020). When implementing advanced technologies in the tourism sector, it is necessary to establish explicit policies that address matters like

data ownership, liability and international standard compliance. Managing a complicated legal environment can make it more difficult for companies looking to adopt innovative solutions and slow down the adoption process (Benckendorff et al., 2019).

5. ROBOTS, ARTIFICIAL INTELLIGENCE AND SERVICE AUTOMATION (RAISA) IN THE TRAVEL, TOURISM AND HOSPITALITY SECTOR

As robots have long fascinated humans, the economy has increasingly integrated RAISA at a rapid pace in recent years (Yassin et al., 2022). While the application of robots in manufacturing has been prevalent for a considerable period, the integration of new technologies into service sectors has only recently occurred, resulting in a significant transformation of our business practices and interactions with organizations (Weber et al., 2024) to the extent that they can now either augment or supplant human labor in service industries, including the travel, tourism and hospitality sectors (Saydam et al., 2022).

Upon its official inauguration in 2015, the Henn-na Hotel in Japan achieved the distinction of being the first hotel to employ a predominantly robotic workforce (Reis, 2024). Consequently, while the initial hotel of its kind was promoted to attract robot enthusiasts, it was practically feasible to develop the technology that would enable hotels to mainly operate using RAISA (Ivanov & Webster, 2019a). The emergence of chatbots, robotics, websites, social media, mobile applications, virtual, augmented and mixed reality, as well as self-service kiosks, during the late 20th and early 21st centuries, has greatly enhanced the technological integration between travel, tourism and hospitality enterprises and their customers (Leung, 2024). This technological layer restructured the "human-human" interactions in travel, tourism and hospitality into "human-machine", "human-computer", and, more recently, "human-robot" interactions (Yassin et al., 2022). Moreover, the business models of travel, tourism and hospitality companies underwent a transformation due to the integration of machine learning, artificial intelligence and service automation (RAISA) technologies. These were employed to develop and deliver services to their human clientele (Ivanov et al., 2019). Technological progress has enabled tourism enterprises to integrate a technology-enabled tailored package component, often referred to as a "high tech" element, into their services (Saydam et al., 2022).

A shared attribute among all service automation technologies is their ability to transform customers into prosumers of the service process by transferring

the responsibility of service delivery from company personnel to them (Granström et al., 2023). The service interaction usually takes place in a predetermined manner with limited flexibility; for instance, the requisite procedures a customer must adhere to in order to check into a hotel using a self-check-in kiosk are predetermined. Self-service technologies are extensively employed globally to offer prompt and cost-effective services to substantial volumes of tourists, such as at airports, railway stations, theme parks, restaurants and hotels (Said et al., 2024). This is because self-service technologies are far more cost-effective and advanced compared to robots. Nonetheless, some individuals may still prefer assistance from human staff, as they are accustomed to this form of service.

6. METHODOLOGY

The present research follows a qualitative secondary data analysis method, utilizing a series of web page content analysis to investigate the four major aspects related to integration of RAISA in the tourism, travel and hospitality sector. The major aspects covered included (a) awareness about RAISA; (b) usage, benefits and adaptability; (c) challenges of implementations; and (d) future implications. Data was systematically collected from websites in the public domain, social media pages like Instagram, Facebook, Twitter and LinkedIn, blogs and other online relevant sources. With the structured and systematic literature reviews, which formed the base for the present research, a digital secondary data analysis ensures identification of patterns, customer behavior and adaptability challenges in real world destinations and companies (Mariani et al., 2018; Sigala, 2018). This approach leverages the use of rich pre-existing qualitative data which is publicly available through platforms like social media posts, web-based open discussion forums and blog comments to identify unique themes and insights which may not have been perceptible in the initial data collection (Cheong et al., 2023). The qualitative secondary data analysis commenced with the identification of data sources followed by the extraction of relevant data from the pertaining sources using web scraping tools available online. A content analysis was performed with the data where it was analyzed to develop codes and themes pertaining to the four aspects of the research. The next step involved interpreting the data and identifying the patterns and themes that were recurring and grouping them together to draw meaningful conclusions. The final stage involved reporting the findings in the form of graphs, charts or tables representing the data in the most effective manner (Kelly et al., 2024).

7. INTEGRATION OF ROBOTICS, ARTIFICIAL INTELLIGENCE AND SERVICE AUTOMATION (RAISA): A SMART AND SUSTAINABLE MODEL FOR DESTINATION MANAGEMENT

From the literature, a conceptual model for the integration of RAISA into destination management for long term sustainability has been developed (Figure 1). It is evident that once the potential benefits are fully realized and implemented in the tourism and hospitality sectors, the massive technological shift will result in greater prospects and lead the destination towards sustainability (Saini & Bhalla, 2022). The tourism industry has numerous prospects for technology integration in terms of automation of services like self-service check-in and baggage handling at airports (Amiri & Kuşakcı, 2024; Booranakittipinyo et al., 2024; Mäkelä, 2024; Martins et al., 2024), virtual assistance or chatbots to provide information and services (Tan, 2023; Vashishth et al., 2024), multilingual assistance to tourists from any part of the world (Al-Hyari et al., 2023; Dev, 2023), training and simulation with the help of VR and AR, giving the tourists a feel of the destination from their homes (Ivanov & Webster, 2017a; Sandhya & Varghese, 2024). A major challenge during the transition phase is the adaptation of technology by stakeholders, creating awareness and educating the public to get basic technical knowledge and skills (Wirtz et al., 2021). With the right mix of technology, effective monitoring and surveillance are possible

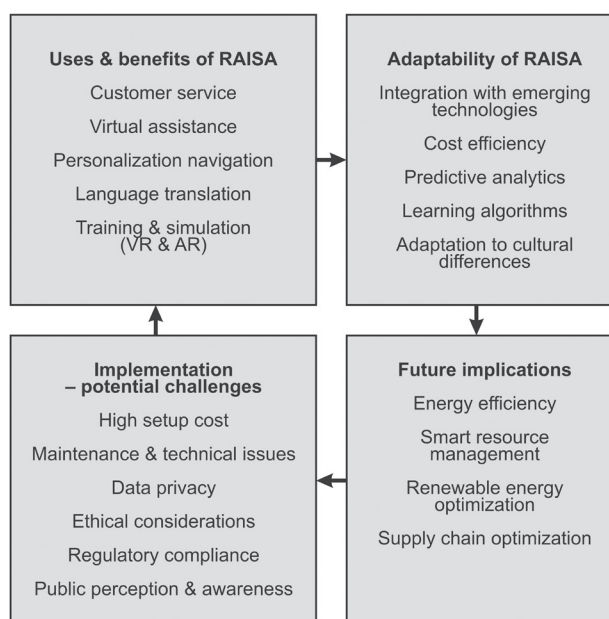


Figure 1. Integration of robotics artificial intelligence and service automation (RAISA): A smart and sustainable model for destination management
Source: authors

(Askarpour et al., 2019). Learning algorithms can be developed, while predictive analysis of tourist behavior and patterns can result in better planning and decision-making (Christou et al., 2023; Ivanov & Webster, 2019b). The initial set-up and periodic maintenance costs may be high, but the benefits reaped from efficient technology integration can easily cover them, ensuring both operational and financial viability for destinations (Azarmi et al., 2017; Touni, 2020). If implemented in a systematic manner, these

technologies can ensure energy optimization, result in better customer satisfaction, reduce wastage of resources, and ensure the sustainable development of destinations (Berezina et al., 2019; Yassin et al., 2022). The extensive qualitative secondary data analysis performed with the help of a detailed content analysis is interpreted and reported in a tabular format below (Table 1). The digital content analysis results have been substantiated with the literature reviews to provide more concreteness and accuracy to the data.

Table 1. Meta analysis of firms enabling robotics, artificial intelligence and service automation (RAISA) in the tourism and hospitality sector

Sector name	No.	Firm name	RAISA implications	References
Hospitality sector	1	Hilton Hotels & Resorts	AI for personalized guest experiences and chatbots for customer service	Jogarao (2024), Gonçalves et al. (2024)
	2	Marriott International	Dynamic pricing and room recommendations	Sapir (2024), Jogarao (2024), Bhatt et al. (2024)
	3	Wynn Las Vegas	Amazon Alexa in rooms for voice-controlled services	Jindal and Kaur (2024), Bilgihan and Ricci (2024)
	4	Yotel	Utilizes robots for luggage delivery and room service	Noor and Sim (2024)
	5	Henn-na Hotel (Japan)	Use of robot staff for check-in and room service	Reis (2024), Leung (2024), Shanmugam et al. (2024), Granström et al. (2023)
	6	The Cosmopolitan of Las Vegas	AI concierge, rose, for guest inquiries and services	Yadav et al. (2024)
	7	Aloft Hotels (Marriott International)	Bot robots for delivering amenities to guest rooms	Štilić et al. (2023), Snäll (2023), Jogarao (2024)
	8	M Social Hotel (Singapore)	robot butlers for room deliveries	Wang and Uysal (2024)
	9	Caesars Palace (Las Vegas)	AI for personalized guest experiences and service recommendations	Clough and Wu (2024)
	10	Crowne Plaza Hotels & Resorts	Robots for guest interactions and room deliveries	Vashishth et al. (2024), Jin (2024), Liu, Chi and Sun (2024)
	11	Radisson Hotel Group	AI for guest preferences and dynamic pricing strategies	Nie (2023), Mishra et al. (2024), Dasgupta and Jamader (2024)
	12	Accor Hotels	AI-driven chatbots for guest interaction and booking services	Dev (2023), Abass et al. (2023), Hinson et al. (2024)
	13	InterContinental Hotels Group (IHG)	AI for customer service chatbots and dynamic pricing	Štilić et al. (2023), Stoimenov (2023), Al-Hyari et al. (2023)
	14	Jumeirah Group	AI for personalized guest experiences and automated room service	Grobbelaar et al. (2024), Stanojevic (2020)
	15	Hyatt Hotels Corporation	AI for guest preferences and service automation	Gomes et al. (2023), Priya et al. (2024)
Aviation sector	1	KLM Royal Dutch Airlines	AI-powered chatbots for customer service and flight information	Chang and Choi Magnusson (2021), Weber et al. (2024)
	2	Delta Air Lines	AI for personalized travel recommendations and customer service automation	Merlo (2024), Huang (2024)
	3	Qatar Airways	AI for customer service automation and personalized in-flight experiences	Tsiakalos (2024), Grosche and Klophaus (2024)

Table 1 (cont.)

Sector name	No.	Firm name	RAISA implications	References	
Aviation sector (cont.)	4	British Airways	AI for customer service chatbots and personalized recommendations	Annamalai et al. (2024), Martins et al. (2024)	
	5	Changi Airport Group	Robots for cleaning and AI for passenger flow management	Wang and Uysal (2024), Tan (2023)	
	6	Heathrow Airport (London)	AI for security checks and passenger experience management	Amiri and Kuşakcı (2024), Annamalai et al. (2024), Martins et al. (2024), Booranakittipinyo et al. (2024)	
	7	Dubai International Airport	Robots for security and customer service automation	Mäkelä (2024), Alketbi et al. (2024), Waheeb and Wheib (2024)	
	8	Hamad International Airport (Qatar)	Robots for customer service and AI for operational efficiency	Al-Malki et al. (2024)	
	9	Munich Airport	Robots for information and service automation for travelers	Mäkelä (2024), Kasarda et al. (2024)	
	10	American Airlines	AI for flight scheduling and customer service automation	Metcalfe et al. (2024), Divakaruni and Navarro Sarmiento (2024), Huang (2024)	
	11	Japan Airlines	AI for customer service chatbots and personalized travel experiences	Jamshed, Quereshi et al. (2024), Wongyai et al. (2024), Silini (2023)	
	12	Air New Zealand	AI-driven chatbots and robotics for passenger service	Koçak (2023), Ngo and Tsui (2023)	
	13	Lufthansa	AI for customer service automation and operational efficiency. Fuel emission control	Geske et al. (2024), Krishna et al. (2024)	
	14	Qantas Airways	AI for customer service and personalized travel experiences. Metaverse in airline marketing	Tsiakalos (2024), Yilmaz and Atalik (2023)	
	Travel agency and tour operation (private organizations)	1	Expedia Group	Uses AI for personalized travel recommendations and customer service	Dey and Shukla (2020)
		2	Booking.com	Implements AI for dynamic pricing, customer service automation, and personalized travel recommendations	Mellinas et al. (2015)
		3	TripAdvisor	Uses AI for personalized travel recommendations and user-generated content management	Liu, Lin et al. (2024)
4		Airbnb	AI for dynamic pricing, customer preferences, and service automation	Prentice and Pawlicz (2024)	
5		Kayak	Personalized travel search and recommendations	Wolfe and Hiniker (2024)	
6		Priceline	AI for dynamic pricing and customer service automation	Vinod (2024)	
7		TUI Group	Travel recommendations and service automation	Ampountolas et al. (2024)	
8		Ctrip (Trip.com Group)	AI for customer service automation and personalized travel experiences	Guan and Jiang (2024)	
9		Expedia	AI for booking optimizations and personalized recommendations	Compiani et al. (2024), Wu et al. (2024)	

Travel agency and tour operation (private organizations) (cont.)	10	MakeMyTrip	Dynamic pricing and personalized travel suggestions	Upadhyay et al. (2024), Chahal and Devi (2024)
	11	Orbitz	AI for customer service and dynamic pricing strategies	Florido-Benítez (2024)
	12	Traveloka	AI for personalized travel recommendations and dynamic pricing	Octavia et al. (2024)
Destination management organizations (public sector undertakings)	1	Japan	Robot hotels, robotic room service, service bots, language translation devices, autonomous vehicles; AI-powered travel app	Zhou et al. (2024), Erbay (2024), Said et al. (2024)
	2	Singapore	Robot concierge and butlers; bartenders; airport services; autonomous retail assistants; cleaning and disinfection robots; event security with AI	Tan (2023), Jaipurian et al. (2024), Leong et al. (2024)
	3	Dubai	Robotic waiters and chefs; robot tour guides; smart hotel rooms: smart airport and automated services: I-powered event and tourism platforms; robot police; smart surveillance systems; AI for crowd management; robotics and AI in cultural attractions; smart waste management	Vij and Rizwan (2022), Khan et al. (2017), Yaghmour (2024)
	4	Las Vegas, USA	Robotic bartenders; concierge robots; in-room voice assistants; facial recognition for security at casinos; autonomous drone shows; self-driving shuttles; smart energy management systems	Clough and Wu (2024)
	5	Seoul, South Korea	Robotic baristas, robot guides in airports, AI-powered biometric systems, smart traffic management, unmanned convenience stores	Yoo et al. (2024), Lee et al. (2024)
	6	New York, USA	Service robots, automated ordering systems, robotic kitchens, AI-optimized traffic and transit systems, AI-powered tour guides	Mejia et al. (2024), Said et al. (2024), Jevinger et al. (2024), Whig et al. (2024)
	7	Shanghai, China	AI concierge and service robots, robot waitstaff and kitchen automation, autonomous vehicles testing, AI-powered smart retail stores, AI-driven passenger services.	Xu et al. (2024), Jamshed, Shah et al. (2024), Ma et al. (2024)
	8	Vienna, Austria	Service robots, AI-driven concierge services, smart hotel management systems, automated ordering systems and AI menus, augmented reality (AR) and AI at museums, AI in smart transportation systems smart grid and energy management	Felt and Sepehr (2024), Deputat et al. (2024), Bolté et al. (2024)

Source: authors.

sector sustainability, efficiency and safety (Jose et al., 2023). Travelers can anticipate more eco-friendly, dependable and comfortable transportation, which will enhance their enjoyment of and attention to the environment during their trip (Tussyadiah, 2020).

10. CONCLUSION AND SCOPE FOR FUTURE RESEARCH

The prospects of RAISA are still in their infancy stage in many developing countries due to reasons like lack of awareness on usage, high initial investment, privacy and security concerns (Chiwariidzo & Chiwaridzo, 2024; Saydam et al., 2022). Destinations and companies who have explored the endless possibilities like superior quality services, higher levels of personalization and ease in transactions have adopted a cautious and cooperative approach in integrating RAISA technologies into their physical infrastructure (Tussyadiah, 2020). A new era in travel is evolving, one in which automation and innovation come together to completely transform travel patterns and behavior. The present study focuses on four key aspects of RAISA applications, namely, the advantages, potential challenges, implications and future prospects of integrating these technologies into the destination ecosystem. Further research can be undertaken on the ethical implications and social impacts of RAISA, human-robot interaction, social and privacy concerns, and the impact of technology on creating a sustainable future. The influence of robotics and artificial intelligence technologies on influencing tourist behavior and the role of RAISA in building destination resilience and effective crisis management strategies are another research paradigm that needs to be widely explored.

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FACTORS INFLUENCING SUPPORT FOR CULTURAL TOURISM DEVELOPMENT COMMUNITY ATTACHMENT, SOCIAL-PSYCHOLOGICAL AND CULTURAL ATTITUDES

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ABSTRACT

The local community has different attitudes towards the economic, environmental and socio-cultural impacts of tourism. However, studies examining the relationships between attitudes towards tourism development and social psychology, cultural attitudes and community attachment, are limited. In this context, the aim is to investigate the impact of social-psychological and cultural attitudes as well as community commitment to support for cultural tourism development. A quantitative research method has been applied and data were obtained from participants, determined by convenience sampling, with a questionnaire technique. The surveys were conducted among the local residents of Cizre district in Şırnak province, located in the south-east of Türkiye. Descriptive statistics, factor, correlation and regression analyses were used to explain the conceptual model. The results of the research show that community commitment, cultural attitude and the social-psychological attitudes of local people positively affect the development of cultural tourism. In the light of the research results, various recommendations are presented.

KEYWORDS

social psychology, cultural attitudes, community attachment, support for cultural tourism

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1. INTRODUCTION

Due to the importance of tourism, support for tourism development is an issue that needs to be emphasized. Studies on this (Adongo et al., 2017; Bhat & Mishra, 2021; Blešić et al., 2022; Buzlukçu & Avcikurt, 2021; Çalışkan & Saltık, 2018; Campón-Cerro et al., 2017; Eslami et al., 2019; Lee, 2013; Li et al., 2021; Rasoolimanesh, Roldán et al., 2017; Sher et al., 2015) are frequently found in the literature. However, it is still a fact that there may be different factors affecting it. Tourism development has numerous economic, socio-cultural, social-psychological and environmental consequences for a destination and its residents. As local communities are vital stakeholders in the tourism sector, it is difficult to achieve tourism development without their cooperation (Blešić et al., 2022, p. 1; Campón-Cerro et al., 2017, p. 1). In addition, since the attitude of local people towards a phenomenon is an indicator of future behavior related to it (Hadinejad et al., 2019), research on residents' attitudes towards tourism and tourism development (McCool & Martin, 1994; Riden, 1995; Williams et al., 1995) has increased in recent years.

Since having different cultural backgrounds has an impact on the interaction between tourists and local people, it can also affect their support for tourism development (Stringer & Pearce, 1984). When the literature on tourism development and cultural attitude is reviewed, it is seen that there are works on the effect of local participation in cultural activities to support tourism development (Blešić et al., 2022), the effect of tourism development on cultural identity (Daly et al., 2021; McIntosh et al., 2002) and their attitude towards tourists and tourism. Another variable that is also related to support for tourism development is community attachment. As attachment to the community they live in increases, attitudes towards embracing the place where they live and support for tourism development increase (Adongo et al., 2017).

Therefore, the positive and negative effects of tourism affect the relationship between community attachment and support for tourism development (Çalışkan & Saltık, 2018; Eslami et al., 2019; Lee, 2013). In this study, social-psychological attitudes are considered as a variable that may affect such support. Attitudes towards others are one of the most fundamental subjects in social psychology (Allport, 1954). Ultimately, a good attitude towards others can contribute to a positive view of the tourism sector that brings together people from different cultures and beliefs. On the other hand, the attitudes and behaviors of tourists can also affect the attitudes of local people towards tourists (Armenski et al., 2011).

In the research, environmental attitudes (Gannon et al., 2020), economic gain (Gannon, 2020), place

image (Stylidis et al., 2014), positive and negative effects of tourism (Yuan et al., 2019), community attachment (Gannon et al., 2020), cultural identity (Daly et al., 2021; McIntosh et al., 2002), local demographic characteristics (Bhat & Mishra, 2021), cultural participation (Li et al., 2021) and place attachment (Blešić et al., 2022) are seen to be effective in local attitudes towards support for tourism. However, studies investigating the effects of cultural attitudes, social-psychological attitudes and community attachment on the dimension of tourism support are limited. In other words, previous works have not sufficiently addressed how social commitment, cultural attitudes and social-psychological attitudes influence the development of cultural tourism. At this point, the first contribution of this work is at the literature level. Here, the impact of social psychology, cultural attitudes and community attachment on support for the development of tourism in Cizre/Şırnak, which is still at the beginning of the road in terms of the development of the tourism sector, is of interest. On the other hand, the selection of Cizre, a rural destination, adds unique value to the subject. As a matter of fact, this is the second important contribution of the research. Also, especially in research examining "support for tourism development", participants in each destination are asked questions without considering the different types of tourism. However, there are types of tourism that are acceptable and unacceptable for each destination. Furthermore, it cannot be expected that the local population living in each destination will say yes to every type of tourism. Therefore, the generalizing attitude in the literature is not considered correct, and in this study, since cultural tourism is at the forefront in the research area, the variable of support for tourism is considered as one for cultural tourism. Thus, this study seeks to answer the question of how social-psychological attitudes, cultural attitudes and community attachment affect the development of cultural tourism in Cizre/Şırnak.

2. LITERATURE REVIEW

2.1. CULTURAL ATTITUDES AND SUPPORT FOR TOURISM DEVELOPMENT

Culture is defined as "the form of ideas and behaviors acquired from human activities within a society or communities" (Bâlc, 2018, p. 258). Attitude is a psychological concept that means a person's positive or negative evaluation of an object, place or subject (Hadinejad et al., 2019, p. 159). Cultural attitudes refer to those of local people towards culture.

In order for the relationship between tourism and culture to be sustainable, tourism should be developed in harmony with community benefits. Tourism should protect and preserve traditional cultures by being sensitive and respectful of cultural practices (McIntosh et al., 2002, p. 39). Through the development and dissemination of traditional culture in tourism planning, residents' awareness of cultural heritage conservation and inter-community exchange increases (Yuan et al., 2019, p. 3). The tourism sector culturally enriches both local people and tourists. It introduces the host to various cultures and provides the emergence of tolerance and understanding in society. It also brings the local culture to the tourists and increases the understanding of what it means to live in a community, leading to identification, pride, unity and support between tourists and locals (Blešić et al., 2021, p. 3).

Local attitudes towards tourism development can be influenced by the culture of their community and cultural differences determine attitudes towards tourism development. One way to understand such local attitudes is to look at the impact of tourism on local people (Bhat & Mishra, 2021, p. 2). In addition, the attitude of a community towards its culture can also affect the perception of tourism. People who embrace their own culture and have a motive to protect it may not accept the negative impact of tourism. As a matter of fact, Rasoolimanesh, Jaafar et al. (2017) found in their study that cultural attitudes effect negative tourism perception, but not positive tourism perception. Again, Gannon et al. (2020) did not find an effect of cultural attitude to support for tourism and on the perception of local people.

There are several studies examining the support of tourism development on local people's cultural attitudes (Bhat & Mishra, 2021; Kamata, 2022; Li et al., 2021). Local attitudes are seen as a psychological concept that includes positive and negative thoughts arising from tourism interaction (Hadinejad et al., 2019). The positive or negative impact of tourism development on the lives of local residents affects their attitude towards tourism (Daly et al., 2021). Therefore, it is more accurate to evaluate their attitude towards tourism development by looking at its impact (Bhat & Mishra, 2021). There are studies indicating that there are significant relationships between the positive and negative impacts of tourism and support for tourism development (Blešić et al., 2022; Ritchie & Inkari, 2006). On the other hand, Teye et al. (2002) concluded that local people have a negative attitude due to the lack of expected results from tourism development. From this point of view:

H₁: Local people's cultural attitude has a positive effect on support for cultural tourism development.

2.2. COMMUNITY ATTACHMENT AND SUPPORT FOR CULTURAL TOURISM DEVELOPMENT

Community attachment is a concept that is often not clearly defined, but is expressed as being attached to a community or being attached to a place. The structure of community attachment takes into account the connections between individuals and societies and is used as a measure of emotion about the society in which a person lives (Trentelman, 2009, p. 201). The concept of community attachment, indicates a strong positive feeling towards the community, a sense of rootedness and a sense of belonging (Eslami et al., 2019, p. 1063). It is related to this belonging and the emotional bond people feel towards their community (Rasoolimanesh, Roldán et al., 2017). There are four forms of effective community attachment. These are having a sense of belonging to a community, having trust that can have an impact on the community, having trust that each member of the community can meet and satisfy their personal needs, and having expressions of reflection of emotions towards the community and between members within it (Wijaya et al., 2018, p. 1).

In a destination where community attachment is active, attachment can influence how residents perceive the potential impacts of a growing tourism industry and can be important determinants of successful coexistence between them (Williams et al., 1995, p. 1). Support for tourism development as a result of community attachment can manifest itself in voting, donations and a willingness to attend meetings in a tourism community. The degree to which residents are attached to a community is thought to be related to the extent to which they will support tourism development within it (Adongo et al., 2017, p. 93).

The relationship between tourism impacts, benefits and subsequent perceptions of support for tourism development is explained by social exchange theory (Campón-Cerro et al., 2017, p. 2). This theory is based on the idea that there is an exchange of physical or intangible activities based on human interaction along with the benefits and costs arising from this interaction (Adongo et al., 2017, p. 89). According to this theory, if local people perceive that they can benefit from the exchange without having to bear heavy costs, they will allow exchange with visitors and support the development of community-based tourism. If they perceive that this development will have more costs than benefits, they are likely to oppose it (Lee, 2013, p. 38). Community-based tourism development is crucial for the community itself to have a deeper knowledge of its local situation and to be able to find and implement the best solutions to problems (Sher et al., 2015, p. 134). Where local people perceive the impacts and benefits of tourism positively, they tend

to be more supportive of tourism development (Adongo et al., 2017, p. 86). This development can provide an understanding of cultural identity in the community, preserve and revitalize traditional arts, culture and crafts, and encourage local people to take pride in their culture. However, tourism can also irreversibly change the value system of families and family relationships, leading to overcrowding and an increase in illegal activities (Rasoolimanesh, Roldán et al., 2017).

There are various studies examining support for tourism development and community attachment (Buzlukçu & Avcıkurt, 2021; Çalışkan & Saltık, 2018; Gursoy & Rutherford, 2004; Lee, 2013; Sher et al., 2015). Social attachment is the state of belonging to a community (Rasoolimanesh, Roldán et al., 2017). There are studies indicating that residents with high community attachment support tourism development (Adongo et al., 2017; Campón-Cerro et al., 2017), as well as studies indicating that community attachment is ineffective in support for tourism development (Choi & Murray, 2010; Gursoy et al., 2002; McCool & Martin, 1994). In this manner:

H₂: Local attachment to a community has a positive impact on support for cultural tourism development.

2.3. SOCIAL PSYCHOLOGY AND SUPPORT FOR CULTURAL TOURISM DEVELOPMENT

From the beginning of the twentieth century to the second decade of the twenty-first, social psychology is as relevant today as it was more than a hundred years ago (Chadee, 2022, p. 3). Social psychology has witnessed the development of numerous theories that aim to conceptualize areas of reality that are outside the scope of sociology or general psychology (Chadee, 2022, p. 3) and it is emphasized in the literature that attitudes form the basis of social psychology (Allport, 1954). Attitudes are expressed in the literature as prejudices and stereotypes. Although it is difficult to change prejudices, it is seen in many studies that tourism changes attitudes and/or reduces prejudices due to increased interpersonal interaction (Çelik, 2019; Günlü et al., 2015; Milman et al., 1990; Pizam et al., 1991). In this work, the concept of social-psychological attitudes has been addressed by taking this effect of tourism into consideration. Social-psychological attitudes, which were previously used as a variable in the studies of Çelik and Rasoolimanesh (2023), were introduced to express such attitudes. It is thought that such attitudes towards those from different cultures, values and beliefs may affect their perspective on sectors that feeds on differences such as tourism.

There are different studies examining the social-psychological attitude of local people towards supporting tourism development (Özel & Kozak, 2017; Kattiyapornpong et al., 2018). It is stated that the

perception of tourism including social psychology is effective in support for tourism (Çelik & Rasoolimanesh, 2023). In this manner:

H₃: Local social-psychological attitudes have a positive effect on support for cultural tourism development.

The conceptual model of the research (Figure 1) was created within the framework of the explanations and hypotheses made in the sub-title to this work. Accordingly, the model demonstrates the effect of social-psychological attitudes, cultural attitudes and community attachment on supporting the development of cultural tourism.

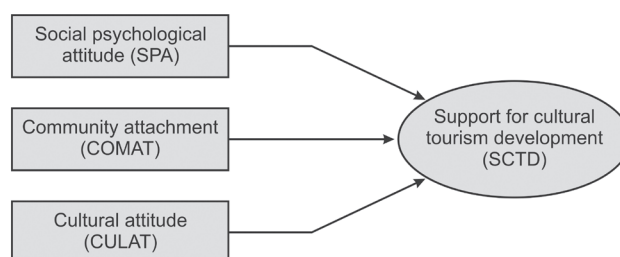


Figure 1. Conceptual model of the research

Source: authors

3. METHOD

3.1. STUDY AREA

Cizre is located in the Tigris section of the Southeastern Anatolia Region. It borders İdil in the west, Silopi in the east, Güçlükonak in the northwest, Şırnak province in the north and Syria in the south (Figure 1). Cizre is located southwest of Mount Cudi and southeast of Mount Gabar. Cizre, which was established on the edge of the Tigris valley, is 380 meters above sea level, within the borders of Mesopotamia between the Euphrates and Tigris rivers, and is located on important trade routes that have survived until today (Karademir, 2019). Cizre's history dates back to the 4th millennium BC. It boasts important historical and cultural assets such as the Tomb of Noah, the Red Madrasa, the Grand Mosque, the Tomb of Mem û Zin, the Abdaliye Madrasa, Cizre Castle, Bırca Belek, the Dengbej House, the Garden of the Mirs (Raze Mira), and the Old Bazaar (Rotam Şırnak, n.d.).

According to 2024 data from the Ministry of Culture and Tourism, the number of tourists staying in ministry-certified tourism facilities in Cizre is 80,523, the average length of stay is 1.46, and the occupancy rate is 55 percent (Ministry of Culture and Tourism, 2025).

The tourism sector has not yet developed in Cizre-Şırnak due to the conflicts and security problems experienced for many years within the country and

on the Iraq-Syria borders, a lack of awareness about tourism, and the lack of promotion and marketing (Mızrak et al., 2021).

3.2. MEASUREMENT

Quantitative research was used in this study with data being collected through questionnaires including demographic questions, cultural attitudes, community attachment, social-psychological attitudes and questions about support for cultural tourism development. The cultural attitude variable, which we addressed, consisted of a single dimension and four statements, the commitment to the community variable also consisted of a single dimension and four statements and is taken from Gannon (2020). The variable on support for cultural tourism development consists of one dimension and five statements and was adapted from Euebio (2018). Social-psychological attitude questions consist of five statements in one dimension and are taken from Çelik and Rasoolimanesh (2023). The answer options for all variables are of a 5-point Likert-type (from 1 – *completely disagree* to 5 – *completely agree*). The scale questions received ethical approval with the decision of the Ethics Committee of T.C. Şırnak University dated 26/02/2021 and numbered 2021/5.

3.3. DATA COLLECTION AND SAMPLING

Data were collected from those over the age of 18 living in Cizre and convenience sampling was preferred. Before starting the survey, 15 face-to-face questionnaires were conducted and the comprehensibility of the questions was measured (surface validity). After the necessary arrangements were made, data were collected from 384 participants between 26.02.2021 and 30.07.2021. According to Cohen's (1988) *d* formula, this number of participants is sufficient for generalization. According to the recommendations of Hair et al. (2019) and Tabachnick and Fidell (2006), this number of participants was sufficient for model testing.

The data were collected from those who voluntarily participated in the convenience sampling research. The research field was in Cizre, which has a total population of 151,699 (Türkiye İstatistik Kurumu [TÜİK], 2021), 76,733 men and 74,966 women. The demographic profile was 37.2% ($n = 143$) female and 62.8% ($n = 241$) male; 37.2% were single and 62.8% were married; in terms of education 14% had completed elementary school only, 3.9% were literate 48.2% completed high school while 32.5% were university educated; 12% were in the 14–23 age group, 40.4% 24–33, 20.8% 34–43, 14.8% 44–53 age group, and 12% aged 54 and over.

This study has similar sampling characteristics with Çelik et al. (2023), however, the dependent and independent variables, purpose, method, hypotheses and analyzes are completely different.

4. DATA ANALYSIS AND FINDINGS

After the data were collected, data cleaning procedures were carried out. After it was understood that there were no outliers and missing data, skewness and kurtosis values were checked for the normality values of variables, and since the skewness and kurtosis values were between -2.11 and $+3.38$, it was accepted that the variables were normally distributed. Then, factor analysis was undertaken for construct validity, Cronbach's alpha test for reliability, and correlation and regression analyses were conducted to test the hypotheses. The SPSS software package was used for the analyses.

As a result of the factor analysis conducted for the cultural attitude variable, it was seen that (Table 1) four questions related to the variable were gathered under a single dimension and this dimension explained the variable at a rate of 90.4%. The naming was made by considering the content of the item expressions and identified as cultural attitude. It was determined that the variable had a high reliability (Cronbach's alpha: 0.96).

Table 1. Factor and reliability analysis results for cultural attitude

Factor	Items	Communalities	Factor loading	Eigenvalue	Total variance explained (%)	Mean (\bar{x})	Cronbach's alpha (α)
Cultural attitude	CULAT	–	–	3.618	90.460	4.360	0.960
	CULAT3	0.920	0.963	–	–	–	–
	CULAT2	0.910	0.959	–	–	–	–
	CULAT4	0.880	0.942	–	–	–	–
	CULAT1	0.880	0.940	–	–	–	–

Note: Principal component analysis: Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy: 0.86; Bartlett's test of sphericity: 1939.488, $df: 6$, $p < 0.001$.

Source: authors.

As a result of the factor analysis conducted for the social-psychological attitude (SPA) variable (Table 2), the SPA2 statement was removed from the factor analysis since it constituted a factor on its own, and finally, a social-psychological variable with four statements emerged with factor loadings of 0.847, 0.8526, 0.911 and 0.955. The explained variance of the single-factor SPA variable was 79.84% and the factor was found to be highly reliable (Cronbach's alpha: 0.91).

The community attachment variable emerged under a single factor structure with four statements with an explanation rate of 87.54% (Table 3). The factor loadings of each statement were determined as 0.902, 0.925, 0.954 and 0.961 and it was found to have high reliability (Cronbach's alpha: 0.95).

The variable of support for cultural tourism emerged under a single factor with five statements and an explanation rate of 88.18% (Table 4). The factor loadings

Table 2. Factor and reliability analysis results for social psychology

Factor	Items	Communalities	Factor loading	Eigenvalue	Total variance explained (%)	Mean (\bar{x})	Cronbach's alpha (α)
Social-psychological attitude	SPA	–	–	3.194	79.840	4.160	0.910
	SPA4	0.913	0.955	–	–	–	–
	SPA5	0.830	0.911	–	–	–	–
	SPA3	0.733	0.856	–	–	–	–
	SPA1	0.718	0.847	–	–	–	–

Note: Principal component analysis: Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy: 0.80; Bartlett's test of sphericity: 1205.362, *df*: 6, $p \leq 0.001$.

Source: authors.

Table 3. Factor and reliability analysis results for community attachment

Factor	Items	Communalities	Factor loading	Eigenvalues	Total variance explained (%)	Mean (\bar{x})	Cronbach's alpha (α)
Community attachment	COMAT	–	–	3.502	87.540	4.280	0.950
	COMAT3	0.923	0.961	–	–	–	–
	COMAT2	0.911	0.954	–	–	–	–
	COMAT1	0.855	0.925	–	–	–	–
	COMAT4	0.813	0.902	–	–	–	–

Note: Principal component analysis: Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy: 0.85; Bartlett's test of sphericity: 1682.057, *df*: 6, $p \leq 0.001$.

Source: authors.

Table 4. Factor and reliability analysis results for support for cultural tourism development

Factor	Items	Communalities	Factor loading	Eigenvalues	Total variance explained (%)	Mean (\bar{x})	Cronbach's alpha (α)
Support for cultural tourism development	SCTD	–	–	4.409	88.188	4.310	0.960
	SCTD1	0.880	0.963	–	–	–	–
	SCTD2	0.927	0.944	–	–	–	–
	SCTD3	0.824	0.942	–	–	–	–
	SCTD4	0.888	0.938	–	–	–	–
	SCTD5	0.892	0.908	–	–	–	–

Note: Principal component analysis: Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy: 0.84; Bartlett's test of sphericity: 2634.408, *df*: 6, $p \leq 0.001$.

Source: authors.

of the statements ranged between 0.908 and 0.963 and the variable was found to be highly reliable (Cronbach's alpha: 0.96).

In absolute terms, a Pearson's correlation coefficient between 0.70 and 1.00 indicates a high level of relationship; between 0.70 and 0.30 indicates a medium level; and between 0.30 and 0.00 indicates a low level (Büyüköztürk, 2010). As a result of the correlation analysis (Table 5), it was found that there were high-level relationships between the cultural attitude (CULAT) variable and SPA (0.87), community attachment (COMAT, 0.79) and support for cultural tourism development (SCTD, 0.88), between SPA and CULAT (0.87), COMAT (0.79) and SCTD (0.81), and between COMAT and CULAT (0.87), SCTD (0.90) and SPA (0.79).

Table 5. Relationships between variables

Variables	CULAT	SPA	COMAT	SCTD
Cultural attitude (CULAT)	1	-	-	-
Social-psychological attitude (SPA)	0.871**	1	-	-
Community attachment (COMAT)	0.875**	0.797**	1	-
Support for cultural tourism development (SCTD)	0.886**	0.813**	0.906**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed).

The regression analysis model to determine the effect of community attachment, cultural attitude and social-psychological attitude variables on the dimension of support for cultural tourism development was found to be significant ($p \leq 0.05$, $F = 780.580$) (Table 6). Community attachment ($\beta = 0.54$ and $t = 13.59$), cultural attitude ($\beta = 0.33$ and $t = 6.78$) and social-psychological attitude ($\beta = 0.08$ and $t = 2.24$) have a significant positive

effect on support for cultural tourism development. It is seen that the three variables explain 85% of the dimension of support for cultural tourism development.

5. CONCLUSIONS AND DISCUSSION

In this study, the impact of SPA, CULAT and COMAT on SCTD was investigated as in places where tourism is not yet developed, the attitudes of local people play an important role (Bhat & Mishra, 2021). This study was conducted in the Cizre district of Şırnak, a place where tourism has not yet developed but has significant potential. Conducting this study there within the framework of cultural and religious tours, where tourists have started to come in recent years, is important for the development of tourism in the future. As a matter of fact, the results show that the people of the region have a positive attitude towards the development of cultural tourism (\bar{x} : 4.31). At this point, it is also important to determine the factors affecting this variable.

When the relationship between COMAT and SCTD is analyzed, it is found that community attachment has a high impact on the development of cultural tourism. Studies in the literature also support the idea that those who are attached to the community have a positive tendency towards tourism development (Buzlukçu & Avcıkurt, 2021; Gursoy & Rutherford, 2004; Lee, 2013; Sher et al., 2015). Adongo et al. (2017) stated in their study that local people who feel a stronger attachment to their communities have a positive tendency towards tourism and tourism development. Campón-Cerro et al. (2017), who stated that community attachment has a positive effect on support for tourism development, stated likewise. Similarly, Viana-Lora et al. (2024) found that COMAT has a positive effect on support for tourism development and this effect does not differ according to educational level.

Table 6. Regression analysis of the effects of community commitment, cultural attitude and social-psychological attitude on support for cultural tourism development

Independent variables	Unstandardized β	Unstandardized standard error	Standardized coefficients β	t	Sig.	Tolerance	Variance inflation factor
Constant	0.253	0.080	-	2.890	0.004	-	-
COMAT	0.530	0.030	0.540	13.599	0.000	0.220	4.360
CULAT	0.320	0.040	0.330	6.783	0.000	0.150	6.560
SPA	0.080	0.030	0.080	2.245	0.025	0.230	4.220

Note: COMAT – community attachment, CULAT – cultural attitude, SPA – social-psychological attitude; R (multiple correlation coefficient) = 0.86; adjusted $R^2 = 0.85$; $F = 780.580$; $p < 0.05$; Durbin-Watson: 1.805. Dependent variable: support for cultural tourism development (SCTD).

Source: authors.

When we look at the relationship between CULAT and SCTD, it is determined that cultural attitude has a high positive effect on SCTD. Contrary to the research result, Gannon et al. (2020) did not find a significant effect of cultural attitude on support for tourism development in their study. This may be due to the fact that they conducted research in places with a high level of cultural preservation and therefore did not see a cultural threat. Rasoolimanesh, Jaafar et al. (2017) found that cultural attitude has an effect on negative tourism perception.

It has been determined that the SPA variable has a low positive effect on SCTD. When the literature is examined, it is seen that there are studies that argue that the social-psychological attitude of the public has a positive effect on support for tourism development (Kattiyapornpong et al., 2018; Özel & Kozak, 2017). Likewise, Çelik and Rasoolimanesh (2023) revealed in their study that the tourism perception variable, included in social-psychological attitude, is effective for support for tourism.

The results obtained in Cizre, a rural destination, are seen to be similar to the results of research conducted in different destinations around the world, such as Lewes (England) and the Kashmir Valley (India). For example, Ritchie and Inkari's (2006) study in the town of Lewes indicates that responses to explanations regarding the effects of cultural tourism were generally positive and that the economic and social benefits of developing cultural tourism were largely accepted. On the other hand, Basheer et al.'s (2024) study in the Kashmir Valley indicates that in destinations with high community cohesion, the local population's attitude towards tourism development is positive.

This study contributes to the literature in several ways. Firstly, the research was conducted in a place where tourism has not yet developed and if it develops, what will be the attitude of the people? In this way, the attitudes of the public were revealed before the development of the tourism sector. The second important contribution is the use of social-psychological attitudes to improve previous models.

The work also provides some important data for decision-makers and tourism sector stakeholders. First of all, it is seen that the public has significant support for SCTD. The second important point is that the cultural attitudes of the participants are at a high level (\bar{x} : 4.36). This finding emphasizes that decision-makers should pay attention to the sensitivities of people towards cultural values in projects related to the tourism sector in the steps they will take in the district. The third important point is the social-psychological attitude of the participants towards tourism. The participants revealed that they agreed with the social-psychological effects of tourism within the framework of respect for differences (\bar{x} : 4.16). In this context, this finding shows

that the relationship between tourism and social psychological impacts can be handled by decision makers and should be included in policies.

Decision-makers and sector stakeholders should work to raise the awareness of local people about tourism. Workshops on tourism involving academics, industry representatives and political actors can be organised to raise awareness among them. The perception that the juxtaposition of different cultures will result in cultural conflict should be destroyed and the perception that it will result in cultural fusion should be gained. The culture of tolerance, which is an intangible cultural heritage that has prevailed in this area for years, should be protected. International festivals can be organised to both preserve this culture and raise tourism awareness among the public, bringing together local people and tourists. Finally, local people and decision-makers should take precautions against the negative effects of tourism. Tourism policies should be developed that include measures to regulate the positive effects of tourism and minimise its negative effects, and these policies should be shared with all stakeholders. At this point, sector representatives should work in partnership with local people to develop tourism. A protectionist approach should be developed for the destination by considering both the positive and negative aspects of the social, environmental and economic impacts of tourism. Information and awareness-raising activities should be carried out for incoming tourists about the social, cultural and socio-psychological structure of those living in the region.

As in every work, this one also has some limitations. First of all, the fact that only a questionnaire was used can be considered a shortcoming. Mixed methods could be used in future studies. In addition, other variables in the literature that affect support for tourism development (emotional solidarity, positive-negative perceptions, etc.) can be added to the model. In addition, researchers can make temporal comparisons after tourism has developed by investigating many different topics in Cizre where tourism has not yet developed.

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BARRIERS TO WOMEN'S ECONOMIC EMPOWERMENT IN SUSTAINABLE TOURISM EVIDENCE FROM EASTERN INDONESIA

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ABSTRACT

Tourism is widely recognized as a sector with the potential to promote inclusive and sustainable development, yet women's participation often remains limited by structural and cultural barriers. The purpose of this article is to analyze the barriers faced by women entrepreneurs in sustainable tourism and to consider how addressing these challenges can advance women's economic empowerment in the eastern part of Indonesia. The specific research aim is to identify and prioritize the most critical constraints through the integration of multiple stakeholder perspectives. The study applied a hybrid methodological design combining the Delphi technique, the Q-sort method and thematic analysis. Data were collected from experts, policymakers, community leaders and women entrepreneurs between January and June 2025. The findings reveal that women face interlocking barriers: restricted access to finance and credit, socio-cultural norms limiting mobility and leadership, weak institutional frameworks, and insufficient training and digital literacy. These constraints are compounded by poor infrastructure and limited market access in remote areas. The study contributes to scholarship by applying a multi-method approach and situating women's empowerment within the underexplored context of Eastern Indonesia. Policy recommendations include gender-sensitive financial inclusion, accessible capacity-building initiatives, and strengthened women's cooperatives to foster agency and leadership in tourism.

KEYWORDS

Delphi method, Q-sort, thematic analysis, sustainable tourism, women's empowerment

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1. INTRODUCTION

Tourism has emerged as a major driver of economic development, social transformation and cultural exchange across the globe. In recent years, sustainable tourism has gained increasing attention for its ability to balance economic growth with environmental preservation and social inclusion (Ahmadi Zahrani et al., 2025). Sustainable tourism does not only preserve natural and cultural resources but also creates opportunities for equitable participation of marginalized groups, particularly women, in local economies (Figueroa-Domecq et al., 2024). Women's active involvement in tourism-related businesses contributes to household well-being, cultural heritage preservation and broader community resilience, aligning with the Sustainable Development Goals (SDGs) on gender equality and decent work.

In Indonesia, tourism is widely recognized as a strategic sector (Yuli, 2024), yet women entrepreneurs face persistent structural and cultural barriers that limit their ability to benefit fully from tourism development. While women in regions such as Bali and Java have received considerable scholarly and policy attention, the situation in the eastern part of Indonesia remains underexplored. This region, encompassing provinces such as Maluku, Papua, North Maluku, Southeast Sulawesi and East Nusa Tenggara, is marked by geographic isolation, limited infrastructure and enduring poverty rates that are higher than the national average (Pandina & Barika, 2023). Deeply rooted gender norms continue to confine women to caregiving and household roles, restricting their leadership opportunities and economic independence (Bayo, 2021). At the same time, the eastern region holds immense potential for sustainable tourism, with its distinctive landscapes, cultural richness and biodiversity. Ensuring that women can participate equally in this development process is therefore both a social justice imperative and an economic necessity.

Despite this potential, academic literature on women in sustainable tourism has been disproportionately focused on more established destinations. Research in the Indonesian context has tended to concentrate on Bali, Lombok or urban centers, where women's access to capital, education and markets is relatively more advanced (Candra et al., 2023; El Badriati et al., 2022). In contrast, the challenges and opportunities facing women in the eastern provinces have been insufficiently documented, leaving policymakers and practitioners with limited evidence to guide interventions. Furthermore, many previous studies have employed single-method qualitative approaches, which often fail to capture the complexity of intersecting barriers related to finance, social norms and institutional support (Trisanti et al., 2022). This

imbalance highlights a critical research gap that this study seeks to address.

The aim of this article is to present the barriers and challenges faced by women who run tourism enterprises in the eastern part of Indonesia and to explore how these barriers can be addressed to strengthen women's economic empowerment in sustainable tourism. The specific research aim is to identify and prioritize the most pressing barriers to women's empowerment by integrating multiple perspectives from experts, entrepreneurs, community leaders and policymakers. In pursuing this objective, the study asks three guiding questions: What are the most critical barriers experienced by women in tourism businesses across the eastern provinces of Indonesia? How do different stakeholders perceive and prioritize these barriers? And to what extent can participatory, multi-method approaches generate practical and context-sensitive recommendations for advancing women's empowerment in sustainable tourism?

By framing Eastern Indonesia as the locus of inquiry, this study contributes to correcting a regional imbalance in the literature while advancing a more comprehensive understanding of gender and tourism in developing contexts. It combines expert consensus, stakeholder experiences and thematic insights to provide both analytical depth and practical recommendations. The findings are expected to inform tourism policy and gender empowerment initiatives not only in Eastern Indonesia but also in comparable peripheral regions across the Global South where women's economic participation in tourism remains constrained.

To establish a robust theoretical and contextual foundation, the study also employed a narrative literature review. This approach enabled a descriptive and interpretive synthesis of previous studies, allowing the integration of diverse and interdisciplinary sources (Juntunen & Lehenkari, 2021; Popik-Mazur, 2025).

2. LITERATURE REVIEW

2.1. CONCEPTUAL FOUNDATIONS OF SUSTAINABLE TOURISM

Sustainable tourism has been widely discussed as both a theoretical framework and a policy agenda that seeks to reconcile tourism development with long-term ecological, social and economic sustainability. The World Tourism Organization defines sustainable tourism as "tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities" (Global Sustainable Tourism Council, n.d.). This definition

underscores that tourism cannot be viewed solely as an economic activity but must also be embedded within broader sustainability concerns that account for equity, resilience and intergenerational responsibility. Earlier contributions by Bramwell and Lane (2011) similarly emphasized that sustainable tourism requires a holistic approach, one that avoids prioritizing economic outcomes at the expense of environmental conservation or social justice.

Central to the concept of sustainable tourism is the principle of balance across three interrelated dimensions: economic viability, socio-cultural integrity and environmental protection (Nguyen, 2023). Economically, tourism is expected to provide stable livelihoods, generate income while contributing to local and national development. Socially and culturally, it must respect and preserve traditions, strengthen community cohesion and promote inclusivity. Environmentally, it should minimize negative impacts on ecosystems and biodiversity while fostering conservation initiatives. The interdependence of these dimensions means that neglecting one will undermine the others, leading to development pathways that may be profitable in the short term but unsustainable in the long run.

Within this framework, gender equality has been increasingly recognized as a critical dimension of sustainability. Tourism provides unique opportunities for women to participate in entrepreneurship, leadership and cultural preservation, yet structural inequalities frequently constrain their potential. Figueroa-Domecq et al. (2024) argue that women's empowerment is not only an ethical imperative but also a practical requirement for ensuring the sustainability of tourism. Empowered women contribute to more resilient communities, more equitable decision-making processes, and more inclusive economic outcomes. Conversely, the exclusion of women reinforces cycles of poverty, inequality and social disempowerment that undermine the goals of sustainable development.

The integration of gender considerations into sustainable tourism aligns directly with the United Nations Sustainable Development Goals: SDG 5 emphasizes the need to eliminate barriers that prevent women from achieving full participation in economic and social life, while SDG 8 promotes inclusive and sustainable economic growth and decent work for all (United Nations General Assembly, 2015). Tourism, as one of the fastest-growing global industries, is uniquely positioned to advance both goals simultaneously by creating employment, supporting entrepreneurship, and enhancing women's economic participation (World Tourism Organization, 2019). As such, sustainable tourism should be conceptualized not only in terms of environmental protection and economic performance but also in relation to gender equity and social inclusion within host communities.

2.2. WOMEN'S EMPOWERMENT IN TOURISM: GLOBAL PERSPECTIVES

Tourism has been described as one of the few global industries with the potential to offer women substantial opportunities for entrepreneurship, employment and leadership (Hussain et al., 2024). Across diverse contexts, women play pivotal roles in managing guesthouses, producing handicrafts, operating food businesses and preserving cultural heritage. These contributions extend beyond economic outcomes, as they often reinforce social cohesion and strengthen community identity (Spagano, 2025). However, despite their active involvement, women in tourism frequently remain marginalized in decision-making processes and disproportionately occupy low-paid or informal roles, reflecting broader structural gender inequalities (Gentry, 2007).

Globally, several recurring barriers have been identified that constrain women's full participation in tourism. One of the most prominent is financial exclusion. Studies across Africa, Asia and Latin America demonstrate that women often struggle to access credit, loans or other forms of investment due to discriminatory lending practices and gendered biases within financial systems (de Andrés et al., 2021). Another common barrier is the persistence of cultural and social norms that limit women's mobility, confine them to household responsibilities, or restrict their roles to low-status occupations within tourism enterprises (Babb, 2012; Kumar, 2023). These cultural expectations not only constrain women's economic opportunities but also reinforce patterns of invisibility in official statistics and policy frameworks.

Regional studies illustrate both shared challenges and context-specific barriers. In Bangladesh, for example, research highlights how women's participation in community-based tourism initiatives is often limited to informal or unpaid roles, despite their significant contribution to cultural and ecological stewardship (Sami, 2024). In Iran, women's involvement in tourism is often curtailed by restrictions on mobility and patriarchal norms that prioritize male ownership of businesses and resources (Seyfi et al., 2025). In China, indigenous women face compounded challenges, as tourism development frequently intersects with issues of ethnic identity, land rights and cultural commodification (Dam et al., 2025). Despite these differences, a common thread is the under-recognition of women's economic and social contributions to tourism development.

The literature also demonstrates that participatory and capacity-building approaches can play a crucial role in addressing these barriers. Interventions that integrate training programs, access to microfinance and cooperative business models have shown positive

outcomes in enabling women to move from peripheral to central roles in tourism development (Scheyvens, 2014). Moreover, participatory methods that include women in decision-making processes have been found to enhance the legitimacy and sustainability of tourism initiatives, ensuring that women's voices shape both policy and practice (Figueroa-Domecq et al., 2024). These global insights reinforce the view that empowering women in tourism is not merely a matter of social justice but also a practical requirement for the sustainability and resilience of tourism systems.

Taken together, global studies illustrate that while women's roles in tourism are significant, their empowerment remains constrained by structural, cultural and institutional barriers. This recognition provides a comparative lens for analyzing the situation in Indonesia, particularly in the eastern provinces where similar challenges of financial exclusion, cultural norms and limited institutional support are prevalent, but where the evidence base remains comparatively sparse.

2.3. WOMEN IN TOURISM IN INDONESIA

Indonesia has positioned tourism as one of its priority sectors for economic diversification, cultural diplomacy and regional development. Women have historically played a significant role in this industry, particularly in small and medium-sized enterprises (SMEs) such as homestays, culinary ventures, handicrafts and cultural performances. Their contribution is critical to sustaining community-based tourism initiatives, enhancing visitor experiences, and ensuring that tourism reflects local cultural identities (El Badriati et al., 2022). Nationally, studies have documented how women's involvement in tourism contributes to household income, supports children's education and enhances family resilience, thereby extending the benefits of tourism beyond individual businesses (Candra et al., 2023).

Despite these contributions, Indonesian women in tourism face persistent constraints related to limited access to credit, unequal participation in decision-making and entrenched gender norms that prioritize their domestic responsibilities (Adnyani, 2023). These barriers are not evenly distributed across the country but are shaped by regional socio-economic contexts. Research has disproportionately concentrated on Bali, Lombok and Java, destinations with relatively developed infrastructure, market access and global visibility (Candra et al., 2023). These areas often provide women with more opportunities for formal sector participation, tourism-related education and exposure to international networks. By contrast, peripheral and rural regions remain understudied,

leaving a significant gap in the understanding of how women navigate tourism entrepreneurship in more disadvantaged contexts.

The eastern part of Indonesia which includes provinces such as Maluku, Papua, North Maluku, Southeast Sulawesi and East Nusa Tenggara offers a contrasting picture. This region is characterized by high poverty rates, geographic isolation and weaker infrastructure compared to the western provinces (Kurniawan & Gunawan, 2025; Pandina & Barika, 2023). For women entrepreneurs in these provinces, barriers extend beyond financial exclusion to encompass socio-cultural constraints that limit their mobility and entrepreneurial autonomy. For instance, patriarchal norms often position women as secondary income earners, making it difficult for them to access credit or leadership roles within community tourism cooperatives (Bayo, 2021; Miranti et al., 2022). Moreover, weak institutional support and limited capacity-building initiatives exacerbate these challenges, leaving women in Eastern Indonesia particularly vulnerable to exclusion from the benefits of tourism development.

At the same time, Eastern Indonesia holds immense potential for sustainable tourism due to its rich biodiversity, cultural heritage and indigenous knowledge systems. From Timor's spice tourism heritage to Papua's eco-cultural tourism, women are integral custodians of cultural traditions and environmental practices that are central to the region's tourism appeal (Manggaprouw et al., 2025; Utama Dewayani, 2024). Yet, these contributions often remain invisible within official tourism planning frameworks. Studies in agriculture and fisheries suggest that women in Eastern Indonesia exhibit resilience and adaptability in the face of structural barriers, but their participation in tourism has not been systematically documented (Husni, 2024). This absence of empirical evidence underscores the urgency of research that not only identifies the barriers but also amplifies women's voices and explores strategies for empowerment in tourism-specific contexts.

By examining women's empowerment in the eastern provinces of Indonesia, this article addresses two important gaps. First, it expands the scope of Indonesian tourism research beyond the dominant western regions to shed light on marginalized geographies. Second, it situates women's empowerment within a broader framework of sustainable tourism, demonstrating how gender equality and inclusivity are essential for unlocking the developmental potential of peripheral regions. In doing so, it contributes to both national debates on tourism and gender and to international discussions on the intersection of sustainability and women's empowerment in the Global South.

3. RESEARCH METHOD

This study employed a hybrid methodological design that integrates the Delphi technique, the Q-sort method, and thematic analysis to identify and prioritize barriers to women's empowerment in sustainable tourism in the eastern part of Indonesia. The study was conducted between January and June 2025, involving experts, policymakers, community leaders and women entrepreneurs across provinces such as Maluku, Papua, North Maluku, Southeast Sulawesi and East Nusa Tenggara. The multi-method approach was selected to ensure a comprehensive understanding of the barriers, while also facilitating stakeholder participation in generating context-sensitive insights.

The Delphi method was first used to solicit expert opinions and reach consensus on the key barriers

facing women in tourism enterprises. This iterative process allowed experts to refine their views through successive rounds of feedback. Following this, the Q-sort technique was applied to rank and prioritize the identified barriers according to their perceived importance. Finally, thematic analysis was conducted to examine qualitative insights, ensuring that the voices of women entrepreneurs and community stakeholders were integrated into the findings.

Participants were purposively selected based on their expertise in tourism, gender and community development. Efforts were made to include a diverse range of actors from government agencies, non-governmental organizations (NGOs), academia, community organizations and international development bodies. This ensured a multi-stakeholder perspective that reflects both policy-level and grassroots experiences of women in tourism (see Table 1).

Table 1. Expert details

Expert ID	Position/role	Experience (years)	Area of expertise	Affiliation
1	Senior tourism officer	15	Women's empowerment, community-based tourism	Ministry of Tourism and Creative Economy, Indonesia
2	Gender equality specialist	12	Gender policy, women in tourism	UN Women Indonesia
3	University lecturer	9	Sustainable tourism, capacity-building	Pattimura University, Maluku
4	Non-governmental organization (NGO) program director	18	Community development, microfinance	Local NGO (Gender Equity and Development), Papua
5	Senior policy analyst	20	Policy reform, women's rights	National Development Planning Agency (Bappenas)
6	Community leader	25	Community-based tourism, women's leadership	Women's Cooperative, Maluku
7	Tourism consultant	14	Private sector development, SME support	Independent Consultant (Eastern Indonesia Focus)
8	Researcher/academic	10	Women's economic empowerment, policy research	Research Institute for Tourism Studies, Sulawesi
9	Regional tourism director	17	Destination management, women in leadership	Provincial Tourism Office, Papua
10	Development specialist	22	Sustainable development, gender equity	International Development Agency (IDA)
11	Social entrepreneur	11	Women-led businesses, social enterprise	Founder of Tourism Social Enterprise, Maluku
12	Advocacy specialist	13	Gender advocacy, legal rights	Women's Legal Aid NGO, Eastern Indonesia
13	Cooperative leader	19	Women's cooperatives, small business	Cooperative Network for Women's Enterprises, Sulawesi Tenggara
14	International consultant	16	Tourism policy, gender-sensitive planning	International Consultant (Asia-Pacific)
15	Local tourism expert	21	Local economic development, gender inclusion	Regional Government (Tourism Office, North Maluku)

Source: authors.

Three rounds of Delphi surveys were administered electronically to the expert panel, with response rates above 85% across all rounds. The Q-sort exercise was conducted in facilitated workshops, where participants sorted and ranked the barriers according to priority. In-depth interviews and focus group discussions with women entrepreneurs and community members complemented these methods, generating qualitative data that were later thematically analyzed.

Quantitative rankings from the Q-sort were analyzed using descriptive statistics to establish consensus on priority barriers. Qualitative data were coded inductively, allowing themes related to financial exclusion, socio-cultural constraints and institutional support to emerge organically. This triangulation of methods enhanced the robustness of findings, addressing both the structural and lived dimensions of women's empowerment in sustainable tourism.

4. RESULT AND DISCUSSION

4.1. DELPHI FINDINGS: CONSENSUS ON KEY BARRIERS

The Delphi process generated a high level of consensus among the expert panel regarding the main barriers to women's empowerment in sustainable tourism in the eastern part of Indonesia. Across three iterative rounds, participants consistently highlighted financial, socio-cultural and institutional constraints as the most critical obstacles. The final ranking of barriers is presented in Table 2.

Limited access to finance and credit emerged as the top-ranked barrier, with an average score of 4.8 and agreement from 92% of experts. Participants emphasized that women entrepreneurs in Eastern Indonesia continue to face systemic discrimination in lending practices, coupled with limited collateral ownership and inadequate access to microfinance schemes. As a senior tourism official noted, women entrepreneurs in tourism frequently encounter credit exclusion because formal land ownership is required as collateral, despite their businesses being economically viable (Ministry of Tourism and Creative Economy, Indonesia, personal communication, January 14, 2025).

The second-ranked barrier was socio-cultural norms that restrict women's mobility and leadership roles (average rank: 4.6; 89% agreement). Experts and community leaders underscored that patriarchal expectations frequently relegate women to domestic responsibilities, thereby constraining their ability to engage in business development or participate in decision-making structures. This finding resonates with regional literature that identifies cultural traditions as persistent obstacles to gender equality in peripheral areas of Indonesia (Bayo, 2021).

Lack of capacity-building and vocational training opportunities was the third most significant barrier (average rank: 4.5; 87% agreement). Experts agreed that while women demonstrate strong entrepreneurial motivation, they often lack the skills necessary for business expansion, digital marketing, and product innovation. Participants stressed the absence of targeted training programs in rural and remote areas of the

Table 2. Top-ranked barriers identified in the Delphi study

Rank	Barrier	Average rank (1–5)	Agreement among experts (%)	Notes (from Delphi rounds)
1	Limited access to finance and credit for women entrepreneurs	4.8	92	Consistently ranked highest; financial institutions perceived as discriminatory
2	Strong socio-cultural norms restricting women's mobility and leadership	4.6	89	Patriarchal norms reinforce women's domestic roles, limiting participation
3	Lack of capacity-building and vocational training opportunities	4.5	87	Absence of targeted tourism skills training for women, especially in rural areas
4	Weak institutional support and fragmented policy frameworks	4.4	85	Inconsistent government support; policies often not gender-sensitive
5	Limited market access and poor infrastructure in remote areas	4.3	82	Geographic isolation reduces competitiveness of women-led enterprises
6	Digital divide: limited digital literacy and access to technology	4.1	78	Women face challenges adopting digital platforms for marketing and networking
7	Low representation of women in decision-making structures	3.9	74	Women underrepresented in cooperatives, associations, and policy forums

Source: authors.

eastern provinces, leaving many women without the competencies required to compete in the tourism sector.

The Delphi panel also identified weak institutional support and fragmented policy frameworks as a major obstacle (average rank: 4.4; 85% agreement). According to a senior policy analyst, tourism development policies in Indonesia rarely incorporate explicit gender sensitive measures, and existing initiatives remain fragmented across ministries with limited interagency coordination (National Development Planning Agency, Indonesia, personal communication, January 15 2025). Similarly, poor infrastructure and limited market access were ranked fifth (average rank: 4.3; 82% agreement), reflecting the geographic isolation of many communities and the logistical challenges women face in reaching larger markets.

Lower-ranked but still significant barriers included the digital divide (average rank: 4.1; 78% agreement) and women's underrepresentation in decision-making structures (average rank: 3.9; 74% agreement). These issues highlight both technological exclusion and institutional gaps that further limit women's empowerment in the tourism sector.

Overall, the Delphi results suggest that women in the eastern part of Indonesia face interlocking barriers that span financial, socio-cultural and institutional domains. While financial access remains the most urgent challenge, socio-cultural norms and weak institutional frameworks create additional layers of exclusion that undermine the potential of women-led tourism enterprises. These findings provide a foundation for further prioritization through the Q-sort exercise and deeper exploration through thematic analysis.

4.2. Q-SORT FINDINGS: PRIORITIZATION OF BARRIERS

The Q-sort exercise provided a more fine-grained understanding of how different stakeholder groups prioritize the barriers faced by women in sustainable tourism in the eastern part of Indonesia. While the

Delphi method identified a broad consensus on the most critical issues, the Q-sort revealed areas of convergence and divergence between experts, policymakers and women entrepreneurs (see Table 3).

Across all groups, limited access to finance and credit consistently emerged as the most urgent challenge. Experts and women entrepreneurs ranked this barrier first, while policymakers placed it second. Women entrepreneurs emphasized that without adequate capital, they cannot expand their businesses or access new markets, a finding that confirms earlier studies on the financial exclusion of women entrepreneurs in developing economies (de Andrés et al., 2021). Experts noted that discriminatory lending practices and lack of collateral remain persistent issues, echoing the findings of the Delphi phase.

Socio-cultural norms restricting women's mobility and leadership were also consistently prioritized, ranking second overall. Women entrepreneurs and experts agreed on its central importance, while policymakers ranked it third. The divergence suggests that policymakers may underestimate the depth of cultural constraints compared to those who experience or directly observe them. This gap underscores the need for gender-sensitive policymaking that acknowledges the lived realities of women in rural communities (Bayo, 2021).

The third area of convergence was the lack of capacity-building and vocational training opportunities. Interestingly, policymakers ranked this barrier as the highest priority, whereas experts and women entrepreneurs placed it third. This indicates that policymakers perceive training interventions as a primary entry point for empowerment, while practitioners and women themselves see training as necessary but not sufficient without improved financial access and cultural change.

Other barriers, such as weak institutional support, limited market access, and poor infrastructure, occupied mid-level rankings across all groups. Policymakers

Table 3. Q-sort prioritization of barriers by stakeholder group

Barrier	Experts (mean rank)	Policymakers (mean rank)	Women entrepreneurs (mean rank)	Overall rank
Limited access to finance and credit	1	2	1	1
Socio-cultural norms restricting women's mobility/leadership	2	3	2	2
Lack of capacity-building and vocational training	3	1	3	3
Weak institutional support and fragmented policies	4	4	5	4
Limited market access and poor infrastructure	5	5	4	5
Digital divide: limited literacy and access to technology	6	6	6	6
Low representation of women in decision-making structures	7	7	7	7

Source: authors.

and experts converged in ranking institutional weaknesses fourth, while women entrepreneurs gave it slightly lower importance (fifth). This suggests that structural governance issues, while acknowledged, may appear less pressing to entrepreneurs who face immediate constraints of finance and mobility. Similarly, limited market access and infrastructure challenges were seen as significant but secondary to socio-cultural and financial barriers.

Lower-ranked barriers included the digital divide and women's underrepresentation in decision-making structures. All three groups placed these consistently at the bottom of their rankings, suggesting that while important, they are perceived as longer-term issues compared to immediate economic and cultural barriers. However, experts cautioned that neglecting these dimensions could undermine future opportunities for women, especially as digital platforms increasingly shape market access and as representation in cooperatives and associations remains crucial for institutional change.

Overall, the Q-sort findings highlight that while there is broad consensus on the primacy of financial access and socio-cultural barriers, stakeholders differ in the weight they assign to training, governance and infrastructure issues. These differences underscore the value of participatory approaches that incorporate diverse perspectives. By integrating the views of experts, policymakers and women entrepreneurs, the study ensures that subsequent recommendations are both contextually grounded and responsive to multiple levels of stakeholder concern.

4.3. THEMATIC ANALYSIS: INSIGHTS FROM STAKEHOLDERS

Thematic analysis of interviews and focus group discussions with women entrepreneurs, community leaders and local stakeholders provided deeper insights into the lived experiences behind the barriers identified in the Delphi and Q-sort phases. Three major clusters of barriers emerged from the qualitative data: financial and institutional constraints, socio-cultural norms, and capacity and skills limitations.

Financial and institutional barriers

Participants consistently emphasized that lack of access to credit and weak institutional support are the most immediate obstacles to women's empowerment in tourism. Women entrepreneurs reported difficulties in obtaining loans due to the absence of collateral, such as land titles, which are typically registered under male family members. One participant explained, *Even if I want to expand my homestay, the bank asks for land certificates, but the land is in my husband's name. I cannot apply on my own.* This reflects structural financial exclusion rooted in both legal frameworks and gender norms.

Institutional barriers were also evident in fragmented and inconsistent policies. Several community leaders observed that government tourism programs are rarely designed with gender sensitivity in mind, often overlooking women's specific needs. A policy officer remarked, *Programs come and go depending on the budget cycle, but there is no continuity, and women are rarely consulted in the design.* These gaps in institutional support exacerbate women's vulnerability and reinforce dependence on informal networks of credit and support.

Socio-cultural barriers

The influence of deeply entrenched gender norms emerged as a pervasive theme. Across provinces, participants reported that women's mobility and decision-making authority remain constrained by patriarchal expectations. As one community leader put it, *In our culture, women are expected to stay at home, take care of children, and support their husbands. Running a tourism business is seen as secondary, even if it helps the family.*

These cultural norms not only limit women's ability to manage and expand their businesses but also restrict their participation in leadership roles within cooperatives and tourism associations. Several participants described instances where women's proposals were disregarded in community meetings, reinforcing their marginalization in collective decision-making. The persistence of these norms underscores the importance of shifting community perceptions alongside economic interventions.

Capacity and skills barriers

A third set of barriers centered on limited access to training and digital literacy. While women expressed strong motivation to improve their businesses, they noted that training programs are often unavailable or inaccessible due to distance, cost, or scheduling conflicts with household responsibilities. One entrepreneur shared, *There was a training on digital marketing in the city, but I could not attend because I had no one to look after my children. Opportunities pass us by for these reasons.*

The digital divide was highlighted as a critical issue, with many women lacking the skills or resources to use online platforms for marketing and networking. Participants acknowledged that younger women are more adept at using smartphones and social media, but older entrepreneurs often struggle to adapt to digital technologies. This generational divide suggests that interventions should be tailored to different age groups to maximize their impact.

The thematic analysis reveals that barriers to women's empowerment in tourism are multi-dimensional and interlocking. Financial exclusion and weak institutional support limit women's capacity to grow their businesses, while socio-cultural norms restrict their autonomy and leadership opportunities. At the same time,

inadequate training and digital skills hinder their ability to adapt to the changing demands of the tourism industry. These findings underscore the necessity of holistic approaches that address economic, cultural, and institutional factors simultaneously, rather than in isolation.

5. DISCUSSION

The findings of this study show that barriers to women's empowerment in tourism in the eastern part of Indonesia are multi-dimensional and mutually reinforcing, spanning economic, cultural and institutional domains. Limited access to finance emerged as the most pressing challenge, with women entrepreneurs unable to expand their businesses due to collateral requirements and discriminatory lending practices. This financial exclusion, compounded by weak institutional support, restricts women's autonomy and hinders their participation in tourism enterprises. At the same time, entrenched socio-cultural norms continue to confine women to domestic roles, limiting their mobility and excluding them from leadership and decision-making positions. Capacity gaps, particularly in vocational training and digital literacy, further exacerbate these challenges, as many women lack opportunities to build the skills necessary to compete in an increasingly digitalized tourism economy. These interlocking barriers illustrate that sustainable tourism cannot be achieved without simultaneously addressing the economic, cultural and institutional constraints that women face. If women remain marginalized in tourism development, the sector's potential to foster inclusive growth and community resilience will be significantly undermined. The results therefore underscore the importance of integrating gender equality into sustainable tourism, directly contributing to the realization of SDG 5 on gender equality and SDG 8 on decent work and economic growth.

This study also offers important contributions to the literature. Methodologically, it demonstrates the value of combining Delphi, Q-sort and thematic analysis, providing a triangulated understanding that moves beyond the single-method approaches common in prior research. Empirically, it shifts the focus to Eastern Indonesia, a region underrepresented in tourism and gender studies. Much of the existing literature on women in Indonesian tourism concentrates on Bali, Lombok or Java, where access to markets and infrastructure is relatively advanced. By situating the inquiry in the eastern provinces, this study highlights both the universality of certain barriers, such as financial exclusion, and the distinctiveness of local cultural dynamics that shape women's empowerment in

peripheral contexts. In this way, it not only contributes to national debates on gender and tourism but also engages with global discussions on inclusivity and sustainability in the Global South (Chambers, 2022).

The findings resonate with international scholarship while extending it in context-specific ways. Financial exclusion mirrors the challenges identified by de Andrés et al. (2021) in developing economies and by Asiseh et al. (2025) in Sub-Saharan Africa, where women struggle to access formal credit. Socio-cultural constraints are comparable to those observed in South Asia, where patriarchal norms limit women's mobility and participation in economic life (Kumar, 2023). At the same time, the Indonesian context adds unique nuances, as highlighted by Bayo (2021), where customary practices and household expectations reinforce women's marginalization in decision-making. The lack of training and digital skills parallels the concerns raised by Scheyvens (2014), who emphasized that capacity-building is a prerequisite for women's meaningful involvement in peripheral destinations. Thus, the study confirms global patterns while contributing new insights into how these dynamics unfold in Eastern Indonesia.

From a practical standpoint, the study highlights several pathways for intervention. Governments should prioritize gender-sensitive financial inclusion programs (Kumari et al., 2025), such as microcredit schemes that do not require land titles as collateral, and integrate gender equality into tourism policies to ensure coordinated and sustainable support. NGOs and international agencies can strengthen capacity-building by designing accessible, locally relevant training initiatives, while also promoting women's leadership through targeted programs. Community cooperatives and women's associations have a vital role in fostering peer networks that enable women to share resources, strengthen bargaining power, and overcome socio-cultural barriers. By implementing such measures, tourism in Eastern Indonesia can evolve into a sector that not only generates economic returns but also advances gender equity, social inclusion and sustainable development (Dwipayanti et al., 2022).

6. CONCLUSION

This study set out to examine the barriers faced by women entrepreneurs in sustainable tourism in the eastern part of Indonesia, guided by the questions of what obstacles are most critical, how they are perceived by different stakeholders, and to what extent participatory and multi-method approaches can generate practical recommendations. Using a hybrid methodology that combined Delphi, Q-sort and thematic analysis, the

study identified finance, socio-cultural norms, weak institutional support and limited capacity-building as the most pressing challenges constraining women's empowerment in the tourism sector.

The findings make several academic contributions. Methodologically, the study demonstrates the value of triangulating expert consensus, stakeholder prioritization and qualitative insights to capture the complexity of women's empowerment. Empirically, it shifts the focus of Indonesian tourism scholarship toward Eastern Indonesia, a region underrepresented in existing literature yet rich in potential for sustainable tourism development. The study contributes to broader academic debates by situating gender empowerment as a central pillar of sustainable tourism, showing that inclusivity and equity are essential alongside economic and environmental objectives.

From a practical perspective, the findings point to the need for targeted interventions at multiple levels. Governments should design gender-sensitive financial inclusion policies and ensure that tourism development programs explicitly incorporate gender equality. NGOs and international agencies can strengthen women's skills and leadership capacity through accessible and tailored training initiatives. Community-based organizations and cooperatives should foster peer support and collective action to help women overcome socio-cultural barriers and strengthen their market position.

Nevertheless, the study has limitations that must be acknowledged. The data were collected from selected provinces within Eastern Indonesia, which limits the generalizability of the findings to other regions. The focus on small and medium-sized enterprises also excludes larger tourism actors who may face different challenges. Future research could expand the geographic scope, employ longitudinal designs to capture change over time, and explore how digital technologies may open new opportunities for women in tourism.

In sum, this study underscores that empowering women is not only a matter of social equity but also a prerequisite for the sustainability of tourism in Eastern Indonesia. By illuminating the interplay of financial, socio-cultural and institutional barriers, and by proposing practical solutions, it provides both scholarly insight and actionable guidance for advancing gender-inclusive tourism development.

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CHALLENGE AND HINDRANCE APPRAISALS OF SMART TECHNOLOGY, ARTIFICIAL INTELLIGENCE, ROBOTICS AND ALGORITHMS (STARA) AWARENESS AND JOB PERFORMANCE: THE MODERATING ROLE OF WORK-LIFE BALANCE

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ABSTRACT

This study examines hotel employees' perceptions of smart technology, artificial intelligence, robotics and algorithms (STARA) awareness regarding challenges and hindrances as well as analyzing how these perceptions influence their job performance. It also investigates the role of work-life balance as a moderating factor in the relationship between STARA awareness as a stressor with job performance. A quantitative research approach was employed, with data collected online and from face-to-face questionnaires. The study targeted employees from 5-star hotels in Jakarta who have had at least two years of experience working with technology and hold permanent or contract positions (excluding daily or part-time workers). A total of 400 respondents participated. The findings indicate that viewing STARA awareness as a challenge positively influences job performance, while perceiving it as a hindrance has no significant effect. Moreover, work-life balance was found to impact job performance. Future research could extend these findings by comparing international and local hotels and incorporating additional variables such as technological competence, organizational support and work involvement.

KEYWORDS

challenge-hindrances, hotel industry, job performance, STARA awareness, work-life balance

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1. INTRODUCTION

The hotel industry has shown strong expansion over time, making it one of the fastest growing and largest sectors globally (Presenza et al., 2019, p. 1). The industry has changed a lot in the last few years because more people are using new technologies faster (Kansakar et al., 2019), because of constant innovation and a business climate that is becoming more dynamic (Hsu & Tseng, 2022). Smart technology, artificial intelligence, robotics and algorithms (STARA) are examples of this change (Brougham & Haar, 2018). They are changing the way services are delivered and are helping to achieve larger sustainability goals that are in line with Sustainable Development Goals (United Nations General Assembly, 2015). Even if STARA technologies are expected to take away a lot of jobs, especially in industries that rely heavily on services, the hotel industry still relies on interactions between people, which makes full automation impossible (Parvez et al., 2022).

The integration of STARA technologies offers substantial advantages (Lestari et al., 2023), including enhanced operational efficiency (Balatska et al., 2022), increased productivity (Huang & Rust, 2018), and reduced labor costs (Ivkov et al., 2020; Naik & Daptardar, 2019). However, it concurrently presents significant human resource challenges. Previous research has recorded elevated work stress (Fernández-Batanero et al., 2021), increased job insecurity (Lingmont & Alexiou, 2020), employee fatigue (Kong et al., 2021), and possible reductions in job performance linked to technology-induced change (Choi et al., 2020). The diverse outcomes suggest that STARA's impact on employees is variable and depends on how technological demands are interpreted and handled at both individual and organizational levels.

Employees are a vital strategic resource and a significant reason why the hospitality industry is so competitive (Ghani et al., 2022; Tahiri et al., 2022). Hotel personnel often encounter several stressors, such as unstable job conditions, extended working hours, inadequate wages and a continual work-life imbalance (Bhaswani & Hymavathi, 2022), which may be exacerbated by continuous technological advancements (Tuan, 2022). Current research on stress underscores that occupational stress should not be regarded as intrinsically harmful; instead, its effects depend on employees' cognitive evaluations, which interpret stressors as either opportunities for development or obstacles to achieving objectives (Akkuş & Arslan, 2023; Bolm et al., 2022; Tsui, 2021). Applying this distinction to STARA awareness helps clarify why analogous technological situations may yield divergent performance outcomes among employees.

While research has increasingly focused on STARA awareness and technology-induced stress, most studies

examine these concerns in isolation. Numerous studies investigate the impact of STARA awareness or utilize the challenge-hindrane evaluation framework for general job stressors; however, they often neglect to address STARA-related perceptions within this framework. Moreover, work-life balance is widely seen as a crucial human resource management strategy for enhancing employee well-being and productivity (Irawanto et al., 2021; Putra Edy Wirawan, 2022). Prior studies primarily regard work-life balance as a direct determinant of performance rather than as a contextual factor that influences how employees cognitively interpret technology-related stressors, such as heightened workload, indistinct work-life boundaries or perceived job insecurity, into performance outcomes. Accordingly, it remains unclear whether work-life balance merely enhances performance or also alters the strength of the relationship between STARA-related stress appraisals and job performance. As a result, little is known about when and under what conditions STARA awareness enhances or undermines job performance in the hospitality context.

Additionally, theoretical uncertainty persists regarding the importance of work-life balance for STARA awareness, particularly its impact on performance enhancement and on the interpretation of technological stress evaluations in relation to work outcomes. STARA-related challenges, such as heightened workload, continuous monitoring or perceived job instability, may compromise employees' ability to keep clear boundaries between professional and personal life in technology-driven contexts. In this way, work-life balance is a reflection of both an individual's condition and the efficiency of organizational procedures that allow workers to handle increased technological demands (Prastita et al., 2025).

In the hotel industry, employee performance is a key factor in business success, as it directly affects service quality, customer satisfaction and operational effectiveness (Alomran et al., 2022; Ni et al., 2022). Previous studies have delineated various antecedents of performance in hospitality environments, encompassing emotional exhaustion (Hori & Chao, 2022), motivation and incentives (Seng & Arumugam, 2017), perceptions and adoption of technology (Bangun et al., 2021; Baskaran et al., 2020), and work-life balance (Faisal et al., 2022). Among these elements, work-life balance has become a particularly prominent human resource management (HRM) mechanism, especially in environments marked by extended working hours and blurred work-family boundaries, such as the hotel industry (Arumdani & Churiyah, 2022; Besagas & Branzuela, 2023). Empirical research indicates that work-life balance not only alleviates stress but also enhances employee performance (Mufida Ahmad et al., 2022; Susanto et al., 2022). Its effectiveness

may vary depending on the nature of the stressors employees face.

To address existing gaps, this study takes a fresh approach by integrating STARA awareness, the challenge–hindrance appraisal theory, and work-life balance into a clear framework. Here, STARA awareness is seen as a technology-related source of stress that hotel employees might view as either a challenge or a hindrance. Rather than assuming that work-life balance generically buffers all forms of technology stress, this study frames work-life balance as a border condition that may variably influence the performance consequences of challenge and hindrance appraisals. It examines hotel employees' perceptions of STARA awareness regarding challenges and hindrances and analyzes how these perceptions influence their job performance while investigating the role of work-life balance as a moderating factor in the relationship between STARA awareness as a stressor and job performance. This underscores the significant role of work-life balance in shaping the effects of these stressors and the approach reframes STARA awareness from a uniform threat to a more nuanced understanding of how hotel employees' performance is influenced by their work-life balance.

The findings have significant implications for hotel managers, indicating that initiatives aimed at achieving work-life balance and supportive human resource management practices should enhance, rather than replace, efforts to mitigate technology-related hindrance stressors, including job insecurity and excessive workload.

2. LITERATURE REVIEW

2.1. SMART TECHNOLOGY, ARTIFICIAL INTELLIGENCE, ROBOTICS AND ALGORITHM (STARA) AWARENESS

Many people thought that smart technology, artificial intelligence, robotics and algorithms (STARA) would change the workforce. Some estimates say that up to one-third of current jobs will be affected in the future (Rane & Bhosale, 2023). STARA awareness refers to employees' perceptions and understanding of the extent to which these technologies might replace or alter their existing job functions (Brougham & Haar, 2018). With the rapid pace of technological progress, apprehensions surrounding job security, career stability and the pertinence of skills have emerged as prominent issues for the workforce (Tan et al., 2023).

The implementation of STARA signifies a profound transformation in work dynamics and organizational frameworks, introducing uncertainty and potential risks for many employees (Zhang & Jin,

2023). While technology adoption is linked to enhanced efficiency and productivity, it may concurrently heighten job demands and psychological strain (Fernández-Batanero et al., 2021). Previous research has established a connection between technology-induced transformations and heightened job-related stress, along with negative implications for employee well-being and performance (Choi et al., 2020). These mixed findings suggest that STARA awareness does not uniformly affect employees but rather depends on how individuals perceive and interpret the technological changes they face.

Thus, understanding employees' psychological reactions to STARA awareness is essential for elucidating the diversity of work-related outcomes and for formulating appropriate human resource strategies amid the digital transition.

2.2. CHALLENGE-HINDRANCE APPRAISAL TOWARD SMART TECHNOLOGY, ARTIFICIAL INTELLIGENCE, ROBOTICS AND ALGORITHM (STARA) AWARENESS

Job stress occurs when a person's job responsibilities are too much to handle, either physically or mentally (Tsui, 2021). Due to rapid technological advances, awareness of STARA has become a notable contributor to workplace stress (Ding, 2021) and research on stress indicates that the effects of stressors depend on individuals' cognitive appraisals rather than the stressors themselves.

According to the transactional theory of stress, stress depends on an individual's cognitive appraisal of a situation, particularly whether it is perceived as a challenge or a threat, which in turn shapes the stress experience (Lazarus & Folkman, 1984). Recent research has applied and extended this framework to modern work contexts, showing the interplay between challenge–hindrance appraisal and individual outcomes such as performance in remote work settings (Schoch, 2023). Challenge appraisals arise when individuals perceive difficult conditions as opportunities for learning, growth or success. At the same time, hindrance evaluations occur when situations are viewed as barriers to goal achievement or threats to job security (Ding, 2022).

Within the STARA framework, these two appraisals are highly relevant. Employees who perceive technological advancements as challenges often appreciate the positive aspects of technology, including increased efficiency, improved work processes, and opportunities for personal growth, particularly when supported by a supportive work environment and access to technology training (Bhargava et al., 2021; Schoch, 2023). The implementation of robotics and artificial intelligence automates repetitive tasks, enabling employees to focus on higher-value or more significant activities (Mabungela, 2023). Such positive

interpretations suggest that challenge appraisals of STARA awareness may facilitate adaptive behaviors and enhance job performance.

On the other hand, employees who see STARA awareness as a problem tend to feel stressed because they are unsure about their job security and feel as if their talents are not needed or can be replaced (Mazzola & Disselhorst, 2019). In such circumstances, STARA awareness may impose a psychological burden, leading to anxiety or disengagement. Moreover, a comprehensive understanding of STARA as an adaptive mechanism indicates that individuals proficient in technology are more inclined to address their anxieties through upskilling and career advancement proactively (Li et al., 2021). This shows that higher evaluations of STARA awareness are likely to be connected with less favorable performance outcomes, but the extent of this association may differ among situations.

Drawing on stress appraisal theory and prior empirical findings, STARA awareness may be cognitively appraised by employees as a challenge or a hindrance, leading to different performance outcomes. Accordingly, the following hypotheses are proposed:

H₁: Challenge appraisal toward STARA awareness affects job performance.

H₂: Hindrance appraisal toward STARA awareness affects job performance.

2.3. WORK-LIFE BALANCE

Work-life balance is the ability to manage and meet obligations in both work and non-work areas while still being happy and healthy in both (George & Sreedharan, 2023). This balance indicates the extent of alignment among work demands, family responsibilities and personal activities, including leisure, social interactions and self-care (Kerdpitak & Jermstiparsert, 2020). In modern employment settings, especially in service sectors, work-life balance has become a significant factor for job seekers, reflecting a transition from a solely financial focus to a more comprehensive assessment of job quality (Hoang et al., 2020). Organisations are increasingly tasked with designing work-life balance initiatives that are congruent with their culture and values, and that receive institutional support to guarantee their effectiveness (Fotiadis et al., 2019).

From an employee well-being perspective, the capacity to uphold distinct boundaries between professional and personal life correlates with diminished stress, a lower likelihood of burnout, and enhanced psychological health, all of which foster sustained work engagement and productivity (Cabaraban & Borbon, 2021). Empirical evidence indicates that work-life balance positively affects job satisfaction and overall job performance, especially in occupations with significant emotional

and temporal demands, such as the hospitality sector (Dewi et al., 2021). Work-life balance is an essential resource in human resource management that enhances employees' ability to manage workplace stressors.

In technology-driven workplaces, achieving work-life balance is increasingly complex. The implementation of STARA has the potential to elevate workloads, expedite tasks, and blur the boundaries between professional and personal life. Work-life balance supports time management and recovery from job demands; however, its effectiveness in mitigating technology-related stress depends on employees' perceptions of these stressors. The challenge-hindrance appraisal theory posits that challenge-related stressors from STARA, including opportunities for skill development or efficiency enhancement, are more manageable for employees who maintain a robust work-life balance. This study indicates that work-life balance equips individuals with the necessary time and mental resources to transform challenges into enhanced job performance (Adya & Desiana, 2025; Tan et al., 2023).

Conversely, hindrance stressors linked to STARA, such as job insecurity, diminished autonomy and fears of technological replacement, pose significant threats to employees' job stability and career continuity. These stressors frequently extend beyond work and family dynamics and may not be adequately addressed through work-life balance strategies alone. Consequently, work-life balance may mitigate stress when employees perceive STARA as a hindrance instead of a challenge. This indicates that although work-life balance may alleviate stress, its effectiveness depends on employees' perceptions of the stress they encounter (Santhanam et al., 2021).

Furthermore, as work-life balance represents a vital personal and organizational resource, it may influence how employees translate STARA-related stress appraisals into performance outcomes. Therefore, the following hypotheses are proposed.

H₃: Work-life balance affects job performance.

H₄: Work-life balance moderates the relationship between challenge appraisal toward STARA awareness and job performance.

H₅: Work-life balance moderates the relationship between hindrance appraisal toward STARA awareness and job performance.

2.4. JOB PERFORMANCE

Job performance can be defined as how an individual's actions, behaviours and abilities contribute to achieving organizational goals (Ni et al., 2022). In the hospitality industry, where direct interactions between employees and guests significantly determine the guest experience, employee performance is crucial for a hotel's operational success and competitiveness (Dorta-Afonso et al.,

2021). Therefore, improving employee performance is a strategic priority, especially amidst the industry's evolving challenges.

Implementing technology in the workplace has been shown to improve performance through task automation, reduced human error, and increased operational efficiency (Baskaran et al., 2020). However, employee responses to technology are not always uniform. Based on a stress assessment approach, previous research has shown that stress resulting from challenges perceived as opportunities for growth is positively correlated with improved performance (Xu et al., 2024). Conversely, stress resulting from obstacles perceived as disruptive or threatening negatively correlates with performance (Deng et al., 2019).

In addition to technology and work stress, work-life balance has been shown to significantly impact performance (Cai et al., 2022). When employees feel they have sufficient time and energy to meet the demands of their professional and personal lives, they tend to perform at their best (Borgia et al., 2022). Thus, achieving the best possible employee performance requires a comprehensive strategy that emphasizes not only technology and productivity but also each employee's mental health and work-life balance.

Based on the literature review above, this study argues that STARA awareness, which is divided into challenge and hindrance stress, influences work performance. Furthermore, this study proposes that work-life balance can mitigate or strengthen the relationship between STARA Awareness and work performance. The research framework is presented in Figure 1.

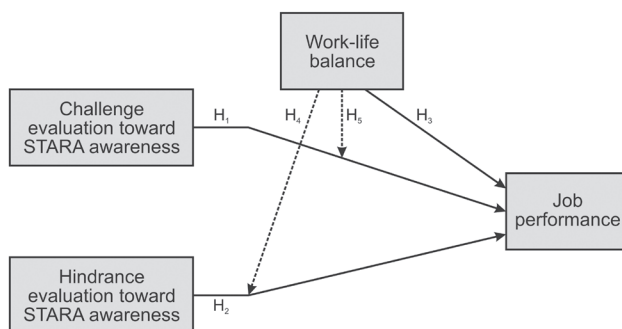


Figure 1. Conceptual framework
Source: authors

3. METHODOLOGY

3.1. SAMPLE AND DATA COLLECTION

This research uses quantitative methods, and data collection is conducted through online and in-person questionnaires. The population consists of employees

of 5-star hotels in Jakarta with a minimum length of service of two years, who work in the technology field and are contract or permanent employees, not daily or part-time workers. After sorting the 415 respondents who completed the questionnaire according to the stated criteria, 400 respondents were gathered. The minimum number of samples that must be collected is 5–10 times the number of indicators (Hair et al., 2017), so the minimum sample for this research is 160 or 320. By obtaining a total of 400, a large sample size will increase the partial least squares structural equation modeling (PLS-SEM) estimates' precision (i.e., consistency) (Hair et al., 2021).

3.2. VARIABLE MEASUREMENT

The data in this study were collected through a questionnaire survey. The measurement instrument was constructed based on several relevant studies published in reputable international journals concerning information technology, information systems and business management. It was carefully translated from English to Indonesian, and other academics collaborated with it to ensure terminological accuracy and cultural contextual appropriateness.

The STARA awareness measure, conceptualized as a stressor categorized into challenge and hindrance dimensions, was adapted from (Tan et al., 2023). Eight items were used to measure perceptions of challenges, and eight to measure perceptions of barriers. Meanwhile, the work-life balance measure consisted of ten items adapted and adopted from Susanto et al. (2022). The job performance measure included six items adapted and adopted from an instrument developed by Han et al. (2022).

4. FINDINGS

4.1. RESPONDENT PROFILE

The data in this study were collected from 400 participants who met the inclusion criteria: 5-star hotel employees, having worked for at least two years, being either permanent or contract employees, and engaging in a field that utilizes technology in daily operations. The characteristics of respondents can be seen in Table 1.

Table 1. Respondents characteristics

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	230	57.50
	Female	170	42.50

Table 1 (cont.)

Characteristic	Category	Frequen- cy (<i>n</i>)	Percent- age (%)
Age	20–30 years	110	27.50
	31–40 years	105	26.25
	41–50 years	100	25.00
	Above 50	85	21.25
Educational background	Senior high school	28	7.00
	Vocational high school	118	31.00
	Diploma 3 (D3 – general)	45	11.00
	Diploma (D3/D4 – tourism or hospitality)	144	35.00
	Bachelor degree (S1 – general)	47	12.00
	Above a bachelor degree	18	4.00
Employment status	Permanent employee	129	32.25
	Contract employee	271	67.75
Length of employment	≥2 years	400	100.00

Source: authors.

4.2. MEASUREMENT MODEL

Data processing in this study was conducted using SmartPLS software, with the initial stage including testing the validity and reliability of the measurement instruments. Construct validity was determined based on factor loading values >0.70 and average variance extracted (AVE) values >0.50 . In contrast, construct reliability was assessed using composite reliability and Cronbach's alpha, both expected to exceed 0.70, as recommended in the quantitative methodology literature (Hair et al., 2017).

The test results presented in Table 2 indicate that all indicators had factor loadings above the minimum threshold of 0.70, and all constructs demonstrated adequate AVEs, namely greater than 0.50. Furthermore, the composite reliability and Cronbach's alpha values for each construct also exceeded the minimum required value, indicating a high level of internal consistency.

Thus, all instruments used in this study were valid, reliable and suitable for further structural model testing.

Furthermore, the Fornell-Larcker criterion is required to assess discriminant validity. It assesses discriminant validity by comparing each construct's square root of the AVE with the correlations among other constructs. Discriminant validity is declared fulfilled if the square root of the AVE is higher than the correlation with other constructs, indicating that each construct measures a distinctly different concept. Applying this criterion

ensures the clarity of the model's constructs, making the analysis results more accurate and credible. The processing results can be seen in Table 3.

Table 2. The measurement model's reliability

Variable	Items	Load- ing	Cron- bach's alpha	Com- posite reli- ability (CR)*	Average variance extracted (AVE)**
Challenge appraisal toward STARA awareness	X1.1	0.889	0.940	0.951	0.706
	X1.2	0.794			
	X1.3	0.809			
	X1.4	0.845			
	X1.5	0.820			
	X1.6	0.886			
	X1.7	0.835			
	X1.8	0.841			
Hindrance appraisal toward STARA awareness	X2.1	0.874	0.942	0.951	0.709
	X2.2	0.872			
	X2.3	0.873			
	X2.4	0.848			
	X2.5	0.743			
	X2.6	0.844			
	X2.7	0.832			
	X2.8	0.843			
Work-life balance	Z1	0.840	0.960	0.965	0.736
	Z2	0.863			
	Z3	0.868			
	Z4	0.858			
	Z5	0.840			
	Z6	0.870			
	Z7	0.872			
	Z8	0.859			
	Z9	0.843			
	Z10	0.865			
Job performance	Y1	0.800	0.914	0.933	0.700
	Y2	0.850			
	Y3	0.840			
	Y4	0.864			
	Y5	0.856			
	Y6	0.809			

Source: authors.

Table 3. Fornell-Larcker criterion

Variables	Challenge stressor (X1)	Hindrance stressor (X2)	Job performance (Y)	Moderating effect 1	Moderating effect 2	Work-life balance (Z)
Challenge stressor (X1)	0.841	–	–	–	–	–
Hindrance stressor (X2)	0.339	0.842	–	–	–	–
Job performance (Y)	0.515	0.254	0.837	–	–	–
Moderating effect 1	–0.265	–0.154	–0.309	1.000	–	–
Moderating effect 2	–0.188	–0.065	–0.142	0.483	1.000	–
Work-life balance (Z)	0.574	0.344	0.739	–0.342	–0.282	0.858

Source: authors.

The data from Table 3 show the results of the discriminant validity test using the Fornell-Larcker criterion, indicating that the square root of the AVE for each construct is higher than the correlations among the other constructs. The square root of the AVE values for challenge stressor (0.841), hindrance stressor (0.842), job performance (0.837), moderating effect 1 (1.000), moderating effect 2 (1.000), and work-life balance (0.858) consistently exceed the highest correlation values with other constructs in the same row/column. The results indicate that each construct in the model measures a distinct concept, thereby meeting the discriminant validity criteria.

Afterward, the data were processed to calculate the coefficient of determination (R^2), which indicated that the proposed structural model accounted for most of the variance in job performance. According to the structural model results, job performance has an adjusted R^2 of 0.568 and an R^2 value of 0.573. This suggests that 57.3% of the variation in employee job performance may be explained by assessments of work-life balance, challenge, and hindrance related to STARA awareness, as well as their interaction effects. These results imply that the proposed model has sufficient explanatory power for hotel-sector performance outcomes.

4.3. HYPOTHESIS TEST

The next step was hypothesis testing, which used the PLS-SEM approach in this study and was processed using SmartPLS software. This analysis focused on three main indicators: the path coefficient to determine the direction and strength of the relationship between variables, the t -statistic to test the significance of the relationship, and the p -value to determine the probability of error in statistical decision-making.

This test accepts the hypothesis if the t -statistic exceeds 1.96 (at a 5% significance level) and the p -value is less than 0.05. This approach allows for a more comprehensive evaluation of direct, indirect and moderating relationships within the research model, resulting in a more accurate interpretation of the results and their relevance to the research objectives. The following are the results of the hypothesis test in Table 4.

The results of the hypothesis test using PLS-SEM analysis show that challenge stressor (X1) has a positive and significant effect on job performance (Y) with a path coefficient of 0.135, a t -statistic of 2.735, and a p -value of 0.006 (<0.05). This indicates that employees' work challenges can significantly improve their performance, thereby supporting hypothesis one.

Table 4 . Hypothesis testing result

Hypothesis	Structural path	Original sample (O)	t -value	p -values	Result
H ₁	Challenge appraisal toward STARA awareness affects job performance	0.135	2.735	0.006	Supported
H ₂	Hindrance appraisal toward STARA awareness affects job performance	–0.031	0.845	0.399	Not supported
H ₃	Work-life balance affects job performance	0.670	12.551	0.000	Supported
H ₄	Work-life balance moderates the relationship between challenge appraisal toward STARA awareness and job performance	–0.074	2.097	0.036	Supported
H ₅	Work-life balance moderates the relationship between hindrance appraisal toward STARA awareness and job performance	0.103	2.528	0.012	Supported

Source: authors.

Conversely, hindrance stressor (X2) shows a negative but insignificant effect on job performance (Y), with a coefficient of -0.031 , a t -statistic of 0.845 , and a p -value of 0.399 (>0.05), so the data do not support the hypothesis that work obstacles affect employee performance. Based on these results, hypothesis two is rejected. Furthermore, work-life balance (Z) was shown to have a positive and significant effect on job performance (Y) with a coefficient of 0.670 , a t -statistic of 12.551 , and a p -value of 0.000 , indicating that work-life balance is an important factor in driving optimal performance. Based on this, hypothesis three was accepted.

In the moderation effect test, moderating effect 1 had a negative but significant effect on job performance (Y) with a coefficient of -0.074 , a t -statistic of 2.097 , and a p -value of 0.036 (<0.05), indicating that this variable weakens the tested relationship. Conversely, moderating effect 2 had a positive and significant effect on job performance (Y) with a coefficient of 0.103 , a t -statistic of 2.528 , and a p -value of 0.012 (<0.05), indicating that this variable strengthens the tested relationship. Hypotheses 4 and 5 were accepted based on the results.

Overall, these results support most of the research hypotheses and confirm the dominant role of work-life balance in influencing performance, rather than the inhibiting effects of work-stress factors. These results support most of the research hypotheses and confirm the dominant role of work-life balance in influencing performance rather than in mitigating work stressors.

5. DISCUSSION

This study examines hotel employees' opinions of STARA as challenges or hindrances and evaluates the influence of these perceptions on job performance. It employs stress appraisal theory and work-life balance frameworks to clarify STARA-related stress, employees' evaluations of these challenges, and their boundary management strategies within human resource management.

The findings indicate that challenge appraisal of STARA awareness has a significant positive effect on job performance. A result consistent with prior research suggesting that when employees perceive technological change as an opportunity for learning, skill development, and career advancement, they are more likely to demonstrate higher motivation and performance (Bhargava et al., 2021; Li et al., 2021; Schoch, 2023). Compared to previous studies on digital stressors, this finding reinforces the argument that challenge-oriented interpretations of STARA can activate adaptive behaviors rather than resistance, particularly in service-based industries such as hospitality.

In contrast, hindrance appraisal of STARA awareness was found to have a negative but statistically insignificant effect on job performance. While some studies have reported a significant negative relationship between hindrance stressors and performance (Deng et al., 2019; Mazzola & Disselhorst, 2019), the present findings suggest that perceived job insecurity or workload associated with STARA does not necessarily translate into immediate performance deterioration. This divergence may reflect the hospitality context, where human interaction and service delivery norms may temporarily sustain performance despite underlying stress.

The work also confirms a strong positive relationship between work-life balance and job performance, consistent with previous findings (Cabaraban & Borbon, 2021; Dewi et al., 2021; Fotiadis et al., 2019). This supports the broader human resources management literature, which emphasizes work-life balance as a critical personal resource that enhances employee energy, engagement and sustained performance.

More importantly, this study demonstrates that work-life balance moderates the relationship between STARA-related stress appraisals and job performance. Consistent with Santhanam et al. (2021), work-life balance strengthens the positive effect of challenge appraisal by enabling employees to allocate personal resources more effectively when facing technological demands.

The results show that work-life balance is not a universal way to protect against all types of STARA-related stress, especially those that come from job uncertainty and a heavier workload. Although work-life balance can help people cope with challenge-related stress, it is insufficient to mitigate hindrance stressors that jeopardise job stability. This distinction emphasises that work-life balance functions as a contextual resource, influencing how employees convert STARA-related evaluations into performance results, rather than serving as an independent protective factor.

From a managerial standpoint, these data indicate that relying solely on individuals' work-life balance is unlikely to comprehensively mitigate the stress associated with the digital transition. Human resource managers should thus acknowledge STARA technologies as both efficiency-enhancing instruments and potential sources of psychological stress. Consequently, work-life balance initiatives, such as flexible scheduling, wellness support and equitable leave policies, must be complemented by targeted training, reskilling programmes, and clear communication to mitigate uncertainty and perceived job instability.

The research possesses multiple limitations. The data were gathered from a single industry environment, which may have constrained generalizability. Subsequent

research may enhance this paradigm by integrating organizational-level resources, such as work-life balance-supportive practices, technical proficiency or perceived organizational support, as alternative boundary conditions. Cross-cultural studies would yield profound insights into employee responses to STARA-related stress across various institutional contexts.

This study enhances the literature by illustrating that employees' challenge and hindrance perceptions of STARA awareness have unique effects on job performance, and that the influence of work-life balance is conditional rather than absolute. It enhances comprehension of employee adaptation to digital transformation in the hotel industry by delineating the parameters of work-life balance as a contextual resource.

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MENTAL WELL-BEING AND PSYCHOLOGICAL DISTRESS IN THE WORKPLACE: A PILOT STUDY OF GREEK HOTEL EMPLOYEES

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ABSTRACT

Mental well-being in the workplace has emerged as a critical area of concern, particularly in the hospitality sector, where employees face demanding schedules, emotional labour and heightened customer expectations. This article investigates the mental well-being and the psychological distress of Greek hotel employees through a case study based on 139 survey responses. The research examines demographic profiles, daily work pressures and the impact of the post-COVID era on psychological well-being, while also documenting coping strategies and policy recommendations. Results reveal high levels of stress, extended working hours, moderate satisfaction with working conditions, and significant challenges in maintaining a work-life balance. Post-pandemic, employees reported a decline in self-assessed mental well-being, with anxiety, emotional exhaustion and sleep disturbances being prevalent. Despite these challenges, few employees sought professional support, reflecting stigma and low organizational attention to mental well-being. Suggestions provided by employees centered on reducing working hours, improving communication with management, and introducing structured mental well-being programs. The study highlights the urgent need for organizational, sectoral and governmental policies to safeguard employee well-being, enhance resilience and promote sustainable employment practices in the Greek hotel industry.

KEYWORDS

mental well-being, hotel employees, Greece, COVID-19, workplace stress

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1. INTRODUCTION

In recent years, mental well-being in the workplace has emerged as a crucial domain for both academic inquiry and organizational practice. Work-related stress, burnout, anxiety, and depression are not only individual challenges but also have strong implications for organizational performance, absenteeism, turnover and service quality (O'Neill & Davis, 2011). The hospitality sector, particularly hotels, is an environment in which employees are uniquely vulnerable to psychological strain due to irregular hours, emotional labour, intense customer interaction, job insecurity and resource constraints (Izell, 2022).

In the context of the COVID-19 pandemic and its aftermath, these vulnerabilities have been exacerbated. Empirical studies report that hospitality employees experienced elevated levels of anxiety, depression and distress as a result of operational disruptions, health risks and job instability (Krikonis et al., 2025). Research in hotels further suggests that work-related stressors positively correlate with depressive symptoms, nervousness and reduced inner calm among staff (Wong et al., 2025). In addition, the concept of hotel employee perceived crisis shocks (HEPCS) highlights how employees interpret crises (such as pandemics) across dimensions of task disturbance, safety, performance and family life, with measurable impacts on mental health and turnover intentions (Xie et al., 2022).

In Greece, where tourism constitutes a major pillar of the economy, the psychological well-being of hotel workers is of strategic significance. The Greek hotel sector is highly seasonal, with pressure to maintain high levels of service during peak months and vulnerabilities during the low season. The pandemic struck this model hard, intensifying job insecurity, operational strains and stress. Qualitative research within the sector also points to an ongoing "crisis" in the employee experience, with staffing shortages, increased demand and low workforce participation being key concerns. In addition, studies focused on Greek hotels have explored working conditions, job satisfaction and well-being in regional contexts such as Crete (Vagena et al., 2024).

The purpose of this study is to identify and assess the level of mental well-being and selected indicators of psychological distress among hotel employees in Greece, as well as to diagnose key work-related conditions and post-COVID factors associated with perceived well-being and coping practices through a case study based on 139 survey responses. It examines how employees perceive their workload and daily burdens (questions 7–10), probes the influence of the post-COVID era (questions 11–16), and documents coping strategies and suggestions (questions 17–20). The research questions include:

1. What levels of stress, anxiety and psychological strain do Greek hotel employees report?

2. How have the operating conditions after COVID-19 affected their mental well-being?
3. What coping strategies do employees adopt, and what suggestions do they propose to improve workplace well-being?
4. What policy and managerial implications can be drawn to support sustainable mental well-being in the hotel sector?

By combining theoretical insights with empirical data, this research aims to fill a gap in the Greek context and contribute to both academic debates and policy recommendations. The findings are intended to inform hotel management practices, human resources strategies, and public policies geared toward supporting employee mental well-being, thereby enhancing institutional resilience and service quality in a key economic sector.

In this study, the term mental well-being is used to refer to employees' self-perceived psychological functioning at work, including perceived stress, emotional exhaustion, anxiety, sleep disturbances and perceived work-life balance. The study does not aim to diagnose mental disorders, but to examine subjective indicators of psychological distress and well-being in the workplace, following common practice in hospitality and occupational health research.

2. THEORIES ON MENTAL HEALTH IN THE HOTEL SECTOR

Understanding mental health in the hotel industry requires grounding in occupational stress and emotional labour theories. Several models provide insight into why hotel employees, in particular, face heightened risks of stress, burnout and psychological strain.

2.1. JOB DEMANDS-CONTROL (JD-C) AND JOB DEMAND-CONTROL-SUPPORT (JD-CS) MODEL

Karasek's job demands-control (JD-C) model (1979), later extended to include social support (JD-CS), posits that stress is highest when employees face high demands but have little control over their work. Hospitality workers frequently experience heavy workloads, irregular shifts and limited autonomy in guest service situations, placing them in "high strain" categories. Studies applying the JD-CS framework in hospitality show that autonomy and social support can buffer the impact of stressors.

2.2. EFFORT-REWARD IMBALANCE (ERI) MODEL

Siegrist's effort-reward imbalance model suggests that psychological distress arises when the efforts employees invest are not matched by adequate rewards such as

salary, recognition or promotion opportunities (Siegrist, 1996). Empirical research demonstrates that hotel housekeepers reporting high effort but low reward experience reduced well-being and productivity (Rosemberg & Li, 2018). This imbalance is especially salient in Greek hotels, where many employees report long working hours and modest compensation.

2.3. JOB DEMANDS-RESOURCES (JD-R) MODEL

The job demands-resources (JD-R) model expands on earlier theories by considering the ever-changing balance between a wide range of job demands (workload, emotional pressure) and job resources (training, supervisor support, autonomy). Demands that outweigh resources lead to burnout, whereas sufficient resources promote engagement (Bakker & Demerouti, 2007). Applied to hotels, this model explains how resource provision, such as supportive management or flexible scheduling, can mitigate strain from demanding guest interactions or long shifts.

2.4. EMOTIONAL LABOUR THEORY

Hochschild's (1983) theory of emotional labour highlights the regulation of feelings and expressions to meet organizational expectations. In hotels, front-line employees are required to maintain friendliness and composure, often through surface acting (faking emotions) or deep acting (internalizing required emotions). Research shows that surface acting increases anxiety and depression, while prolonged deep acting can also contribute to emotional exhaustion (Xiong et al., 2023). Emotional labour is thus a critical driver of mental health challenges in the sector.

2.5. PSYCHOSOCIAL SAFETY CLIMATE (PSC)

The concept of psychosocial safety climate (PSC) emphasizes the role of organizational culture in protecting employees' psychological health. A strong PSC, where management visibly prioritizes mental health, reduces stress and burnout risks, while a weak PSC exacerbates them (Dollard & Bakker, 2010). In hotels, where stressors are inherent, PSC plays a central role in shaping whether employees feel supported or abandoned in managing their well-being.

2.6. AFFECTIVE EVENTS THEORY (AET)

Weiss and Cropanzano's (1996) affective events theory (AET) suggests that daily workplace events influence employees' emotional reactions, which in turn shape job satisfaction and mental health. In hotels,

constant micro-events (guest complaints, team conflicts, last-minute schedule changes) can accumulate into significant emotional strain if not managed effectively.

2.7. BURNOUT MODEL

Maslach and Jackson's (1981) burnout model describes burnout as a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment. It remains one of the most widely used frameworks in occupational health research. Burnout is frequently observed in hotel workers due to chronic exposure to high demands, irregular hours and emotional labour (Wong et al., 2025).

3. LITERATURE REVIEW ON MENTAL HEALTH IN HOTELS' WORKPLACES

3.1. STRESSORS AND ANTECEDENTS IN THE HOTEL WORK ENVIRONMENT

Research has consistently identified the hospitality and hotel sector as a high-risk environment for employee stress and poor mental health due to its unique job demands. Excessive workload, overtime and irregular scheduling are among the most common antecedents (Saito et al., 2025). Front-line hotel employees in particular face heavy service demands, role ambiguity and constant exposure to customer interactions, which significantly predict stress and reduced quality of life (Elshaer, 2023).

Another key stressor is emotional labour. Hochschild's (1983) original framework has been widely applied to hotel employees, where surface acting (suppressing or faking emotions) has been shown to increase anxiety and depression, while deep acting may protect employees in the short term but contributes to emotional exhaustion over time.

Job insecurity and financial strain are also major predictors of distress. For instance, during the COVID-19 crisis, job insecurity was found to increase depression, anxiety and stress among tourism and hospitality workers, particularly when combined with household financial pressure. Similarly, studies in hotels show that job insecurity is strongly associated with burnout (Chong et al., 2024).

Finally, interpersonal and organizational dynamics matter. Customer incivility, team conflict and poor supervisory support exacerbate stress and lead to poorer mental health outcomes. Conversely, organizational climates that emphasize trust and psychological safety have been shown to improve well-being and loyalty in post-COVID hotel settings (Liu et al., 2025).

3.2. MENTAL HEALTH OUTCOMES

Hotel employees are prone to multiple adverse mental health outcomes. Depression, anxiety and stress symptoms are prevalent across hospitality populations. A large-scale study of Chinese hotel employees confirmed that work stressors are positively associated with depressive symptoms, nervousness and reduced peace of mind (Wong et al., 2025).

Burnout is a central theme in hospitality research. Evidence from Phuket (Thailand) demonstrates that burnout among hotel employees escalated during COVID-19, with younger and less experienced workers particularly vulnerable (Weerakit & Eason, 2022). Earlier studies already highlighted that work stress in hotels spills over into physical exhaustion, poor sleep and health problems (O'Neill & Davis, 2011).

3.3. IMPACTS OF COVID-19 AND THE POST-PANDEMIC CONTEXT

The COVID-19 pandemic amplified existing vulnerabilities in the hotel sector. Empirical evidence shows that employees experienced heightened anxiety, depression and insecurity, largely due to disrupted work routines and the threat of layoffs (Krikonis et al., 2025). Research on hotel workers in quarantine facilities highlighted that even those retained in employment faced mental distress and required resilience strategies to adapt (Zakaria & Bansah, 2024).

Post-pandemic challenges continue, with many hotels struggling with staff shortages, increased guest expectations and unstable work patterns, all of which contribute to long-term psychological strain. A systematic review further emphasizes that COVID-19 widened the gap between rising mental health needs and insufficient organizational support (Saito et al., 2025).

3.4. COPING STRATEGIES AND ORGANIZATIONAL INTERVENTIONS

Hotel employees adopt diverse coping strategies, including problem-solving, exercise, and seeking social support. Proactive coping behaviors have been linked to greater resilience and reduced stress (Ma et al., 2021).

However, low mental health literacy and stigma remain barriers to effective help-seeking. In UK hospitality, shame and external motivation were significantly correlated with greater distress and reluctance to seek support (Kotera et al., 2018). Industry surveys suggest that many hotel workers fear disclosing mental health concerns because of potential career repercussions.

At the organizational level, interventions such as leadership support, training and fostering a strong

psychosocial safety climate are recommended (Dollard & Bakker, 2010). Government white papers stress the need for industry-specific approaches tailored to hospitality contexts (Nejad et al., 2022).

3.5. GAPS IN THE LITERATURE

Despite the growing body of research, several gaps remain. Few studies focus specifically on Greek hotels or the wider Mediterranean context. Many investigations are cross-sectional, limiting understanding of long-term impacts. The link between coping mechanisms and measurable mental well-being outcomes is underexplored, and evaluations of concrete organizational or policy interventions remain scarce.

4. RESEARCH METHODOLOGY

4.1. RESEARCH DESIGN

This study adopts a quantitative research design based on primary data collected through an online survey questionnaire distributed to hotel employees in Greece. The design follows a cross-sectional approach, allowing for the collection of employee perceptions at a single point in time. Such survey-based methodologies are common in hospitality and tourism research, particularly for investigating job stress, burnout, and mental health (Dogantekin et al., 2022; Saito et al., 2025).

4.2. DATA COLLECTION AND SAMPLE

The data were collected between August and September 2025 via an anonymous online questionnaire shared through professional networks and social media platforms. A total of 139 valid responses were obtained from employees working in hotels across Greece, representing various job categories (front office, housekeeping, food and beverage, management). Participation was voluntary, and confidentiality was assured.

Given the relatively small and non-probabilistic sample, the present research should be considered a pilot study. Its purpose is to provide an initial diagnosis of perceived mental well-being and psychological distress in Greek hotels and to inform future large-scale research designs.

The sampling approach was non-probability convenience sampling, widely used in exploratory hospitality research due to accessibility and resource constraints (Altınay & Paraskevas, 2008). Although this limits the generalizability of findings, it provides useful insights into trends within the Greek hotel sector.

4.3. RESEARCH INSTRUMENT

The structured questionnaire consisted of 20 closed-ended questions organized into four thematic sections:

1. Profile of respondents (demographics, education, job position, experience).
2. Work pressure and daily life (workload, stress frequency, work-life balance).
3. Mental well-being and the post-COVID era (self-reported well-being before and after COVID-19, symptoms of stress and anxiety, perceptions of job insecurity).
4. Suggestions and coping strategies (employee proposals for organizational change and personal coping mechanisms).

Questions were designed based on validated constructs used in prior hospitality research on mental health and occupational stress (O'Neill & Davis, 2011; Wong et al., 2025). The instrument was pre-tested with a small group of employees to ensure clarity and relevance.

4.4. VARIABLES

The survey captured the following variables:

1. Demographic variables: gender, age, education, employment type, years of experience and working hours.
2. Mental well-being variables: indicators of mental well-being and psychological distress (stress levels, self-rated well-being, presence of psychological symptoms before and after COVID-19).
3. Moderating/mediating variables: perceived organizational support, work-life conflict and coping strategies.

4.5. DATA ANALYSIS

Data were analyzed using SPSS software (version 27). The analysis followed a descriptive statistics process to summarize demographic and workplace characteristics. This methodological approach mirrors previous hospitality research that uses descriptive analysis to capture employee well-being (Krikonis et al., 2025).

Considering the exploratory and pilot character of the study and the limited non-probabilistic sample, the analysis focused on descriptive statistics in order to identify general patterns and tendencies in employees' perceived mental well-being and psychological distress. The study does not aim to test causal relationships. Future studies based on larger and stratified samples should apply inferential and multivariate statistical techniques to examine associations between occupational groups, working conditions and mental well-being indicators.

4.6. ETHICAL CONSIDERATIONS

All participants were informed about the purpose of the research, assured of confidentiality, and provided consent before completing the questionnaire. No personal identifiers were collected. The study followed ethical guidelines for social science research (Creswell & Creswell, 2018).

5. PROFILE OF THE RESPONDENTS (QUESTIONS 1–6)

The survey gathered responses from 139 hotel employees working across different positions and departments. This section presents their demographic and occupational profile based on the first six survey questions. The demographic characteristics of the respondents are summarized in Table 1.

Table 1. Demographic profile of respondents

Variable	Category	<i>n</i>	Percentage (%)
Gender	Male	66	47.5
	Female	73	52.5
Age	<25	21	15.1
	25–34	39	28.1
	35–50	69	49.6
	50>	10	7.2
Education level	Primary/ compulsory education	10	7.2
	Secondary education	28	20.1
	Higher education (undergraduate)	73	52.5
	Postgraduate studies or higher	28	20.1
Job position in the hotel	Reception/ front desk	27	19.4
	Housekeeping	10	7.2
	Food & beverage (waiter, bar, etc.)	29	20.9
	Administration/ management	41	29.5
	Technical support	17	12.2
	Other	15	10.8
Employment type	Full-time	73	52.5
	Part-time	4	2.9
	Seasonal work	62	44.6
Years of work experience in the hotel sector	<1 year	14	10.1
	1–3 years	29	20.9
	4–7 years	31	22.3
	8–15 years	31	22.3
	>15 years	34	24.5

Source: authors.

5.1. GENDER

The sample was relatively balanced, consisting of 47.5% men ($n = 66$) and 52.5% women ($n = 73$). This distribution reflects the increasing participation of women in the hospitality sector, particularly in guest-facing and administrative roles, as noted in prior Greek and international studies (Saito et al., 2025).

5.2. AGE

The largest group of respondents fell in the 35–50 age bracket (49.6%), followed by 25–34 years (28.1%), under 25 (15.1%), and over 50 (7.2%). This demonstrates that the hotel sector workforce in Greece is dominated by mid-career employees, with younger workers also forming a substantial proportion, consistent with previous hospitality workforce studies (Dogantekin et al., 2022).

5.3. EDUCATION LEVEL

More than half of respondents had completed higher education (52.5%), while 20.1% held postgraduate qualifications. Secondary education accounted for 20.1%, and only 7.2% reported compulsory education as their highest level. These results highlight the relatively high educational attainment of Greek hotel employees, which has also been observed in other regional studies (Vagena et al., 2024).

5.4. JOB POSITION

Respondents worked in diverse hotel departments: administration/management (29.5%), food & beverage services (20.9%), reception/front desk (19.4%), technical support (12.2%), other roles (10.8%), and housekeeping (7.2%). This spread reflects the sector’s reliance on both operational and guest-facing staff, with management and service roles dominating the sample.

5.5. EMPLOYMENT TYPE

Most respondents were employed on a full-time basis (52.5%), while 44.6% were seasonal workers, and only 2.9% worked part-time. The high percentage of seasonal employment is consistent with the seasonal nature of Greek tourism, where workforce demand peaks during the summer months.

5.6. YEARS OF WORK EXPERIENCE

The respondents reported varying levels of experience: 24.5% had more than 15 years of service, while 22.3% each had 4–7 years and 8–15 years of

experience. A smaller proportion had 1–3 years (20.9%), and 10.1% were relatively new (<1 year). This indicates a well-mixed sample of experienced professionals and early-career employees, allowing for diverse perspectives on workplace mental well-being.

Overall, the profile suggests that the respondent group is representative of the Greek hotel workforce, encompassing a balance of genders, a majority of mid-career employees, relatively high educational backgrounds, and significant proportions of both permanent and seasonal staff. These characteristics provide a robust foundation for analyzing how different demographics perceive and experience workplace pressures and mental well-being challenges.

6. WORK PRESSURE AND DAILY LIFE (QUESTIONS 7–10)

6.1. FREQUENCY OF WORK STRESS

The survey revealed that workplace stress is a pervasive issue among hotel employees. Nearly half of respondents (48.2%) reported experiencing stress “often”, while 34.5% indicated they felt stressed “sometimes”. A smaller proportion reported stress “always” (10.1%) or “rarely” (7.2%), and none reported “never”. These findings align with prior hospitality studies that emphasize high occupational stress as a defining feature of hotel employment, largely due to customer-facing roles, long shifts and emotional labour (Dogantekin et al., 2022; O’Neill & Davis, 2011). The distribution of responses regarding the frequency of workplace stress is illustrated in Figure 1.

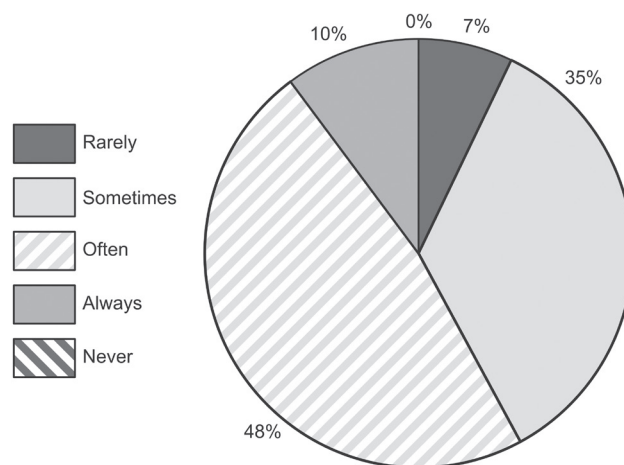


Figure 1. Frequency of work stress (answers to the question: “How often do you feel pressure or stress at work?”)

Source: authors

6.2. WORKING HOURS

With respect to daily working hours, the majority (51.1%) reported working between 9–10 hours per day, while 30.2% worked the standard 6–8 hours, and 18.7% exceeded 10 hours per day. This distribution highlights the prevalence of extended shifts in Greek hotels. Excessive working hours are consistent with international hospitality findings, where long shifts and irregular schedules are linked to higher levels of stress and reduced well-being (Sonnentag, 2018; Wong et al., 2025). The distribution of daily working hours reported by respondents is illustrated in Figure 2.

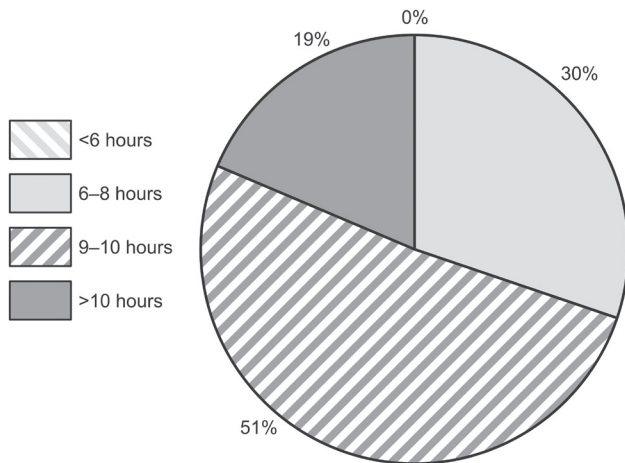


Figure 2. Working hours (answers to the question: “How many hours do you usually work per day?”)
Source: authors

6.3. SATISFACTION WITH WORKING CONDITIONS

When asked about satisfaction with working conditions, nearly half (49.6%) of respondents reported being only “moderately” satisfied. About 28.8% expressed high satisfaction (“very satisfied”), and 6.5% were

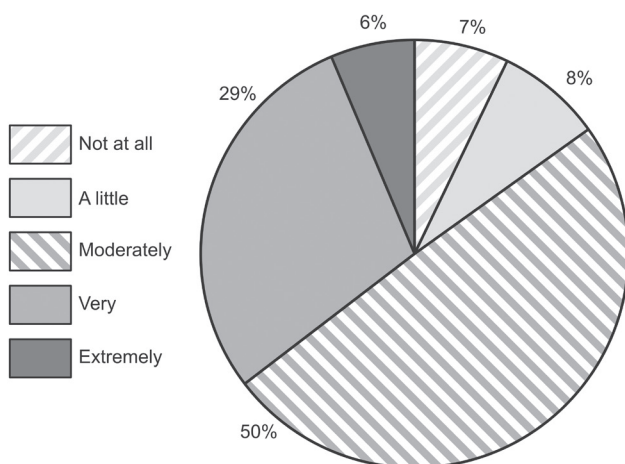


Figure 3. Satisfaction with working conditions (answers to the question: “How satisfied are you with your working conditions?”)
Source: authors

“extremely satisfied”. In contrast, 15.1% reported low satisfaction (“a little” or “not at all”). This suggests that although a segment of employees view their working conditions positively, a significant proportion perceive them as only moderately acceptable, reflecting wider concerns about pay, workload and job security reported in the literature (Saito et al., 2025). Employees’ levels of satisfaction with their working conditions are presented in Figure 3.

Pie chart showing the answers to the question: How satisfied are you with your working conditions? (not at all: 7%; a little: 8%; moderately: 50%; very: 29%; extremely: 6%).

6.4. WORK-LIFE BALANCE

One of the most striking findings concerns the effect of work on personal life. About one-third (33.1%) of participants believed that their work negatively affected their personal lives, while 41.7% stated it partially did, and only 25.2% denied any negative impact. These results confirm earlier findings that hotel work often disrupts work-life balance, particularly for employees with long hours and irregular shifts (Lu et al., 2016). Moreover, the results resonate with Greece-specific studies, where seasonal hotel employment is associated with strong conflicts between work demands and family or social life. The perceived impact of work on employees’ personal lives is illustrated in Figure 4.

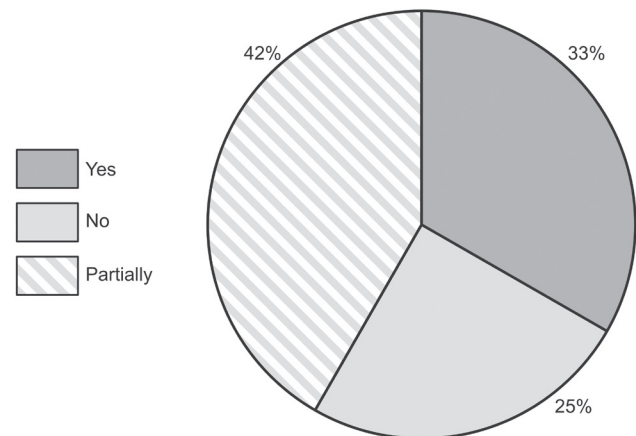


Figure 4. Work-life balance (answers to the question: “Do you feel that your work negatively affects your personal life?”)
Source: authors

Overall, the data indicate that work pressure and long hours are major challenges for Greek hotel employees. High stress frequency, extended working days, moderate satisfaction with working conditions, and significant interference with personal life point to structural pressures embedded in the hotel sector. These findings are consistent with international evidence that hotel employees face disproportionate

stress due to emotional labour and workload, which in turn undermine mental health and job satisfaction (Dogantekin et al., 2022; Hochschild, 1983).

7. MENTAL WELL-BEING AND THE POST-COVID ERA (QUESTIONS 11–16)

7.1. PERCEIVED MENTAL HEALTH BEFORE AND AFTER COVID-19

The survey results demonstrate a substantial decline in self-assessed mental health following the COVID-19 pandemic. Prior to the pandemic, the majority of respondents described their mental health as either very good (40.3%) or good (38.8%), while only 5.8% reported poor or very poor health. However, in the post-pandemic period, only 15.1% rated their mental health as “very good” and 40.3% as “good”, while the proportion

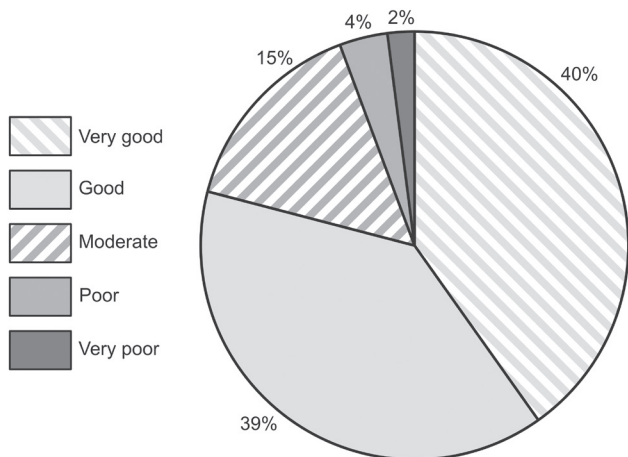


Figure 5. Perceived mental health before COVID-19 (answers to the question: “How would you describe your mental health before the COVID-19 pandemic?”)
Source: authors

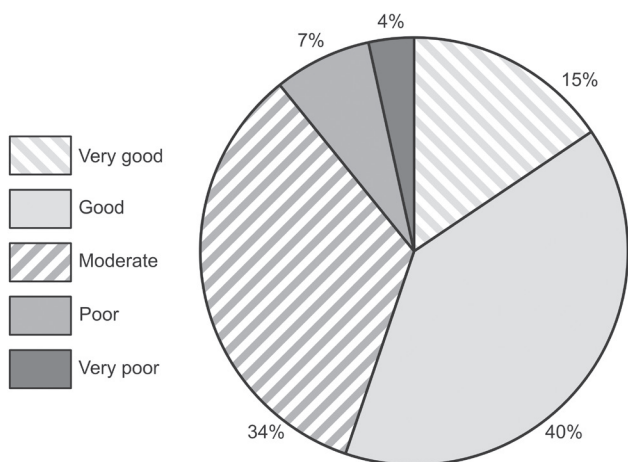


Figure 6. Perceived mental health after COVID-19 (answers to the question: “How would you describe it today?”)
Source: authors

reporting “moderate” or worse mental health increased to 44.6%. This shift highlights the negative long-term impact of COVID-19 on hotel employees’ psychological well-being. Similar declines have been documented across hospitality sectors globally, where the pandemic intensified job insecurity, workload stress and health-related anxieties (Krikonis et al., 2025). Respondents’ self-assessment of their mental health prior to the COVID-19 pandemic is presented in Figure 5 and the current self-assessment of employees’ mental health in the post-pandemic period is illustrated in Figure 6.

7.2. IMPACT OF THE PANDEMIC ON MENTAL HEALTH

When directly asked whether the pandemic affected their mental health, a combined 27% of participants reported that it had impacted them “a lot” or “extremely”. Another 23% reported a moderate effect, while only 20% stated it had no impact. These findings align with studies in Europe and Asia, which consistently show that COVID-19 created psychological strain among hotel staff due to uncertainty, heightened guest demands and the implementation of health protocols (Zakaria & Bansah, 2024). Employees’ perceptions of the impact of the COVID-19 pandemic on their mental health are presented in Figure 7.

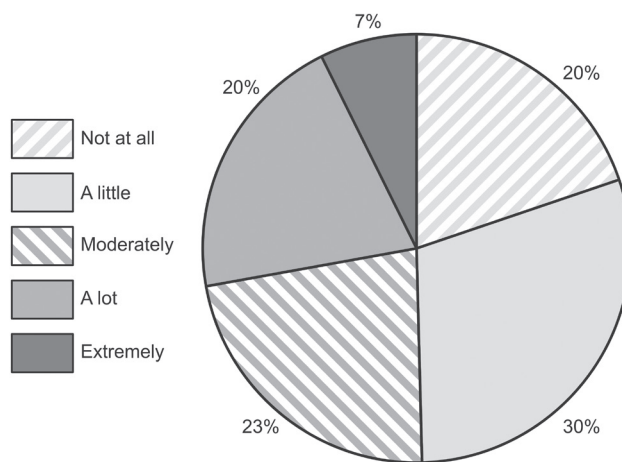


Figure 7. Impact of the pandemic on mental health (answers to the question: “Do you believe the pandemic affected your mental health?”)
Source: authors

7.3. MENTAL HEALTH SYMPTOMS REPORTED

Respondents also indicated specific psychological symptoms experienced after the pandemic. The most frequently reported were anxiety (47.5%), emotional exhaustion (38.8%) and sleep disorders (30.9%). Depression was reported by 20.9% of participants, while 32.4% stated they experienced none of the listed symptoms. This distribution mirrors findings from Wong et al. (2025), who found that hotel stressors contribute to higher levels of anxiety and depression, as

well as reduced inner calm. The prevalence of emotional exhaustion corresponds to the literature on burnout in hospitality, where pandemic-induced pressures amplified existing risks (Weerakit & Eason, 2022). The distribution of reported psychological symptoms after the pandemic is presented in Table 2.

Table 2. Have you experienced any of the following since the pandemic? You may select more than one (question no. 14)

Answer	Frequency	Percentage (%)
Anxiety	66	47.5
Depression	29	20.9
Emotional exhaustion	54	38.8
Sleep disorders	43	30.9
None of the above	45	32.4

Source: authors.

7.4. SEEKING PROFESSIONAL SUPPORT

Despite the prevalence of mental health concerns, only 16.5% of respondents reported seeking help from a mental health professional. The majority (76.3%) stated they had not sought such support, while 7.2% were considering it. These results are consistent with broader hospitality research, which highlights stigma and low mental health literacy as major barriers preventing employees from seeking professional assistance (Kotera et al., 2018). The distribution of responses regarding whether employees sought professional support is presented in Figure 8.

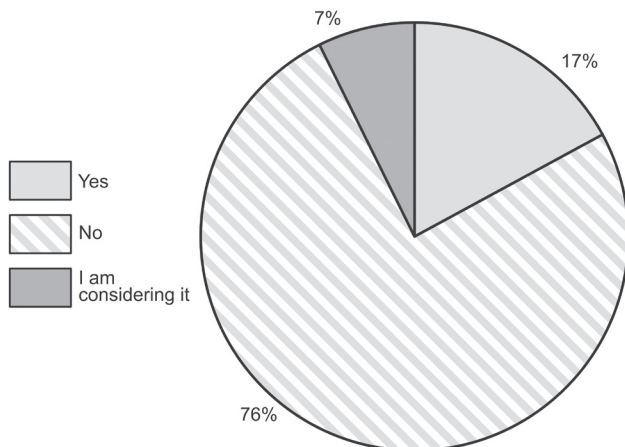


Figure 8. Seeking professional support (answers to the question: “Have you ever sought help from a mental health professional due to your work situation or the pandemic?”)

Source: authors

7.5. EMPLOYER CONSIDERATION OF MENTAL HEALTH

Perceptions of organizational support were limited. More than half (54.7%) of respondents believed that their employer does not take employees’ mental health into account, while 28.8% felt it was considered only “to

some extent”, and just 16.5% believed it was adequately addressed. This lack of organizational attention is problematic, as evidence shows that psychosocial safety climates and supportive leadership reduce stress and buffer employees against burnout (Dollard & Bakker, 2010; Liu et al., 2025). Employees’ perceptions of whether employers take mental health into account are presented in Figure 9.

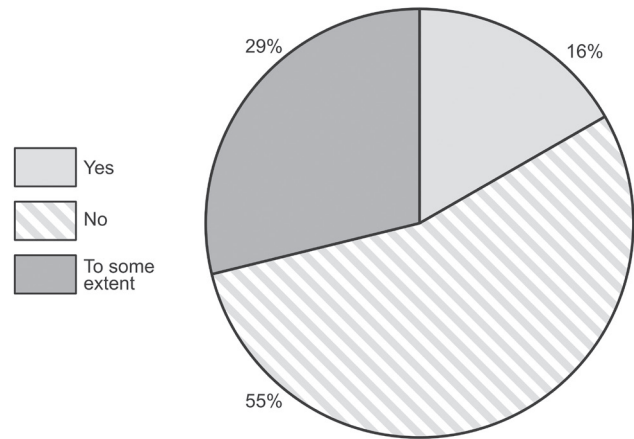


Figure 9. Employer consideration of mental health (answers to the question: “Do you believe your employer takes employees’ mental health into account?”)

Source: authors

The survey findings indicate that the COVID-19 pandemic had a profound and enduring effect on Greek hotel employees’ mental health. A significant portion of the workforce reported declines in well-being, with anxiety, emotional exhaustion and sleep disorders emerging as the most common symptoms. Despite these challenges, few employees sought professional help, highlighting the ongoing barriers of stigma and insufficient workplace support. Furthermore, the majority perceived employers as inattentive to their psychological needs. These findings underscore the urgent need for targeted interventions, both organizational (improving psychosocial safety climates, providing training and resources) and policy-level (ensuring access to mental health services and employee protections), to address the pandemic’s enduring mental health legacy in the hospitality sector.

8. SUGGESTIONS AND COPING (QUESTIONS 17–20)

8.1. EMPLOYEE SUGGESTIONS FOR IMPROVING WORKPLACE MENTAL HEALTH

Figure 10 highlights the limited existence of formal mental health support structures within Greek hotels, illustrating a critical gap between employee

needs and organizational provisions. The findings show that most employees do not perceive their workplace as offering structured assistance, such as counseling services or stress management programs. This absence of institutional support not only reinforces the stigma surrounding help-seeking but also explains why staff rely predominantly on personal coping mechanisms, as reflected in Figure 7. Taken together with perceptions of employer neglect (Figure 8), Figure 9 underscores the urgent need for organizations to adopt systematic interventions that prioritize psychosocial safety, reduce work-related stress and promote resilience.

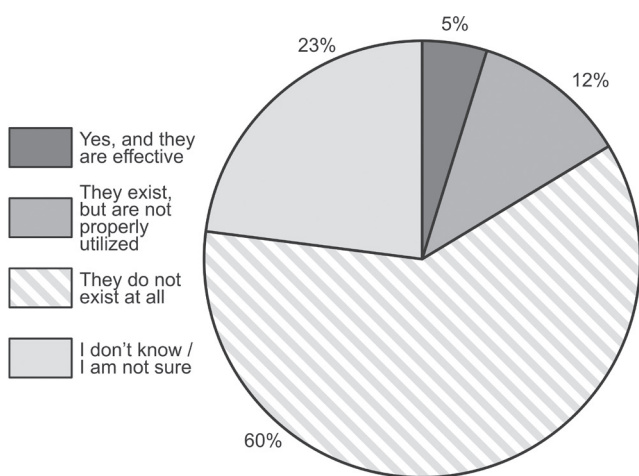


Figure 10. Existence of mental health support structures (answers to the question: “Do you believe there are sufficient mental health support structures in your workplace?”) Source: authors

8.2. COPING STRATEGIES USED BY EMPLOYEES

Figure 10 presents the coping strategies employed by hotel employees to manage work-related stress, revealing a strong reliance on informal and personal approaches. The most common strategies included spending time with family and friends, engaging in physical exercise, and seeking rest or leisure activities, while only a minority turned to hobbies or creative outlets. Notably, professional psychological support is almost absent from the responses, which is consistent with earlier findings of stigma and limited workplace provisions (Figures 8 and 9). These results highlight the resilience of employees in attempting to safeguard their well-being through social and individual resources, yet they also point to a structural imbalance: personal coping alone cannot compensate for the lack of organizational and policy-level interventions. In this sense, Figure 10 illustrates the coping burden placed on employees and emphasizes the necessity of institutional measures to complement individual strategies.

8.3. ORGANIZATIONAL AND POLICY-LEVEL INTERVENTIONS

Figures 11 and 12 illustrate employees’ proposed organizational and policy-level interventions to improve workplace mental health, underscoring their clear demand for structural solutions rather than reliance solely on individual coping mechanisms.

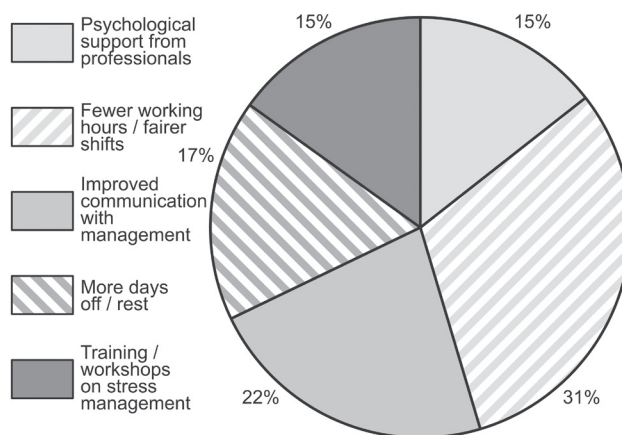


Figure 11. Coping strategies used by employees (answers to the question: “Which of the following actions do you consider most important for improving mental health at the workplace?”) Source: authors

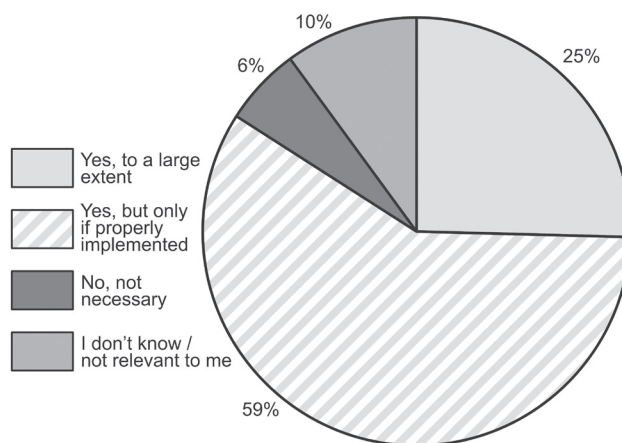


Figure 12. Organizational-level interventions proposed by employees to improve workplace mental health (answers to the question: “Do you think it would be useful to have a mental health policy in the hotel where you work?”) Source: author

Figure 13 presents employees’ satisfaction with the support they receive from their employer when facing psychological pressure. Respondents emphasized the need for formal mental health programs, access to counseling services, and management training in emotional intelligence and conflict resolution. These findings align with international best practices that advocate for psychosocial safety climates and structured well-being initiatives as critical buffers against stress and burnout in the hospitality sector.

Importantly, the figures demonstrate that employees are not passive in the face of mental health challenges; rather, they actively articulate concrete measures that could strengthen resilience and enhance job satisfaction. The consistency of these proposals with evidence from the literature highlights both the feasibility and urgency of implementing systemic reforms at the organizational, sectoral and governmental levels.

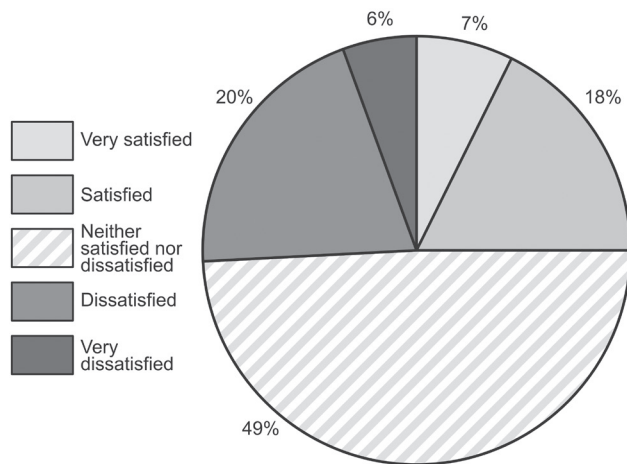


Figure 13. Policy-level interventions proposed by employees to improve workplace mental health (answers to the question: “How satisfied are you with the support you receive from your employer when facing psychological pressure?”)
Source: authors

The survey results suggest that Greek hotel employees see both structural and individual solutions to mental health challenges. On the one hand, employees emphasized the need for systemic changes, such as reduced working hours, better schedules and organizational support mechanisms. On the other hand, many relied on social connections and personal coping behaviors to buffer stress. However, the relatively low mention of professional psychological help suggests that stigma and accessibility barriers remain issues, as noted in prior hospitality research (Kotera et al., 2018). Thus, any long-term strategy should combine individual coping resources with structural reforms at the organizational and policy level.

9. POLICY IMPLICATIONS

The empirical evidence from this study highlights urgent challenges for the Greek hotel sector regarding employee mental well-being. High levels of workplace stress, deterioration of well-being after COVID-19, and limited organizational support underscore the need for targeted interventions. Policy implications can be drawn at three levels: organizational, sectoral and governmental.

9.1. ORGANIZATIONAL-LEVEL POLICIES

Hotel organizations should prioritize creating a psychosocially-safe work environment. Implementing psychosocial safety climate policies, such as clear communication of mental well-being priorities, management training in emotional intelligence, and the establishment of employee assistance programs, has been shown to reduce stress and burnout in service industries (Dollard & Bakker, 2010; Liu et al., 2025). Moreover, redesigning shift schedules to reduce excessive working hours and ensuring fair workload distribution are key to improving a work–life balance, which was one of the strongest concerns expressed by employees in this study.

Hotels could also adopt mental well-being literacy programs, normalizing discussions about stress and reducing stigma around seeking professional support. Prior research has shown that low mental well-being literacy and shame often prevent hospitality employees from accessing available resources (Kotera et al., 2018).

9.2. SECTORAL-LEVEL POLICIES

Industry associations and tourism bodies in Greece can play a significant role by promoting sector-wide guidelines for mental well-being. These could include codes of practice for shift length, mandatory rest periods and stress management workshops. International best practices, such as resilience training and mindfulness programs implemented in Asian and Western hotels, have demonstrated positive outcomes for employee well-being. Sectoral initiatives should also emphasize career development opportunities, as these are linked to lower stress and greater job satisfaction in hospitality (Saito et al., 2025).

9.3. GOVERNMENTAL POLICIES

Given the tourism sector’s strategic importance for Greece, the state has a role in shaping labour and social policies that safeguard employee mental well-being. Policies could include:

1. Regulation of working hours and seasonal employment practices, reducing the burden of extended shifts.
2. Subsidized mental well-being services for seasonal and full-time hotel workers, ensuring accessibility beyond urban centers.
3. Integration of mental well-being considerations in tourism policy frameworks, aligning with EU directives on occupational health and safety.

Governmental support for mental well-being initiatives can also strengthen the sector’s resilience against future crises. The COVID-19 experience demonstrated that crises have disproportionate psychological

impacts on hospitality workers (Krikonis et al., 2025). Embedding mental well-being protections into labour law and crisis management planning can mitigate such impacts in the future.

9.4. SUMMARY

Overall, this study's findings point to the need for a multi-level policy response. At the organizational level, hotels must actively manage workloads and invest in psychosocial safety climates. At the sectoral level, industry-wide standards can reduce variability in practices and promote sustainable employment. At the governmental level, regulatory and supportive frameworks are necessary to protect employees in one of Greece's most vital economic sectors. Addressing mental well-being is not only a matter of individual well-being but also of service quality, staff retention, and the long-term competitiveness of the tourism industry.

10. LIMITATIONS AND FUTURE RESEARCH

Although this study provides valuable insights into the mental well-being of hotel employees in Greece, several limitations must be acknowledged. First, the sample size (139 respondents) was modest and drawn using convenience sampling. While this approach was practical, it limits the generalizability of the findings to the broader population of Greek hotel employees. Future studies should adopt larger, probabilistic samples across different regions and hotel categories to strengthen external validity.

Second, the study relied on self-reported data, which may be subject to bias such as social desirability or underreporting of mental well-being issues due to stigma. Mixed-method approaches that combine quantitative surveys with qualitative interviews could provide a richer understanding of employee experiences.

Third, the cross-sectional design offers only a snapshot in time, preventing the identification of causal relationships or long-term trends. Longitudinal research would allow scholars to examine how mental well-being evolves across different tourism seasons and in the aftermath of crises such as COVID-19.

Finally, while this study focused on individual employees, future research should explore multi-level perspectives, including managerial practices, organizational culture and sector-wide policies, to better capture the systemic factors influencing mental well-being. Comparative studies across countries or regions would also help situate the Greek case within the global hospitality context.

Although employees from different departments participated in the study, the sample size does not allow statistically reliable comparisons between occupational groups (e.g. housekeeping versus management). Future research should apply stratified sampling and larger samples to examine occupational differences in perceived well-being and psychological distress.

In sum, addressing these limitations through broader, longitudinal and multi-level research designs will contribute to a deeper understanding of mental well-being in hospitality and help inform evidence-based interventions to support the well-being of hotel employees.

11. CONCLUSIONS

This study explored the mental well-being of Greek hotel employees through a survey of 139 respondents, focusing on workplace pressures, the effects of the COVID-19 pandemic, coping mechanisms, and policy implications. The findings provide valuable insights into the challenges faced by employees in one of Greece's most important economic sectors.

First, the analysis revealed that stress is pervasive in hotel workplaces. Employees frequently work long hours, often exceeding the standard eight-hour day, and many reported difficulties balancing professional obligations with personal life. Work-life imbalance and workload intensity were identified as central drivers of stress, echoing international hospitality research on occupational pressures.

Second, the COVID-19 pandemic significantly deteriorated employees' mental well-being. While most respondents assessed their mental well-being as good or very good before the pandemic, the proportion decreased substantially afterward. Symptoms such as anxiety, emotional exhaustion and sleep disorders were widespread, reflecting the pandemic's long-lasting psychological toll on the hospitality workforce. Despite these challenges, relatively few employees sought professional help, underscoring persistent stigma and barriers to accessing mental well-being services.

Third, the study highlights an evident gap between employees' needs and organizational practices. More than half of respondents believed their employers did not take mental well-being into account, and only a minority perceived any meaningful support. This suggests that, despite the importance of well-being for performance and retention, mental well-being remains an overlooked issue in Greek hotels.

Finally, the employees' suggestions point toward actionable strategies. Respondents emphasized the need for fairer scheduling, reduced working hours, better managerial communication and formal support

programs. Together, these findings underline that addressing mental well-being is not only a matter of individual coping strategies but also requires organizational and policy-level reforms.

In conclusion, this study demonstrates that mental well-being in the Greek hotel sector is shaped by structural pressures, crisis impact and insufficient institutional support. Improving employee well-being demands a coordinated, multi-level response: hotels must cultivate supportive workplace cultures, industry associations should promote sector-wide standards, and government policies must safeguard workers through regulations and accessible services. Such efforts are essential not only for protecting employees' psychological health but also for ensuring the sustainability and competitiveness of the Greek hospitality industry in a post-pandemic world.

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PERCEIVED RISK, ANXIETY AND INTERNATIONAL TRAVEL DECISIONS IN POST-PANDEMIC CONTEXT: THE CASE OF BALI

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Data availability statement

The data presented in this study are available on request from the corresponding author.

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ABSTRACT

Understanding international tourists' decision-making during periods of uncertainty is crucial for tourism recovery and destination management. Despite the significant disruption of global travel caused by COVID-19, limited empirical research has examined how tourists' risk perception and anxiety influence international travel decisions following border reopening. Therefore, this study investigates the factors influencing such decision-making by integrating risk perception and anxiety into the theory of planned behavior (TPB). This study has developed a theoretical framework that combines risk perception, anxiety and TPB. A quantitative approach was used to measure inbound tourists' decision-making for their trip to Bali after COVID-19. Self-administered surveys consisting of ten sections (physical, psychological, financial and time risks, anxiety, attitude, subjective norms, perceived behavioral control, travel decisions and socio-demographic factors) were distributed to respondents. A total of 487 valid responses were analyzed using partial least squares structural equation modeling. Findings show that perceived behavioral control, subjective norms and attitudes significantly influence international tourists' travel decisions. Perceived behavioral control showing the strongest predictive value. While perceived psychological or physical risks did not directly affect travel decisions, all risk dimensions significantly increased travel-related anxiety. Implications for destination management organizations and marketing professionals in the post-pandemic era are discussed.

KEYWORDS

anxiety, Bali, decision making, risk perception, theory of planned behavior

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1. INTRODUCTION

The first public announcement of COVID-19 was made by the World Health Organization (WHO) on January 30, 2020, and six weeks later, it was declared as a pandemic (Callaway et al., 2020; WHO, 2020). Tourism is one of the industries most affected by the COVID-19 epidemic and a comparison of international tourist arrivals in 2019 with data available in March 2023 shows a decline of 19% (World Tourism Organization [UNWTO], n.d.b). It was estimated that international travel dropped 72% in 2020, resulting in 1.1 billion fewer international tourists worldwide (UNWTO, n.d.a). The economic contribution of tourism to GDP almost halved between 2019 and 2021, from US\$3.5 billion to US\$1.9 billion (UNWTO, n.d.a).

Indonesia comprises over 17,000 islands, the most famous of which is Bali (Babolian Hendijani, 2020). According to Statista Research Department (2025), in December 2021, only 163,620 international tourists visited Indonesia. This significantly impacted industries that support tourism, with a 98.6% decrease compared to January 2020 (12,238,000 visitors). The objective of this research is to discover the consequences of the COVID-19 pandemic on international tourists' travel decisions to Bali. This island is one of the most popular tourist destinations in Southeast Asia (Thung et al., 2024) and heavily depends on tourism (Ramadhani et al., 2024). Most international tourists to Indonesia visit Bali (Pham & Nugroho, 2022), and this island is better known than Indonesia itself (Purnamawati et al., 2022).

To support this study, the theory of planned behavior (TPB) by Ajzen (1988, 1991) is applied to better understand the factors that influence decisions to travel to Bali and is one of the most widely used models for predicting specific decisions. The TPB model was extended to include the following components: psychological, financial, time and physical risks, and anxiety to account for the fact that the decision to travel abroad in the context of a (post-)pandemic is influenced by additional factors. Fears, such as fear of contagion (Fan et al., 2023), are important drivers of behavior (Taylor, 2019) and lead to risk aversion (Smith et al., 2016). With a wide range of practical and theoretical implications, current research plans to clarify the complex process of deciding to travel abroad by examining the interaction of these variables.

Several studies have examined travelers' risk perceptions after health crises (Cahyanto et al., 2016; Cheng et al., 2022; Wang & Karl, 2021) and during COVID-19 (Flaherty & Nasir, 2020; Liu et al., 2021; Luo & Lam, 2020; Neuburger & Egger, 2021; Rather, 2021; Sánchez-Cañizares et al., 2021; Sujood et al., 2022). However, little research has been conducted into how the international opening of tourist activities influences travel decisions, anxiety and individual risk perceptions. This study uses an extended TPB model to examine how different types of risk and anxiety affect decisions to travel to Bali.

Based on previous studies and the identified research gap, this study aims to examine how multiple dimensions of risk perception and travel-related anxiety influence international tourists' travel decision-making by extending TPB. Specifically, this study analyzes the effects of physical, psychological, financial, and time risks on travel decisions, as well as the mediating role of anxiety in shaping TPB components and travel decisions.

The work contributes to the tourism literature by providing empirical insights into international tourists' decision-making under conditions of perceived risk and anxiety. The findings offer practical implications for destination management organizations and tourism marketers seeking to reduce perceived uncertainty and strengthen tourists' confidence in international travel. The findings of this research will not only be applicable to Indonesia but also can be helpful for other destinations that heavily depend on tourism.

2. LITERATURE REVIEW

Theoretically, this paper is based on the extension of TPB. Because unprecedented uncertainty affects attitudes and behaviors under social influence (Bae & Chang, 2020), this extension provides structural guidance for the research model. It is also consistent with Ajzen's (2019, p. 317) statement that the TPB is "open to the inclusion of additional predictors". This study added four dimensions of risk perception and anxiety into the original framework, providing a more complete understanding of why people travel abroad, in this case to Bali, after the reopening of borders in the post-COVID era.

2.1. THEORY OF PLANNED BEHAVIOR (TPB)

The theory of planned behavior builds on the earlier theory of reasoned action (TRA), introduced by Fishbein and Ajzen in 1975. In TRA, so-called intentional factors like attitudes or subjective norms are responsible for the decisions of each person. The term 'attitude' is used to describe how an individual perceives a particular behavior. 'Subjective norm' describes the social pressure that every individual perceives which can either encourage or discourage a person to show a particular behavior (Ajzen, 1991; Liu et al., 2021). Because there is no complete self-control over one's own behavior, the TRA was expanded to the current TPB by adding perceived behavioral control (PBC) (Park et al., 2017), a third dimension measuring the control an individual perceives over their behavior (Musa et al., 2024).

In this study, 'attitude toward international travel' describes the personal feelings and evaluations associated with traveling to a foreign destination

like Bali during COVID-19. 'Subjective norm toward international travel' refers to the expected influence and expectations that friends and family had on people's travel decisions during the pandemic, measuring how others' opinions support or detract from travel in current circumstances. 'Perceived behavioral control to travel abroad' assesses if (potential) tourists believe in their ability to travel to foreign destinations, such as Bali. Before traveling, they evaluate their skills, the available information, and the necessary resources to make such a decision.

The TPB is considered one of the most valuable models to measure the perceptions of health concerns and tourists' protective behavior (Huang et al., 2020). Therefore, many studies in a tourist context (Hüsser & Ohnmacht, 2023; Meng & Cui, 2020; Rather, 2021; Sujood et al., 2022) have used the model or extended it to predict consumer behavior. Recent research has integrated additional psychological constructs into TPB, such as confidence in tourism recovery or risk awareness (Sun et al., 2024).

Several TPB-based studies (Juschten et al., 2019; Liu et al., 2021; Meng & Cui, 2020) have shown significant correlations between the attitudes, subjective norms, perceived behavioral control of individuals, and their decision to travel (abroad). Here, the decision to travel is equivalent to traveling to Bali. In congruence with current literature, attitudes, subjective norms and perceived behavioral control are hypothesized to significantly influence the decision to travel abroad:

H₁: The decision to travel to Bali is significantly influenced by a person's attitude.

H₂: The decision to travel to Bali is significantly influenced by the subjective norms a person perceives.

H₃: The decision to travel to Bali is significantly influenced by perceived behavioral control.

2.2. RISK PERCEPTION DIMENSIONS

Tourism research defines risk differently (Le & Acordia, 2018; Reisinger & Mavondo, 2005). In general, three types of risk are differentiated: absolute, objective and perceived (Seabra et al., 2013). Perceived risk is the focus of most risk studies in tourism and is directly related to behavior (Cui et al., 2016) which means that tourists can only experience risks related to themselves (Ma et al., 2020; Reisinger & Mavondo, 2005). The subjective norm interpretation of risk involves evaluating the uncertainty of tourism experiences (Huang et al., 2014) and considering possible losses, negative impacts and exposure. Therefore, tourists evaluate risks more on their intuition and subjective factors than on rational and objective decisions (Chen & Zhang, 2021).

Tourism risk perception is multidimensional and interdisciplinary (Godovykh et al., 2021; Lin et al., 2022). Several types influencing perceived travel

risk have been identified in the consumer behavior literature. Models with up to 22 travel-related risks consider different possible hazards (Hasan et al., 2017) including physical, health, financial, time, performance, functional, equipment, facility, social, psychological, temporal and communication (Zhan et al., 2022).

One of the key factors influencing tourists' risk perception is the decision-making process, which can affect their choice of destination and ultimately the decision to travel (Karl et al., 2020; Yeung & Yee, 2020). Therefore, the TPB has been extended to include financial, physical, psychological and time risks as four central dimensions of risk perception in pandemic situations.

Financial risk refers to the potential for economic loss resulting from higher prices or poorer quality services caused by COVID-19 (Artuğer, 2015; Dash, 2021; Perić et al., 2021; Rudyanto et al., 2021). Physical risks include sanitation, health or safety issues, as well as infectious risks (Artuğer, 2015; Dash, 2021; Zhan et al., 2022). Psychological risks are related to a lack of courage, the fear of others' opinions, and the epidemiological situation in general (Artuğer, 2015; Perić et al., 2021; Rudyanto et al., 2021). Time risk refers to the potential perception of not having used the time efficiently (Artuğer, 2015; Taşcıoğlu & Yener, 2021; Yağmur & Doğan, 2017).

Given that any perceived risk involves some expected loss, it can significantly influence attitudes toward international travel (Sánchez-Cañizares et al., 2021). A tourist's risk perception is associated with a destination, for example, Bali. It can have a strong impact on tourists' decision-making to visit or revisit that destination (Allameh et al., 2015; Chen et al., 2017; Hasan et al., 2017). According to the four applied risk perception dimensions (Artuğer, 2015; Perić et al., 2021; Yi et al., 2020), the following hypotheses are proposed:

H₄: Perceived financial risk and the decision to travel to Bali are significantly related.

H₅: Perceived physical risk and the decision to travel to Bali are significantly related.

H₆: Perceived psychological risk is significantly related to the decision to travel to Bali.

H₇: Perceived time risk is significantly related to the decision to travel to Bali.

2.3. ANXIETY

One hundred years after Austrian psychoanalyst Sigmund Freud coined the term 'travel anxiety', the description of a new wave of travel phobia seems to be very relevant (Flaherty & Nasir, 2020). Even though there is no unique definition in the literature, anxiety can be described as an emotional response to stress or real or perceived risk (Luo & Lam, 2020). In other words, anxiety arises from exposure to real or perceived risk (Reisinger & Mavondo, 2005). Travel to any destination involves some degree of uncertainty and risk (Luo

& Lam, 2020), however, individuals vary widely in their perception of risk and the resulting potential fear or anxiety. In general, international and exotic travel appears to be associated with greater personal health and safety risks than domestic travel (Zenker et al., 2021).

Anxiety is an emotional and cognitive response (Cacioppo et al., 1979). It expresses the concerns and worries that tourists may have about their safety, health and general well-being when traveling abroad during a health pandemic. These fears may influence their planning intentions and decision-making processes (Gui et al., 2023). Under normal circumstances, healthy travelers show moderate anxiety levels and tend to have positive emotions both before and during their holidays (Zenker et al., 2021). However, some situations lead to elevated levels of risk perception and travel anxiety, such as terrorist attacks (Isaac & Van den Bedem, 2021), war or political problems (Çakar, 2021), crime (Ozascilar & Mawby, 2024), cultural or linguistic misunderstandings (Nagai et al., 2020), and pandemic situations (Zenker & Kock, 2020).

Several researchers (Joo et al., 2019; Luo & Lam, 2020) have shown that pandemic situations can have serious and lasting effects on risk perception, resulting in travel anxiety. It is therefore hypothesized that the perception of different aspects of risk will have a significant effect on anxiety (Cui et al., 2016; Rokni, 2021; Ryu & Fan, 2022):

H₈: Perceived financial risk and anxiety about traveling to Bali are significantly related.

H₉: Perceived physical risk and fear of traveling to Bali are significantly related.

H₁₀: Perceived psychological risk and fear of traveling to Bali are significantly related.

H₁₁: Perceived time risk and fear of traveling to Bali are significantly related.

2.4. THE DECISION TO TRAVEL ABROAD

A mental process results in a decision to travel or not with Karagöz et al. (2021) stating that the cognitive process affects action and converts motivation into behavior. According to Henthorne et al. (2013), an increase in risk perception, and consequently anxiety, leads to tourists being less motivated to visit a destination. Therefore, tourists will prefer to visit low-risk and avoid high-risk destinations (Belias et al., 2022). Previous research (Bae & Chang, 2020; Nazneen et al., 2020; Neuburger & Egger, 2021) has confirmed that travel restrictions imposed during a pandemic increase the perceived risk among travelers and have a significant impact on their travel decisions. Based on current research, it is hypothesized that there is a significant correlation between tourists' anxiety and their decision to make a trip abroad:

H₁₂: Anxiety is significantly related to the decision to travel to Bali.

2.5. THE RELATIONSHIP BETWEEN ANXIETY, ATTITUDES, SUBJECTIVE NORMS AND PERCEIVED BEHAVIORAL CONTROL

Perceived risk, along with the resulting anxiety, describes the possible level of loss that can affect attitudes toward a behavior (Bae & Chang, 2020) which will be equated here with the attitude toward international travel. Since Luo and Lam (2020) and Rather (2021) found that a high-risk perception of travel during COVID-19 significantly impacts the intention to travel, hypothesis 13 is formulated as follows:

H₁₃: Fear and willingness to travel to Bali are significantly related.

Subjective norm (Ajzen, 1991) refers to the perception of social pressure to show a certain behavior. The question here is whether a person's decision to travel abroad depends on the opinions of others, such as friends, family or colleagues. Research has shown that perceived risk is critical in establishing subjective norms (Bae & Chang, 2020; Rahmafritria et al., 2021) while Featherman and Fuller (2003) suggest that consumers tend to believe that as perceived risk increases or is already elevated, referents will become more reluctant to endorse a product or service purchase. In general, as perceived risk increases, an individual will believe that others will have a more negative opinion of their travel decision. According to the existing literature, the following hypothesis was proposed:

H₁₄: When traveling to Bali, there is a significant correlation between anxiety and subjective norm.

Perceived risk and its resulting anxiety are thought to influence the perceived behavioral controllability of a particular action (Huang et al., 2020). The greater the potential risk (financial, physical, psychological or temporal) or the greater the perceived uncertainty, the less control people will feel over traveling abroad. Higher levels of perceived uncertainty about the consequences of a decision have been found to significantly impact control (Ma & Kay, 2017). Therefore, this study hypothesized:

H₁₅: The anxiety associated with traveling to Bali is significantly related to perceived behavioral control.

This study considers risk dimension and anxiety as multiple factors that influence travel decision-making. This integrated perspective recognizes that making travel decisions is a complex process and is influenced by various cognitive, emotional and contextual factors. By considering these factors together, this research captures the multidimensional nature of tourism decision-making. The theoretical framework of the study is presented in Figure 1, which is based on previous findings. It illustrates the relationship between the decision to travel abroad, which is the dependent variable, and the previously discussed independent

variables. This theoretical framework goes beyond simple correlations and examines the mechanisms and processes underlying tourism decision-making. This depth of analysis provides a richer insight into the decision-making process.

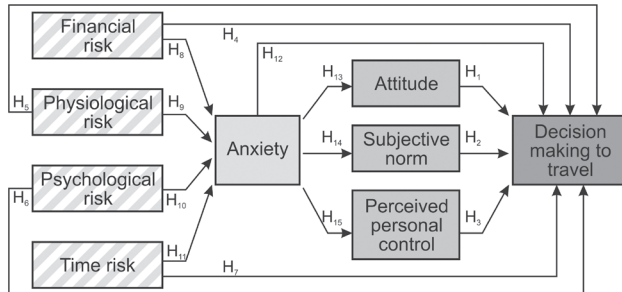


Figure 1. Theoretical framework
Source: authors

3. RESEARCH METHODOLOGY

A quantitative method was used to measure inbound tourists' travel decisions to Bali after COVID-19 and a self-administered questionnaire with four sections (risk, anxiety, TPB and socio-demographic information) was sent out. After the government opened the borders for tourism activities, the study sample consisted of inbound tourists who had traveled to Bali, Indonesia. Convenience sampling was used in this research, and questionnaires were randomly distributed to inbound tourists volunteering for the study. Convenience sampling is often chosen when researchers have limited access to the entire population they wish to study (Sekaran & Bougie, 2016) and in the case of Bali, it took a lot of work to reach all international tourists after the government allowed them to travel, especially when they were spread all over the island. By using such sampling, the researchers were able to obtain data from these tourists who were easily accessible. Questionnaires were distributed at several popular beaches and some tourist areas around Bali. To ensure the eligibility of the participants, they were required to answer a filtering question before accessing the questionnaire (i.e., "Are you visiting Indonesia for tourism activities?").

The use of clearly identified constructs ensured construct validity and reliability. All answers were gathered based on a five-point Likert scale (1 – *strongly disagree* to 5 – *strongly agree*). The first section of the questionnaire was prepared to identify different aspects of risk and consisted of 24 questions (Artuğer, 2015; Dash, 2021; Perić et al., 2021; Rudyanto et al., 2021; Taşcıoğlu & Yener, 2021; Yağmur & Doğan, 2017; Zhan et al., 2022). The second part of the survey comprised

seven questions to measure tourist anxiety (Luo & Lam, 2020; Yang & Wong, 2020). The third part consisted of 19 questions and measured TPB items (Perić et al., 2021).

The final section was related to the socio-demographic information of the participants. To confirm the validity, the investigators modified some of the items of the questionnaire to adapt them to the specific context of international tourism during a global crisis, such as COVID-19. Partial least squares structural equation modeling (PLS-SEM) was conducted using Version 3 of SmartPLS software (Hair et al., 2013) because the hypotheses made different assumptions about data distribution. The maximum number of formative constructs or the maximum number of antecedents leading to a construct (Barclay et al., 1995), whichever was greater, was multiplied by 10 to determine the minimum sample size to test the model. The model did not include formative constructs. This process yielded a minimum sample size of 90 but to evaluate the data, a sample size of 500 was deemed adequate (Hair et al., 2013). They were checked for missing data before analysis and a total of 487 valid questionnaires (response rate: 97.4%) were applied in the study after removing incomplete responses. The questionnaire was prepared in English, and data collection was between May and July 2022.

4. RESULTS

4.1. DESCRIPTION OF THE PARTICIPANTS

The description of the participants, shown in Table 1, revealed that the proportion of female is slightly higher than that of male (51.7% versus 48.3%). Half of the participants were between the ages of 19 and 30 years old (50.3%). More than half of the participants had a college degree ($n = 277$; 56.9%), were single ($n = 260$; 53.4%), and had set up their itinerary ($n = 355$; 72.9%).

Table 1. Description of the participants

Participants		Number	Percentage (%)
Gender	Male	235	48.3
	Female	252	51.7
Age	<18	27	5.5
	19–30	245	50.3
	31–40	118	24.2
	41–50	67	13.8
	>50	30	6.2

Table 1 (cont.)

Participants		Number	Percentage (%)
Education	High school or below	148	30.4
	Diploma	62	12.7
	Bachelor's	208	42.7
	Master's/PhD	69	14.2
Marital status	Single	260	53.4
	Married	189	38.8
	Separated/divorced	21	4.3
	Widow/widower	17	3.5
Mode of travel	Backpack/family	355	72.9
	Tour group	132	27.1

Source: authors.

4.2. RELIABILITY AND VALIDITY

Anderson and Gerbing (1988) suggested a two-step model for testing. First, the measurement model was evaluated, followed by a structural model to check

reliability, validity and predictive ability. Cronbach's alpha and composite reliability (CR) were used to analyze item reliability and all items were above the threshold of 0.7, as suggested by Nunally and Bernstein (1994). In addition, the average variance extracted (AVE) of above 0.5 supported the convergent validity of the variables (Fornell & Larcker, 1981). Confirmatory factor analysis was used to evaluate the measurement model and three items were excluded for insufficient correlation with the factor (PBC 4 = 0.430, finance 1 = 0.641, and time 1 = 0.421). According to Farrell and Rudd (2009), low factor loadings (less than 0.7) may indicate problems with the factor structure being represented. The factor loadings for the remaining items were higher than the recommended value. The discriminant validity of the items was tested by the heterotrait-monotrait ratio of correlations (HTMT). The HTMT assumes that the square root of a construct's AVE must be larger than its correlations with other latent items. Two reflective variables are discriminately valid when HTMTs are less than 0.9 (Ringle et al., 2024). The discriminant validity of the constructs was further supported by factor loadings greater than 0.7 and exceeding cross-loadings (Hair et al., 2013). Tables 2 and 3 depict the reliability and validity assessment of the items.

Table 2. Mean, standard deviation (SD), item loadings, reliability and validity

Variable	Mean	SD	Item	Loading	Cronbach's alpha	Composite reliability (CR)	Average variance extracted (AVE)
Decision	4.125	0.974	Int-1	0.903	0.888	0.931	0.817
			Int-2	0.944			
			Int-3	0.863			
Perceived behavioral control	3.760	0.815	PBC-1	0.728	0.869	0.904	0.655
			PBC-2	0.871			
			PBC-3	0.884			
			PBC-5	0.740			
			PBC-6	0.803			
Subjective norms	4.095	0.838	SN-1	0.824	0.922	0.941	0.763
			SN-2	0.917			
			SN-3	0.886			
			SN-4	0.892			
			SN-5	0.845			
Anxiety	2.202	1.022	Anxiety-1	0.855	0.938	0.950	0.731
			Anxiety-2	0.788			
			Anxiety-3	0.891			
			Anxiety-4	0.829			
			Anxiety-5	0.822			
			Anxiety-6	0.918			
			Anxiety-7	0.873			

Attitude	4.215	0.716	Attitude-1	0.735	0.869	0.905	0.656
			Attitude-2	0.808			
			Attitude-3	0.857			
			Attitude-4	0.817			
			Attitude-5	0.745			
Finance	2.622	1.053	Finance-2	0.867	0.915	0.936	0.747
			Finance-3	0.861			
			Finance-4	0.884			
			Finance-5	0.786			
			Finance-6	0.891			
Physiological	2.189	1.045	Physiology-1	0.873	0.923	0.939	0.721
			Physiology-2	0.869			
			Physiology-3	0.861			
			Physiology-4	0.853			
			Physiology-5	0.807			
			Physiology-6	0.831			
Psychological	2.515	1.024	Psychology-1	0.781	0.900	0.922	0.664
			Psychology-2	0.895			
			Psychology-3	0.880			
			Psychology-4	0.860			
			Psychology-5	0.721			
			Psychology-6	0.736			
Time	2.020	0.845	Time-2	0.847	0.929	0.946	0.779
			Time-3	0.856			
			Time-4	0.892			
			Time-5	0.901			
			Time-6	0.897			

Source: authors.

Table 3. Matrix of heterotrait-monotrait ratio of correlations (HTMT)

Variable	Decision	Perceived behavioral control	Subjective norms	Anxiety	Attitude	Finance	Physiological	Psychological	Time
Decision	–	–	–	–	–	–	–	–	–
Perceived behavioral control	0.867	–	–	–	–	–	–	–	–
Subjective norms	0.765	0.804	–	–	–	–	–	–	–
Anxiety	0.502	0.497	0.530	–	–	–	–	–	–
Attitude	0.635	0.622	0.676	0.472	–	–	–	–	–
Finance	0.471	0.453	0.524	0.797	0.436	–	–	–	–
Physiological	0.423	0.431	0.529	0.803	0.427	0.851	–	–	–
Psychological	0.374	0.395	0.473	0.790	0.374	0.862	0.895	–	–
Time	0.298	0.300	0.387	0.749	0.335	0.637	0.682	0.650	–

Source: authors.

4.3. STRUCTURAL MODEL

The hypothesized relationships were investigated in the following step. The R^2 data in Table 4 suggest that fear, attitude, subjective norms, PBC and decision to travel explained 70.1, 19.6, 25.7, 24.5, and 66.2% of the variation, respectively. Stone-Geisser's Q^2 (Fornell & Larcker, 1981) was used to evaluate the predictive power of the structural model. Hair et al. (2013) suggested cross-validated redundancy to estimate the predictive relevance of the model. A Q^2 value greater than zero indicates the predictive relevance of an endogenous latent variable. As shown in Table 4, all constructs had Q^2 larger than zero, confirming predictive validity. Table 5 summarizes the results of analysis. According to the findings in Table 5, all hypotheses except H_5

and H_6 were confirmed. Therefore, all other hypotheses were accepted. The results of the hypothesis testing are presented in Figure 2.

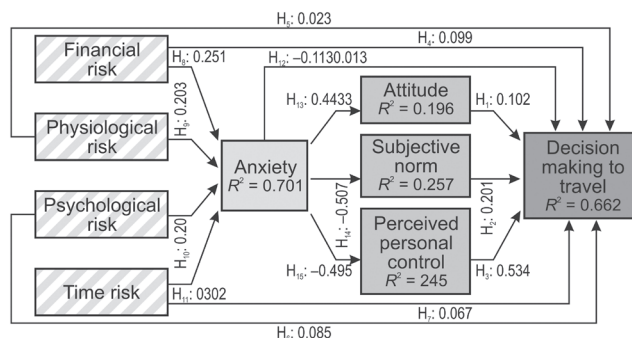


Figure 2. Hypothesis testing results
Source: authors

Table 4. Results of coefficient of determination (R^2)

Construct	R^2	Standard deviation (SD)	p -value	Stone-Geisser' Q^2
Anxiety	0.701	0.024	0.000	0.508
Attitude	0.196	0.033	0.000	0.121
Subjective norms	0.257	0.038	0.000	0.194
Perceived behavioral control	0.245	0.034	0.000	0.150
Decision	0.662	0.030	0.000	0.528

Source: authors.

Table 5. Direct relationships

Hypothesis testing	β	t -test	p -value	Result
H_1 : Attitude \rightarrow decision	0.102	2.810	0.002	Supported
H_2 : Subjective norms \rightarrow decision	0.210	4.897	0.000	Supported
H_3 : Perceived behavioral control \rightarrow decision	0.534	13.056	0.000	Supported
H_4 : Finance \rightarrow decision	-0.099	1.908	0.028	Supported
H_5 : Physiological \rightarrow decision	0.023	0.375	0.354	Rejected
H_6 : Psychological \rightarrow decision	0.085	1.558	0.060	Rejected
H_7 : Time \rightarrow decision	0.067	1.688	0.046	Supported
H_8 : Finance \rightarrow anxiety	0.251	5.746	0.000	Supported
H_9 : Physiological \rightarrow anxiety	0.203	4.115	0.000	Supported
H_{10} : Psychological \rightarrow anxiety	0.201	3.974	0.000	Supported
H_{11} : Time \rightarrow anxiety	0.302	8.040	0.000	Supported
H_{12} : Anxiety \rightarrow decision	-0.113	2.579	0.005	Supported
H_{13} : Anxiety \rightarrow attitude	-0.443	11.881	0.000	Supported
H_{14} : Anxiety \rightarrow subjective norms	-0.507	13.787	0.000	Supported
H_{15} : Anxiety \rightarrow perceived behavioral control	-0.495	14.756	0.000	Supported

Source: authors.

5. DISCUSSION

The results show a significant negative correlation between anxiety and tourist decision-making. In other words, a decreasing level of anxiety leads to an increasing level of travel decision. This finding is consistent with the results of prior studies (Luo & Lam, 2020; Zhu & Deng, 2020). Therefore, the decision to travel overseas will increase when tourists have less anxiety about traveling abroad. Anxiety has a significant and negative impact on perceived behavioral control, subjective norm and attitude; as anxiety decreases, attitude, subjective norm and perceived behavioral control increase. Previous studies have confirmed these negative relationships (Bae & Chang, 2020; Fu et al., 2015). According to Magano et al. (2021), anxiety about becoming infected with the COVID-19 virus leads to changes in human behavior, including changes in leisure and vacation behavior.

A significant and positive correlation was found between the four risk dimensions discussed (physical, psychological, financial and time) and tourist anxiety, which aligns with previous research (Bae & Chang, 2020; Reisinger & Mavondo, 2005). Thus, people are more anxious when risk perceptions are higher. Gudykunst and Hammer (1988) suggested a strategy for managing anxiety and risk reduction in which high levels of anxiety and fear lead people to view the destination as being less safe and to remove it from their planning list (Reisinger & Mavondo, 2005). In addition, the greater the risk associated with a travel destination, the less likely individuals are to visit it (Sönmez & Graefe, 1998). Emotions of worry and fear may continue to deter international travel during pandemics.

Financial risk was found to be significant and negative in determining whether to travel. According to previous research, the COVID-19 pandemic has increased the risk of financial loss because of higher prices and an economic recession (Dash, 2021; Perić et al., 2021). As uncertainty, economic insecurity, and unemployment have increased, people have become more cautious about expanding their consumption and have postponed their demand for consumer durables and services (Sheth, 2020). Therefore, people consider this when planning a trip abroad due to increasing unemployment, economic recession and rising prices caused by the pandemic. It was also found that time risk has a significant and positive effect on the decision to travel overseas, which contradicts previous studies (Taşcıoğlu & Yener, 2021; Yağmur & Doğan, 2017). This contradiction can be explained by the fact that tourists are now more short-term oriented, using the advantages of open borders and fewer travel restrictions to realize their travel plans.

The study itself could not show any correlation between perceived physiological and psychological risk and tourists' intention to travel to another country. Only a few

previous studies support these findings, such as Jiang et al. (2022) for psychological aspects and Li et al. (2022) or Zhou et al. (2024) for physiological. Other investigators demonstrated that psychological and physical risks are significantly correlated with the decision to travel abroad (Rudyanto et al., 2021; Zhan et al., 2022).

6. CONCLUSIONS

The results of this research confirm that TPB is a valid framework for explanations in the context of tourism during a major economic crisis. Attitude, PBC and subjective norms are shown to have a significant influence on travel decisions. These findings are in line with previous tourism studies using the TPB in similar contexts (Bae & Chang, 2020; Li et al., 2020; Sujood et al., 2022). Of all elements of the model, the PBC tends to have the largest influence on travel decisions so marketing communications to potential visitors should emphasize the ease and hassle-free nature of visiting Indonesia. Attitudes play a role in the decision-making process, but the impact is relatively small.

Individuals' risk perceptions, fears, and beliefs associated with their specific cultural group also play an important role in deciding whether to travel abroad. That is why marketing campaigns should emphasize the positive aspects of traveling to Bali with safety precautions, and support from health professionals and government agencies. The findings will be insightful for destinations to be better prepared for a similar pandemic in the future. It helps destinations to have different scenarios for battling pandemic conditions. Based on these findings, the present study provides important practical and theoretical contributions.

6.1. THEORETICAL CONTRIBUTIONS

Theoretically, this study contributes to the existing literature by explaining how different risk perceptions, as well as travel anxiety, influence the decision-making process of international visitors to travel overseas during a pandemic. Most tourists associate visiting different destinations and meeting new people with an unfamiliar situation and need a certain level of safety when planning a holiday. Health concerns have become an important issue while traveling during a pandemic. To develop interventions that promote safety among travelers, it is key to understand the role of risk and anxiety in tourist behavior. The current research aims to extend knowledge of how risk and anxiety influence tourists' decision-making by applying an extended TPB model that includes these variables.

Consequently, this research will provide a more detailed understanding of tourists' intention-based

behavior during an outbreak of an infectious disease in the future. This theoretical framework improves TPB's predictive power, especially when applied to different destinations. The results of this study are significant, and they offer researchers a theoretical basis for future investigation into risk perception and the anxiety of tourists.

Most travel behavior models were developed in Western societies. Nevertheless, this study suggests that a TPB-based model is also applicable in a developing and therefore non-Western society (Pahrudin et al., 2021). Indonesia has invested in tourism to rejuvenate its industry and attract more inbound tourists. Furthermore, this study contributes to the existing literature by showing changes in people's behavior, which contrasts with previous findings. The results also show that physical and psychological risk dimensions did not significantly influence tourists' decisions to travel overseas during COVID-19.

Finally, the work makes a valuable contribution to the academic tourism literature by focusing on a global event that severely disrupted societies and daily life. Given the strong possibility of further waves of COVID-19, the results of this work can serve as a valuable basis for future studies that respond to Gössling et al.'s (2020) call for longitudinal analyses of short- and long-term changes in tourist behavior.

6.2. PRACTICAL IMPLICATIONS

The findings provide an important contribution to the tourism practice in Indonesia and worldwide. Like other serious infectious diseases, COVID-19 is expected to reappear every four to five years. That is why it is important to be prepared for future waves (Kim, 2020). To ensure concrete preparation, international tourism stakeholders must provide a well-thought-out strategic plan. By highlighting the key factors that influence tourists' preventive behavior, the study can serve as a valuable guide providing practitioners with information they can use to develop more appropriate risk management programs.

The results show that tourists' travel intentions decrease with higher levels of anxiety, which has significant implications for the design of effective promotional strategies to reduce tourists' anxiety before traveling abroad. Destination management organisations and other professionals can reduce travel anxiety by providing more detailed information about the risk level (Paredes et al., 2023). Tour operators, who offer in-depth information, can also try to minimize tourists' anxiety and increase their feeling of security when making decisions.

According to traveler anxiety, marketers should offer solutions that reduce tourists' perceived risks (e.g. by providing more detailed information about

the destination) or reposition the destination image by offering packages that lower traveler anxiety and promote tourism. This can be achieved through clear and transparent communication about the safety measures and health protocols in place.

During a severe pandemic, destinations should focus on potential tourists with a fully functioning destination environment. To reduce risk perception and increase tourists' decisions to travel, destinations should use different media and update tourism news. Social media is the most effective tool to disseminate COVID-19 risk information. However, the tourism sector needs to improve its communication strategy by providing tourists with information on how to minimize the health risks of COVID-19.

How tourists perceive travel risks can influence their decision to travel internationally and the possibility of visiting a particular destination (Yadav et al., 2024). These issues reflect the characteristics of destinations that matter to tourists and help to understand what makes a destination attractive. This can be achieved by reducing the perception of travel as risky and tourism marketers and stakeholders can encourage potential tourists to travel. Physical and psychological risks did not influence tourists' intentions to travel abroad. Focusing on the mitigation and management of risk dimensions that are important to tourists, such as financial and time risks, can influence travelers' choice of destinations, for example, by providing flexible booking options, insurance coverage and information on how travelers can effectively manage their time in a destination.

During pandemics, stakeholders and tourism authorities should enhance risk management and therefore reduce the perceived risk perception of tourists. DMOs should try to increase the safety and security perception of tourists by reducing physical, psychological, time and financial risks. Policy makers can use the results of this research to develop more effective policies for tourism during COVID-19. Understanding the impact of fear and risk perceptions, they could develop targeted interventions and support the tourism industry. At a societal level, this research can contribute to developing strategies for revitalizing local economies. If those responsible can address tourists' concerns and encourage people to travel to Bali, the region can benefit economically by creating jobs and improving livelihoods.

6.3. LIMITATIONS AND FUTURE SUGGESTIONS

The existing limitations of this research could be used as a base for future work. These limitations include the use of cross-sectional data, collected only at a single point in time, which affects the generalizability. To solve this limitation, research data should be collected over multiple periods. Long-term data collection is an

ideal way of investigating the impact of TPB elements on tourist decision-making. Furthermore, data should not only be collected during the stay of tourists, but also before their departure. This helps to find out more about the potential risks they experience during their holidays.

Current research has investigated how four different risk factors and tourists' anxiety influence travel decisions. Further studies could expand the applied theoretical framework to include motivational and emotional aspects that guarantee a better understanding of inbound tourists' decisions to travel abroad in times of pandemic. Although the findings of this study are limited to tourists in general. They cannot be applied to a specific group of tourists. It is suggested that future researchers test the theoretical model for a special group or type of travel Indonesia offers, such as nature, cultural, sports, religious or food tourism.

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BLOCKCHAIN TECHNOLOGY IN THE TOURISM INDUSTRY: BIBLIOMETRIC ANALYSIS

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ABSTRACT

This study seeks to provide a comprehensive overview of the current body of literature on blockchain technology within the tourism industry and bridge the existing research gap in this area. We searched the Web of Science Core Collection using the topic field with the keywords “blockchain” or “block chain” combined with “tourism”. The search covered titles, abstracts, author keywords and KeyWords Plus, and was refined by using the “hospitality, leisure, sport & tourism” category and documents in English only. After relevance screening based on titles, abstracts and author keywords, 118 documents were included in the analysis. Descriptive and keyword co-occurrence analyses were conducted using VOSviewer. The first publication on blockchains in tourism appeared in 2018, followed by a gradual increase in scholarly output. The results show that blockchain-related tourism research has grown rapidly in recent years but remains fragmented, with publication activity concentrated in a limited number of technology-oriented journals but with weak collaboration across authors, institutions and countries. Taken together, these findings indicate an expanding yet still unconsolidated research field shaped by emerging academic attention rather than mature research integration.

KEYWORDS

blockchain, tourism industry, academic mapping, bibliometric analysis

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1. INTRODUCTION

Blockchain technology is a decentralized database structure that facilitates the secure and transparent recording of data, eliminating the requirement for a central authority (Habib et al., 2022). This technology

utilizes a cryptographic linking system, ensuring the immutability of the information by creating an interconnected chain of data blocks (Komalavalli et al., 2020). Initially introduced in 2008 as the foundational technology for Bitcoin, blockchain has gained recognition for its wide-ranging potential applications

across multiple industries (Zeng et al., 2020). The fundamental benefits of blockchain include enhanced transparency (Lee & Zhang, 2023), heightened security measures (Garg et al., 2021), decentralization (Zarrin et al., 2021) and immutability (Habib et al., 2022).

Blockchain technology has experienced rapid advancement since the emergence of Bitcoin and has found application in a multitude of domains extending beyond cryptocurrencies (Romano & Schmid, 2021) including smart contracts (Khan et al., 2021), supply chain management (Di Vaio & Varriale, 2020) and digital identity verification (Parate et al., 2023). The advent of Ethereum in 2015 endowed blockchain technology with programmability and versatility, thereby facilitating the development of more intricate applications (Rahman et al., 2025). In recent times, numerous industries have embraced blockchain technology and started reaping the rewards of its capabilities. The utilization of blockchain is witnessing exponential growth in industries such as finance, healthcare, logistics, tourism and public services.

Blockchain technology has been widely adopted in the tourism industry, with applications ranging from travel and accommodation bookings to identity verification (Rashideh, 2020), customer loyalty programs (Banerji et al., 2021), travel insurance (Halkiopoulos et al., 2022) and payments (Coita & Ban, 2020). The utilization of blockchain solutions brings about numerous advantages for the tourism industry, such as mitigating risk of fraud, reducing costs, streamlining processes and enhancing customer satisfaction (Karim et al., 2023; Tyan et al., 2021). Of particular note, decentralized platforms have enabled more secure and transparent transactions in travel bookings, thereby bolstering customer trust (Pradhan et al., 2023).

The impacts of blockchain technology in the tourism industry can be analyzed from both business and customer perspectives. Businesses have the opportunity to improve their operational efficiency, decrease costs and ensure the security of customer data with the implementation of blockchain technology (Dutta et al., 2020). In turn, customers can enjoy the advantages of more secure, expedited and transparent services. Furthermore, blockchain technology facilitates the more efficient execution of customer loyalty programs, thus fostering increased customer loyalty (Utz et al., 2023). Additionally, blockchain-based digital identity solutions can streamline travel procedures, enabling customers to save valuable time (Irannezhad & Mahadevan, 2021).

This study seeks to provide a comprehensive overview of the current body of literature on blockchain technology within the tourism industry and bridge the existing research gap in this area. A thorough search was carried out on the Web of Science (WoS) database, employing the relevant keywords “blockchain” or “block

chain”, with a specific emphasis on studies pertaining to the category of “hospitality, leisure, sport and tourism”. A total of 79 documents were deemed suitable for inclusion in this study based on predetermined criteria, and these documents underwent descriptive and visualization analyses. The bibliographic relationships of these papers were analyzed using VOSviewer to visually represent the knowledge domain of blockchain in tourism research. By employing bibliometric analysis, we were able to compile a comprehensive database of this research and its related areas, thoroughly examining our collection of articles to reveal the associations and intellectual structure of the field (Arici et al., 2023). The primary research questions (RQs) addressed in this study are as follows:

RQ₁: What is the number of studies on blockchain technology in the tourism industry and their distribution by year?

RQ₂: Which countries are conducting the most research in this field?

RQ₃: What are the most frequently used keywords and topics related to blockchain technology?

RQ₄: Who are the most productive authors in this field, and which countries are they collaborating with?

RQ₅: What are the keywords used in studies related to blockchain technology in the tourism industry?

This research will offer valuable insights into the utilization of blockchain technology in the tourism industry and the existing body of literature in this domain. Furthermore, it will serve as a guiding reference for future research endeavors.

2. LITERATURE REVIEW

2.1. THE FUNDAMENTALS AND HISTORICAL DEVELOPMENT OF BLOCKCHAIN TECHNOLOGY

Blockchain technology was introduced with the publication of Satoshi Nakamoto’s 2008 Bitcoin paper (Hariguna et al., 2021). This seminal document marked a significant milestone, establishing the foundation for the concept of blockchain and subsequently giving rise to Bitcoin, the most widely used digital currency today (Faustino et al., 2022). Blockchain is defined as a decentralized database capable of securely and transparently executing data transactions, all without relying on a central authority (Gorkhali et al., 2020). In this framework, each block contains a series of transactions, cryptographically linked to the preceding block, thereby forming an immutable chain (Komalavalli et al., 2020). This inherent structure ensures resistance to tampering and affords heightened security measures (Lavanya & Kavitha, 2022).

The initial implementation of blockchain technology, namely Bitcoin, brought about a significant transformation in the realm of digital currencies and payment systems. It accomplished this by facilitating secure and transparent financial transactions (Sebastião et al., 2021) and building on the success of Bitcoin, the technology continued to progress and reached new heights with the introduction of Ethereum in 2015 (Hashemi Joo et al., 2020). Ethereum's groundbreaking contribution was the introduction of programmable transactions called smart contracts (Timuçin & Biroğul, 2021) which possess the capability to execute automatically upon the fulfillment of specific conditions, thus broadening the scope of blockchain applications. The advent of smart contracts has ushered in considerable innovation by automating financial transactions and a range of commercial and legal processes (Alhejaili, 2025; Nyauma & Manjula, 2023).

The groundbreaking structure of blockchain technology has rendered it attractive in various industries outside of the financial sector and the utilization of blockchain applications has become pervasive in healthcare, logistics, public services and numerous other industries. To illustrate, within the healthcare industry, blockchain facilitates the secure storage and sharing of patient data (Shamshad et al., 2020), in the logistics industry it enables the traceability and transparency of supply chain processes (Centobelli et al., 2022) while in public services, it streamlines and secures the management of services provided to citizens (Kassen, 2022). The wide array of applications underscores the immense future potential of blockchain and influences the ongoing development of this technology.

2.2. INDUSTRY

The utilization of blockchain technology within the tourism industry presents innovative solutions to address a range of industry requirements. Blockchain-based solutions are currently being deployed in numerous domains, including travel and accommodation reservations (Demirel et al., 2022), identity verification (Li et al., 2021), customer loyalty initiatives (Banerji et al., 2021), travel insurance (Jia-lan et al., 2019) and payment systems (Thees et al., 2020). These solutions offer substantial advantages to businesses and consumers, guaranteeing data security, transparency, efficiency and cost-effectiveness (Pradhan et al., 2023).

Blockchain-based booking platforms eliminate intermediaries, enabling direct connections between consumers and service providers (Rashideh, 2020), and consequently the booking processes become more secure and transparent (Dong et al., 2020). For instance, decentralized platforms such as Winding Tree reduce costs and mitigate the risk of fraud in

travel and accommodation bookings (Bakhshaliyeva, 2023). Consumers can engage in direct transactions with hotels, airlines and other travel service providers, resulting in improved pricing and enhanced reservation security (Irannezhad & Mahadevan, 2021).

Blockchain technology offers numerous advantages in digital identity verification processes (Sarmah, 2018). Unlike traditional identity verification systems that heavily rely on centralized databases, blockchain-based identity verification systems provide enhanced security by securely storing users' identity information (Liu et al., 2020) which mitigates risks to data and accelerates the verification process (Zhou et al., 2024). Notably, platforms such as Civic offer secure management of identity information for travelers (Kuperberg, 2019).

Blockchain technology facilitates more efficient management of customer loyalty programs (Utz et al., 2023). Conventional loyalty programs frequently employ a centralized structure which can give rise to transparency concerns but by adopting blockchain-based loyalty programs, users can securely store and administer their loyalty points, thereby enabling customers to utilize these points more effectively and assisting businesses in enhancing customer loyalty (Rejeb et al., 2020). Blockchain technology also offers significant advantages in the management of travel insurance (Gatteschi et al., 2018) and through the utilization of blockchain-based platforms, the processing of insurance claims becomes faster and more efficient (Loukil et al., 2021). Smart contracts guarantee automatic insurance payments upon the fulfillment of specific conditions, thereby enhancing customer satisfaction (Chondrogiannis et al., 2022). For instance, platforms such as Etherisc provide travel insurance based on blockchain technology, thus ensuring safer and more seamless travel experiences for users (Shetty et al., 2022).

2.3. THE IMPACT OF BLOCKCHAIN TECHNOLOGY ON THE TOURISM INDUSTRY

The impact of blockchain technology on the tourism industry reveals noteworthy results when assessed from the perspectives of both businesses and consumers. Businesses can optimize their operational efficiency, reduce expenses and securely manage customer data through the implementation of blockchain technology (Rana et al., 2022; Rashideh, 2020). Conversely, consumers can enhance their travel experiences by benefiting from services that are more secure, faster and transparent (Raluca-Florentina, 2022). Blockchain technology offers substantial advantages in terms of data security and transparency, and by diminishing reliance on centralized databases, it greatly reduces the risk of data breaches (Habib et al., 2022). The data stored on the blockchain is immutable, and all transactions are

recorded in a transparent manner and as a result, users can be confident that their data is secure and can carry out transactions with peace of mind (Alansari, 2020).

Enhancing operational efficiency is instrumental in cost reduction for businesses as the decentralized structure of blockchain technology facilitates faster and more cost-effective transactions (Hashemi Joo et al., 2020). Furthermore, smart contracts automate transactions, thus minimizing the potential for human error (Khan et al., 2021). For instance, a hotel can leverage blockchain to streamline its reservation processes, effectively reducing costs and improving customer satisfaction (Dhiraj et al., 2023). The implementation of blockchain technology offers solutions that enhance customer satisfaction and foster customer loyalty (Madhani, 2022); by securely managing customer data, the risk of fraudulent activities is mitigated, thereby fostering increased customer trust (Rabby et al., 2022). Moreover, blockchain-based loyalty programs enable customers to make better use of their loyalty points; consequently, customers are incentivized to actively participate in such programs leading to enhanced customer loyalty for businesses (Wang et al., 2019).

Blockchain technology has revolutionized various services, including travel insurance and luggage tracking, an innovation which brings about faster and more transparent processing of insurance claims by storing travel insurance policies on the blockchain (Loukil et al., 2021). Furthermore, blockchain technology enables efficient management of luggage tracking allowing passengers to monitor the real-time location of their baggage and minimizing the likelihood of loss (Jiang et al., 2023). Blockchain technology can play a crucial role in promoting sustainable tourism practices (Tham & Sigala, 2020); by utilizing blockchain, businesses can enhance transparency in their supply chains, thereby providing evidence of their commitment to sustainability standards (Di Vaio & Varriale, 2020). A practical application of this would involve hotels leveraging blockchains to monitor whether their suppliers meet environmental and social responsibility criteria, and subsequently sharing this valuable information with their customers.

3. METHODOLOGY

A bibliometric analysis methodology was employed to investigate the utilization of blockchain technology in the tourism industry, following the five-step academic mapping process outlined by Zupic and Čater (2015). This process, depicted in Figure 1, encompasses research design, data collection, analysis, visualization and interpretation. Initially, the databases were reviewed to verify the novelty of the research

topic, as suggested by Kalia et al. (2022). Although bibliometric analyses of blockchain technology have been conducted in various domains such as business (Tandon et al., 2021), smart cities (Rejeb et al., 2021b), marketing (Wasiq et al., 2023), cryptocurrency (Sousa et al., 2022), human resource management (Mohammad Saif & Islam, 2024) and logistics and supply chains (Rejeb et al., 2021a), there exists a noticeable research gap in the application of blockchains within the tourism industry. Despite the rapid technological advancements and increasing interest in blockchain technology in tourism, limited bibliometric studies have been conducted in this particular area. This study seeks to provide a comprehensive overview of the current body of literature on blockchain technology within the tourism industry and bridge the existing gap.

The next step involves selecting keywords and the final ones were chosen based on the research scope (Kalia et al., 2022). Data were retrieved from the Web of Science Core Collection (WoS), which is widely recognized as a reliable source for high-quality bibliometric data (Echchakoui, 2020), as researchers prefer WoS over Scopus due to its higher quality standards, particularly in automatic keyword generation (Jabeur et al., 2023). Since WoS and Scopus provide similar publication coverage and considering the lower quality of Google Scholar (Harzing & Alakangas, 2016), we exclusively relied on WoS. Additionally, García-Lillo et al. (2023) have indicated that using multiple databases concurrently can be counterproductive due to duplicate records. The search was conducted on January 1, 2026, using the Topic (TS) field in WoS. The TS field simultaneously covers the title, abstract, author keywords and Keywords Plus, allowing comprehensive identification of relevant studies and representing a standard and accepted practice in bibliometric research. The exact search query used in the database was TS = (“blockchain” OR “block chain”) AND “tourism”; Boolean operators and parentheses were applied to ensure logical precision. No publication year restrictions were imposed at the search stage in order to capture the full development of the literature over time.

Following the initial retrieval, refinement filters were applied directly within the Web of Science interface. The dataset was restricted to the Web of Science category “hospitality, leisure, sport and tourism”, to document types including articles, proceedings papers, review articles and early access publications, as well as to English-language documents only. The refined dataset was indexed in Social Sciences Citation Index (SSCI), Emerging Sources Citation Index (ESCI), Conference Proceedings Citation Index – Social Sciences & Humanities (CPCI-SSH) and Conference Proceedings Citation Index – Science (CPCI-S). After applying these criteria, a total of 118 documents constituted the final dataset for analysis. It is important to note that this

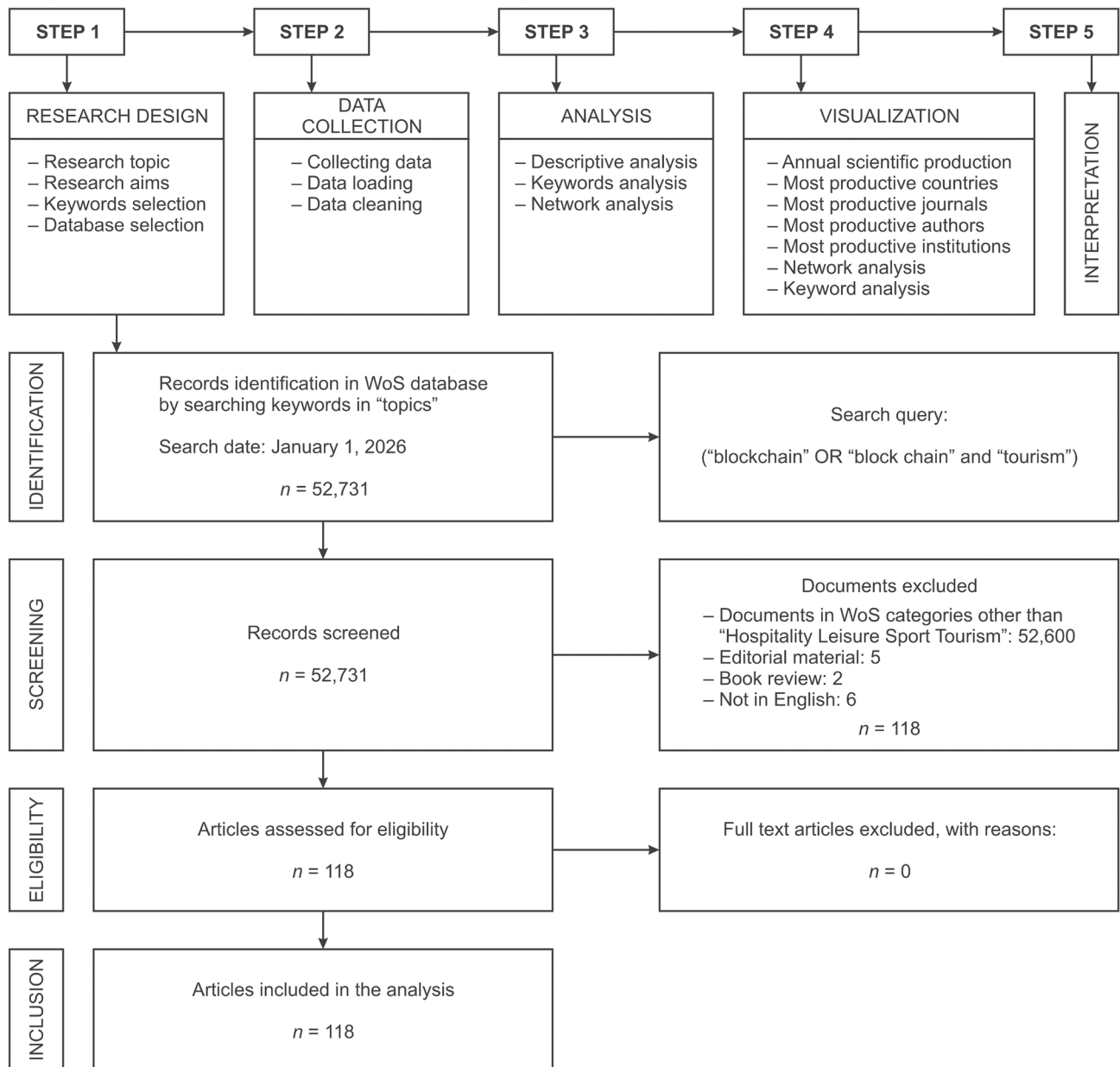


Figure 1. Process of research methodology
Source: authors

study did not involve reading or qualitatively reviewing all records identified at the preliminary search stage. Instead, eligibility assessment was conducted solely for the finalized dataset. For each of the 118 documents, the title, abstract and author keywords were examined to ensure conceptual relevance. Documents in which blockchain appeared only in KeyWords Plus, without being substantively addressed in the title, abstract or author keywords, and without representing blockchain as a central analytical focus, were excluded. No additional exclusions were required following this screening process.

The bibliometric analysis focused on descriptive and relational indicators, including annual academic production, the most productive authors, journals,

countries and institutions, as well as the intellectual and thematic structure of the field. Keyword co-occurrence and network analyses were conducted using VOSviewer which enabled visualization of relationships among keywords and research clusters based on co-occurrence strength. Network maps and density visualizations were used to identify dominant themes and emerging research directions within blockchain and tourism research. In line with the scope of bibliometric analysis, the findings reflect patterns of scholarly output and thematic concentration rather than empirical evidence of blockchain adoption levels or practical impacts in tourism operations.

To upload and clean the data, a plain text file containing all the relevant data fields was extracted

from the WoS database. During the data analysis phase, VOSviewer was used to perform descriptive and visualization analyses which enables the categorization of various aspects of the research field, including the identification of the most productive and influential authors, journals, countries and institutions, through the analysis of academic publication data (Benckendorff & Zehrer, 2013; Le & Nguyen, 2023). In addition to productivity and impact assessments, bibliometric analysis also incorporates network techniques to identify relationships among publications, journals or authors (Echchakoui, 2020; Mohanan & Shekhar, 2022; Roman & Kawęcki, 2024). In the fourth step, the VOSviewer was utilized to generate keyword co-occurrence and network analysis (e.g. Khan et al., 2023). Lastly, the fifth step involved describing and interpreting the findings (Zupic & Čater, 2015).

4. RESULTS

The temporal distribution of publications indicates a clear growth trend in blockchain-related tourism research. The first study was published in 2018, followed by limited output until 2020. From 2021 onward, the number of publications increased steadily, reaching a peak in 2024 (32 publications) while remaining high in 2025 (25 publications). This upward trend reflects growing academic attention to blockchain applications and implications within the tourism field.

The analysis of source productivity shows that research on blockchains and tourism is concentrated in a limited number of journals. *Information Technology & Tourism* emerges as the most productive outlet with 10 publications, followed by the *International Journal of Contemporary Hospitality Management* and the *Journal of Hospitality and Tourism Technology* with nine publications each. Other leading sources include *Current Issues in Tourism* and the *International Journal of Sports Marketing & Sponsorship* (eight each), while several core hospitality and tourism journals contribute between five and seven studies. This distribution indicates that blockchain-related tourism research is primarily disseminated through technology-oriented and innovation-focused tourism journals.

The co-authorship analysis was conducted to examine the collaboration patterns among authors and to identify the structure and intensity of scholarly networks within blockchain and tourism research. The co-authorship analysis indicates a fragmented and weakly interconnected collaboration structure, characterized by multiple small author clusters and limited cross-cluster interaction. This pattern is consistent with prior bibliometric studies on emerging technologies in tourism, which report that nascent research fields tend

to be dominated by small, loosely connected research teams rather than mature, large-scale collaboration networks. The largest cluster consists of four authors, including Andrei Kwok and Andreas Strebing, while other clusters are formed around limited research teams, such as Yueming Guo, Fei Hao, Albert Kimbu, and Ikram Muharam. Several authors, including Apostolos Ampountolas, Viachaslau Filimonau, Rob Law, and Nripendra Rana, appear as single nodes, indicating isolated contributions. The prevalence of two- to four-author clusters and the presence of isolated contributors suggest that blockchain-related tourism research has not yet reached a stage of intellectual consolidation.

The institutional co-authorship analysis reveals a limited and fragmented collaboration structure, consisting of three small clusters formed by a total of five institutions. The strongest collaboration is observed between Hong Kong Polytechnic University and Modul University Vienna, while other institutional links are confined to small, isolated pairs such as the University of Johannesburg and the University of Surrey. Florida State University appears as a standalone institution, indicating independent research activity. The results suggest that institutional collaboration in blockchain and tourism research remains weak and localized, reflecting an early stage of network development within the field.

The country-level co-authorship analysis identified three small collaboration clusters involving six countries. One cluster reflects collaboration between Austria and the United States, while another links Australia with China. A third cluster connects the UK and Italy, indicating limited bilateral research cooperation. The presence of only small, country-pair clusters suggests that international collaboration in blockchain and tourism research remains modest and fragmented, with no dominant or highly interconnected global research network.

The author keyword co-occurrence analysis was conducted to identify the main research themes and to reveal the conceptual structure of the blockchain and tourism literature. Figure 2 presents the author keyword co-occurrence map, illustrating the main thematic clusters and their interrelationships within the blockchain and tourism literature. The author keyword co-occurrence analysis reveals four distinct thematic clusters that structure the blockchain and tourism literature. The core cluster is centered on the keyword "blockchain", which exhibits strong co-occurrence links with "tourism and hospitality", indicating that blockchain is primarily examined within mainstream tourism and hospitality contexts. A second cluster connects "blockchain technology" and "cryptocurrency", reflecting a technology-oriented stream that focuses on technical infrastructures and digital payment systems. A third cluster links "blockchain" with "technology

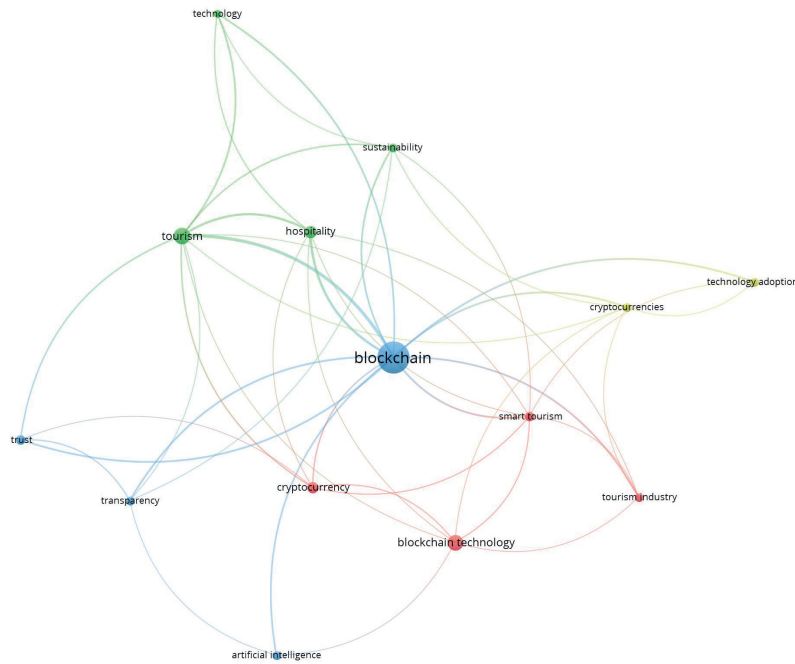


Figure 2. Author keyword co-occurrence map
Source: authors

adoption” and “smart tourism”, highlighting research that explores adoption processes and the integration of blockchain within smart tourism systems. Finally, “sustainability” emerges as a smaller but connected cluster, suggesting an emerging research theme that associates blockchain with sustainable tourism practices.

Citation document analysis was conducted to reveal the intellectual structure, key studies and thematic

evolution of blockchain research in the tourism field. Citation document analysis examines how academic publications on blockchain in tourism cite one another in order to identify influential studies and dominant research themes. As illustrated in Figure 3, each node represents a document, with larger nodes indicating higher citation impact. Seminal studies such as Rashideh (2020) and Filimonau and Naumova (2020) appear at the center of the network, suggesting

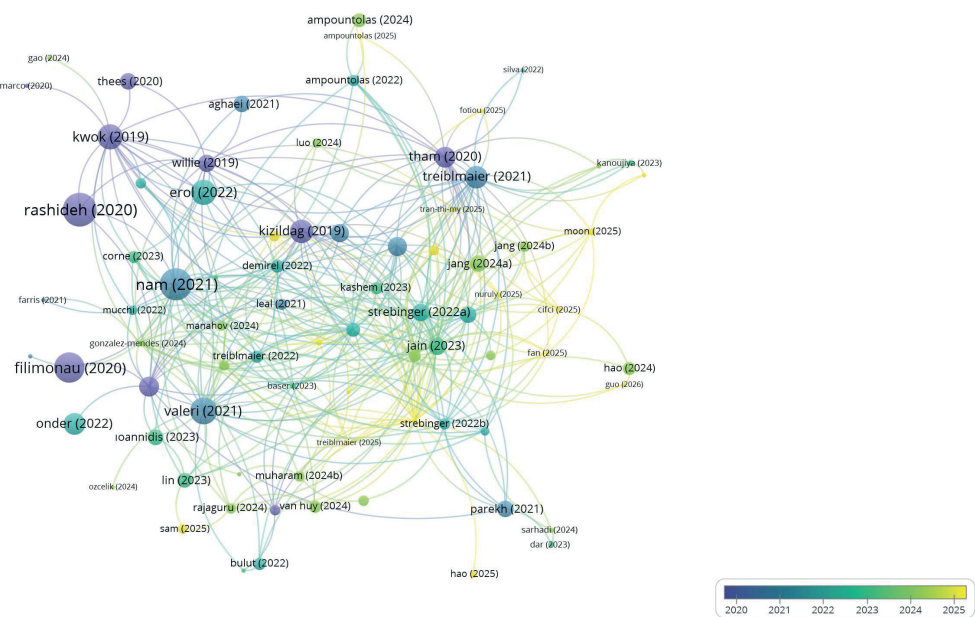


Figure 3. Citation (document) network of blockchain research in tourism
Source: authors

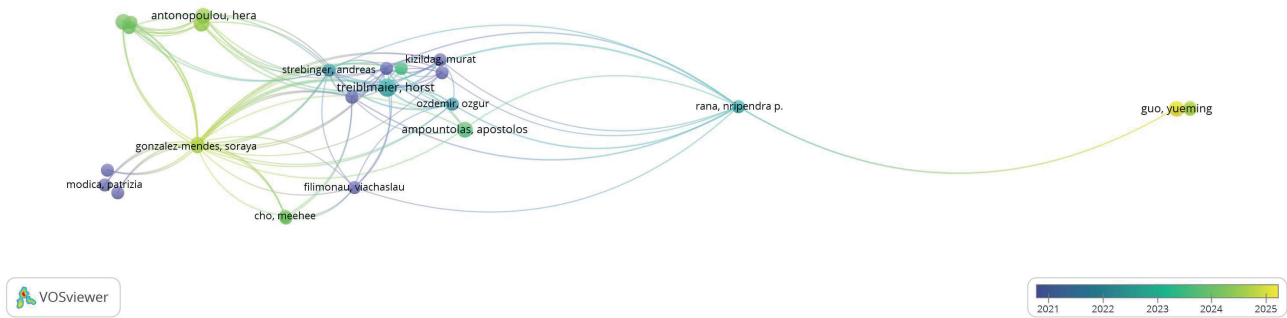


Figure 4. Author citation network of blockchain research in tourism
Source: authors

their foundational role in blockchain-related tourism research. The links between documents reflect citation relationships, revealing strong conceptual connections among studies focusing on areas such as trust, transparency, smart contracts and technology adoption in tourism and hospitality. The color-coded clusters indicate distinct but interrelated research streams within the field, while the node color gradient (2020–2024) highlights the rapid growth and recent intensification of blockchain research in tourism.

Author citation network analysis was conducted to identify the most influential authors and collaboration patterns in blockchain research within the tourism field. This analysis examines how frequently authors are cited together, revealing intellectual linkages and leading contributors to the literature. As shown in Figure 4, each node represents an author, while node size reflects citation impact. Larger and more centrally positioned authors such as Horst Treiblmaier, Andrei Kwok, Aaron Tham, and Viachaslau Filimonau, indicate scholars who have significantly shaped block-

chain-related tourism research. The links between authors represent citation relationships, with stronger connections suggesting shared theoretical foundations or closely related research themes. The network is divided into several color-coded clusters, each representing groups of authors who contribute to similar thematic areas, such as technology adoption, trust, governance and digital innovation in tourism. The color gradient (2020–2024) further illustrates the temporal development of influential authors, highlighting both foundational contributors and emerging scholars in the field.

Bibliographic coupling analysis was conducted to identify the intellectual structure of the literature and to reveal thematic relationships among studies based on shared references. The results are presented in Figure 5. The bibliographic coupling analysis grouped the 76 publications into seven distinct clusters based on the extent to which they share common references. Cluster 1, the largest, consists mainly of foundational and highly interconnected studies

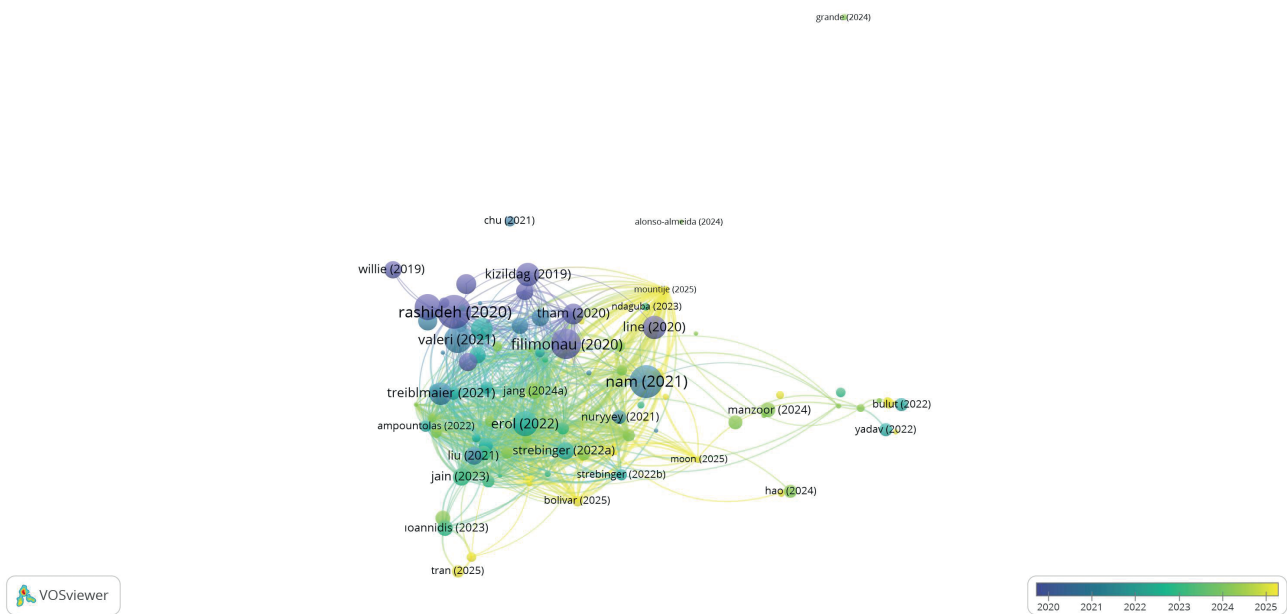


Figure 5. Bibliographic coupling analysis
Source: authors

(e.g. Kwok & Koh, 2019; Line et al., 2020; Filimonau & Naumova, 2020; Rashideh, 2020), indicating a core research stream that forms the theoretical backbone of the field. In contrast, smaller clusters (e.g. cluster 2) represent more specialized or emerging research themes that, while still connected to the core literature, draw on more specific reference bases.

5. DISCUSSION

The findings of this bibliometric study offer a comprehensive overview of the primary contributors to research in blockchain within the tourism industry. These contributors encompass countries, journals, authors and institutions, as well as the identification of significant topics. A succinct summary of the results is presented in Figure 6.

The temporal evolution of blockchain-related tourism research can be interpreted as a direct outcome of technology readiness and problem salience. Early academic caution is consistent with blockchain’s initial technical complexity and regulatory ambiguity, which limited its perceived applicability to tourism. As these barriers gradually diminished and practical use cases became more visible, scholars increasingly engaged with the topic, suggesting that research activity followed technology legitimacy rather than speculative interest.

The concentration of publications within a small group of technology and innovation-oriented tourism journals reflects the interdisciplinary nature of blockchain research. Because blockchain sits at the intersection of information systems and tourism management, its academic diffusion appears to be shaped by outlets that traditionally publish research on digital transformation and technological innovation. This pattern mirrors earlier tourism research on emerging technologies where specialized journals often act as gatekeepers before broader disciplinary adoption occurs.

The fragmented co-authorship structure observed among authors suggests that blockchain and tourism research is still characterized by exploratory rather than cumulative knowledge production. Limited collaboration across research teams may stem from the novelty of the topic and the absence of established research communities dedicated specifically to blockchain in tourism. This fragmentation aligns with prior literature indicating that emerging technological fields often rely on small, independent teams before converging into more stable collaborative networks. Similarly, weak institutional and country-level collaboration patterns point to structural and contextual constraints. Blockchain research often requires technical expertise, regulatory knowledge and industry access, which may be unevenly distributed across institutions and countries. As a result, research activity appears localized rather than globally integrated,

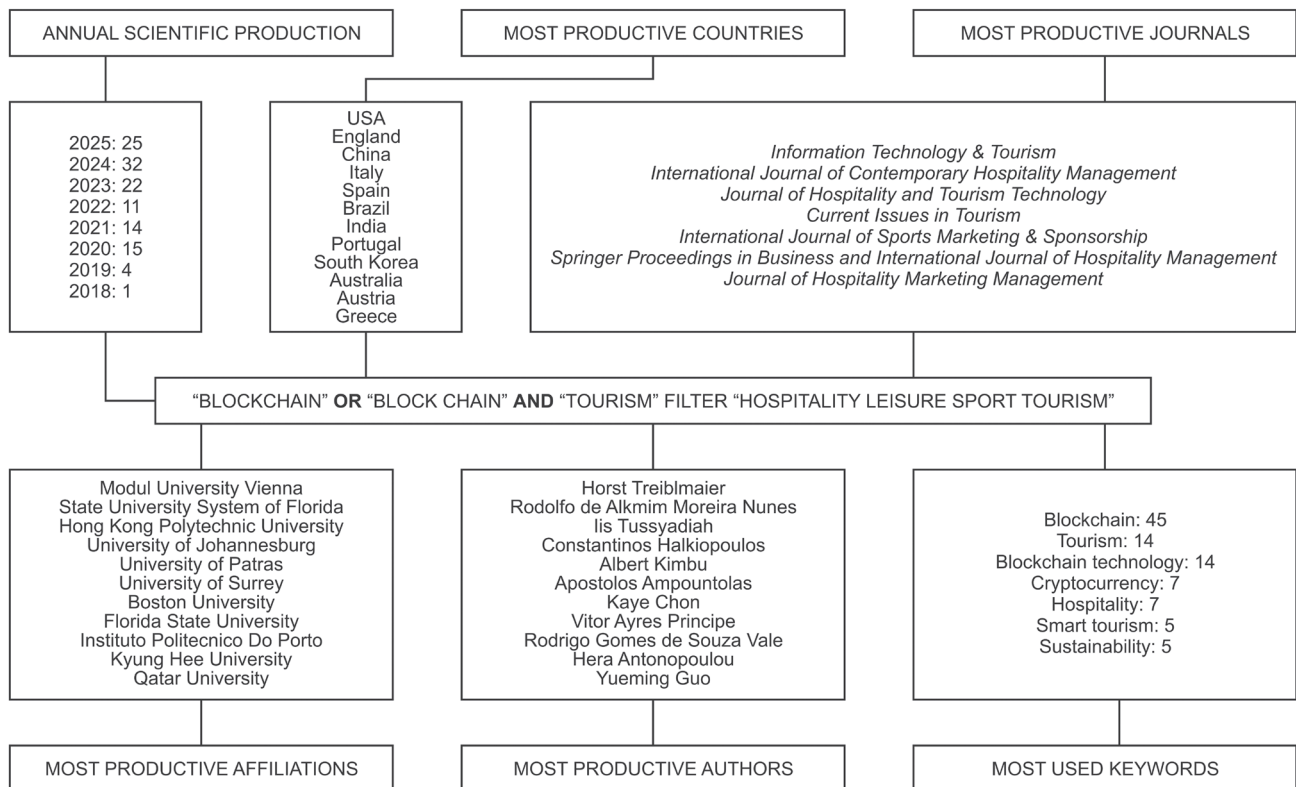


Figure 6. Map of blockchain in tourism domain
Source: authors

suggesting that international collaboration has not yet become a defining characteristic of this research domain.

The conceptual structure identified through author keyword co-occurrence can be explained by the way blockchain has been incorporated into tourism research primarily as an enabling technology rather than as an independent research domain. The central positioning of blockchain alongside tourism and hospitality reflects scholars' tendency to embed the technology within established tourism contexts, while the separation of cryptocurrency-oriented studies suggests a parallel but more technically focused research stream. Research linking blockchain to technology adoption and smart tourism appears to reflect the growing maturity of digital tourism ecosystems, where blockchain is increasingly examined as part of broader smart system integration. In contrast, the relatively smaller presence of sustainability-related keywords may indicate that blockchain's long-term structural implications for tourism development are still at an early conceptual stage and have yet to be fully operationalized in empirical research.

6. CONCLUSIONS AND LIMITATIONS

This study set out to examine the structure and evolution of blockchain-related research within the tourism literature through a bibliometric lens. It is important to draw a clear boundary at this point: this study does not evaluate the actual impact of blockchains on tourism practice, but rather analyzes the structure, dynamics and orientation of the existing academic literature. By doing so, the analysis captures patterns of academic attention, research dynamics and the thematic orientation of studies addressing blockchains in tourism and hospitality contexts.

The findings indicate that blockchain-related tourism research is shaped by a relatively concentrated set of publication outlets, fragmented collaboration networks, and a small number of influential scholarly contributions. Taken together, these patterns suggest that blockchain remains an emerging research topic within tourism, where intellectual development is still driven more by exploratory efforts than by consolidated research traditions. The observed thematic configuration further indicates that blockchain is predominantly framed within established tourism and hospitality contexts, while more specialized or peripheral research streams remain less developed.

Several limitations of this study should be acknowledged which define its analytical scope rather than representing methodological weaknesses. First, the study does not include empirical evidence on blockchain

adoption, implementation or performance in tourism settings. Second, no practical or application-level evaluation of blockchain use cases is conducted, as the analysis is exclusively literature-based. Third, the study relies on bibliographic metadata rather than full-text content, which means that the analysis reflects patterns of publication, citation and keyword usage rather than detailed conceptual or methodological arguments within individual studies. These limitations also point to directions for future research. Future work could benefit from complementing bibliometric evidence with empirical investigations that examine how blockchains are actually implemented and experienced by tourism stakeholders. In addition, qualitative or mixed-method approaches may provide deeper insights into how the themes identified in the literature translate into organizational practices and policy frameworks. Finally, future studies could extend the present analysis by incorporating alternative databases or longitudinal comparisons which may further illuminate changes in academic attention and research dynamics over time.

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VISITOR TYPOLOGIES IN SUFI RELIGIOUS TOURISM: INSIGHTS FROM HOSTS AT THE EL SAYED AHMED EL-BADAWY SHRINE

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ABSTRACT

This study addresses the under-researched area of Sufism within religious tourism, specifically examining how Sufi hosts perceive Muslim and non-Muslim visitors at the El Sayed Ahmed El-Badawy mosque and tomb in Egypt. Utilizing qualitative methods, the research identifies five distinct visitor types based on their behaviors and interactions. Notably, Sufi hosts perceive the concept of the “pious pilgrim” differently from Western literature, emphasizing a broader understanding that includes those who engage meaningfully with Sufi practices and teachings. The findings contribute to tourism marketing strategies by highlighting the diverse demands of different visitor groups, thus enabling better management and interpretation of Sufi sites. This research not only enriches the academic discourse on religious tourism but also offers practical insights for enhancing visitor experiences and sustaining the sanctity of Sufi sites.

KEYWORDS

Sufism, host perceptions, typology of visitors, pious pilgrim, religious tourism, Egypt

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1. INTRODUCTION

Religious tourism can be defined as the ways in which religious sites relate to individuals’ needs, interests, and motives (Sharma & Timothy, 2023). Earlier research, such as Vukonic (2002), maintained that a religious tourist is driven solely by religious motives. However, recent scholars (e.g., Choe, 2024; Doğukan Çıkı & Tanrıverdi, 2023) have explored motivations and experiences at various religious sites, indicating that religious tourism often co-occurs with secular

experiences, including relaxation and social activities. Currently, there is no universally accepted definition of religious tourism, but prevailing definitions encompass tourism that satisfies spiritual, educational, cultural, and recreational interests (Choe, 2024). This research lies within the domain of pilgrimages and religious tourism in a Sufi Islamic context. The relationship between tourism and religion has attracted significant interest from scholars and marketers, driven by the economic growth of religious travel and its socio-cultural impacts (Liasidou et al., 2025). Religious tourism



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significantly contributes to the economic development of destinations such as Haifa, Jerusalem, the Vatican City, and Santiago de Compostela (Ezenagu et al., 2022). Tourism scholars, media, and tourism marketers have exhibited a growing interest in the relationship between tourism and religion (Zheng et al., 2022). This interest is driven by the economic growth of religious travel (Shi & Pandi, 2022) and the social, cultural, and physical impacts of tourism on sacred sites (Kayal, 2023). Research on religious hosts' perceptions of visitors at sacred sites can help identify the impacts of tourists and aid in tailoring tours to different visitor types (Prasad et al., 2023).

Hence, this study explores the classification of visitors according to Sufi hosts' perceptions, suggesting that visitors can be broadly divided into five categories based on behavior. Conceptually, this research enhances the understanding of the "pious pilgrim" on the tourism-pilgrimage spectrum. Practically, the five-fold visitor typology is vital for identifying demand among Muslim and non-Muslim consumers. Understanding hosts' views on visitors' activities can aid in managing the sacredness of popular Sufi sites. The intersection of Sufism and tourism has produced increasing academic interest (Hidayat, 2023), yet the perceptions of Muslim hosts towards visitors remain underexplored. Previous studies have primarily focused on the perspectives of religious hosts and visitors in Christianity (Collins-Kreiner & Kliot, 2000; Liasidou et al., 2025; Rodrigues & McIntosh, 2014), Jewish (i.e. Collins-Kreiner, 2010; Milman & Oren, 2018), Hindu (i.e. Aukland, 2018; Shinde & Rizello, 2014) and Buddhism (Phi et al., 2025; Wong et al., 2013), highlighting a significant gap in the literature concerning Islamic contexts, particularly Sufi sites. Research by Ghaderi et al. (2020) and Elhadary (2018) emphasizes the economic, spiritual, cultural and social impacts of religious tourism, yet often overlooks the nuanced perceptions of Muslim hosts. This study aims to fill this gap by examining the typology of visitors as perceived by Sufi sheikhs at the shrine of El Sayed Ahmed El-Badawy.

The Egyptian press has documented visitor behaviors at Islamic sites, particularly at the shrine of El Sayed Ahmed El-Badawy during events like the Grand Mawlid. Publications like *Egypt Today* (Asal, 2022) and *Egyptian Streets* ("What is Tanta's Moulid Al-Sayyid Al-Badawi?", 2025) have detailed the activities of diverse visitors, while *Lonely Planet Egypt* (Lee et al., 2023) noted protective measures by Sufi sheikhs. The Grand Mawlid attracts hundreds of thousands of visitors engaging in prayers, meditation, and cultural festivities (Asal, 2022), highlighting the importance of studying behaviors at Islamic sacred sites. The systematic consideration of how visitors' behaviors are perceived by Sufi Muslim hosts requires more empirical work (Elhadary, 2018). The rest of the paper is structured

as follows: Section 2 examines tourism literature on Sufism and visitor classifications; Section 3 discusses research methods; Section 4 provides an overview of the study site; Section 5 highlights the findings; and Section 6 concludes with discussions on key findings, implications, and future research directions.

2. STATE OF THE FIELD

2.1. THE RELATIONSHIP BETWEEN SUFISM AND TOURISM

Sufism, often regarded as Islamic mysticism, seeks experiential knowledge and divine love through devotion (Hidayat, 2023). It is not an autonomous sect but a moderate ideological version of Islam focused on spiritual meditation and ethical values. Sufism has deep historical ties to Egypt, significantly influencing its spiritual and cultural life (Brown, 2011). In Western communities, Sufism is seen as a more tolerant form of Islam, attracting non-Muslim visitors despite declining organized religious participation. Sufi tourism merits special attention for its unique spiritual practices, intentions, and socio-economic impacts (Huma, 2024). While Sufi tourism has not been extensively studied, it is recognized as a significant tourism product contributing to destination differentiation and offering emotional and spiritual benefits. However, presenting Sufi experiences as a tourism product may dilute their traditional religiosity, even as they remain rooted in Islam (Elhadary, 2018). Sufi sites play a vital role in tourism across countries like India, Indonesia, Turkey, and Egypt, attracting visitors seeking spiritual experiences and leisure activities (Elhadary, 2018; Huma, 2024). This growing market is acknowledged in business, government, and academic circles as beneficial for regional development. Many Sufi sites serve dual purposes as ritual places and tourist attractions, drawing both devout followers and secular tourists. Notable sites, such as the Shrine of Al-Sayed Al-Badawi in Egypt and the Mausoleum of Jalal ad-Din Muhammad Rumi in Turkey, have witnessed growing numbers of domestic and international visitors, capturing the attention of marketers and scholars (Elhadary, 2018; Haq & Medhekar, 2020). This emphasizes the need for empirical research on Sufi hosts' perceptions of visitors and the typology of visitor engagement.

2.2. TYPOLOGIES OF VISITORS AT SACRED SITES AND THE PILGRIM-TOURIST CONTINUUM

Earlier and recent scholars have developed various typologies to understand visitors' experiences at sacred sites, often distinguishing between secular and sacred behaviors. Smith (1992) created the pilgrim-tourist scale,

revealing similarities and differences in motives and experiences. Santos (2002) further explored distinctions between tourists and pilgrims at Santiago de Compostela, which blurred the lines between the two. Later, Triantafillidou et al. (2010), influenced by Smith (1992), identified four types of religious tourists to the Holy Land. *Pilgrims* are primarily motivated by religious and spiritual factors, engaging in devotional acts, as seen among Buddhist and Baha'i pilgrims. *Pilgrims to tourists* exhibit religious motives while also displaying typical tourist behaviors. *Religious tourists* seek cultural, educational, and experiential inspirations; they often belong to the upper-middle and upper classes and pursue pleasurable experiences. Lastly, *tourists to pilgrims and secular tourists* seek self-improvement and leisure, blending spiritual and vacation desires. This classification aids travel agencies in tailoring marketing strategies to meet the distinct needs of these diverse travelers (Triantafillidou et al., 2010, p. 385).

Supporting the previous models (Smith, 1992; Triantafillidou et al., 2010), Collins-Kreiner and Kliot (2000, p. 65) proposed a typology for Jewish holy graves in Israel, which was divided into four categories: *Haredim* (ultra-Orthodox), *Dateim* (religious), *Masortiem* (traditional), and *Hiloneim* (secular). *Haredim* focused solely on religious aspects, while *Dateim* combined religious visits with non-religious sightseeing. The majority, *Masortiem*, were deeply attached to Jewish saints, primarily visiting for supplications. The minority, *Hiloneim*, engaged in heritage tourism for cultural experiences. Later, Wong et al. (2013) and Wong (2019) introduced a typology for a Buddhist site in China, categorizing visitors as *Jushis* (pure pilgrims), *Shinshis* (pilgrim tourists), *Xiankes* (spiritual worshippers), and *leisure tourists* (cultural heritage visitors). Their typology illustrates various motivations and behaviors, highlighting that leisure tourists, despite their lack of devotion, were perceived by hosts as potentially developing a genuine interest in Buddhism. Similarly, Ebadi (2014, p. 317), with reference to the Smith (1992) and Santos (2002) pilgrimage-tourism spectrum, identified five types at an Iranian shrine. Religiously oriented visitors focused on prayer and spiritual help, while cultural spiritual visitors value the site's atmosphere and history without performing rituals. Nostalgic visitors connected with their cultural and heritage identity. Adventure visitors pursued unique experiences in the natural environment, and cultural-secular visitors are curious about the Iranian Turkmen culture without strong religious beliefs. These classifications reflect the diverse motivations of the Iranian shrine's visitors (Ebadi, 2014).

In synthesizing the findings from various typologies of visitors at sacred sites, a clear connection emerges: the continuum between pilgrims and tourists is shaped by the diverse motivations and behaviors exhibited

by visitors. Scholars like Smith (1992) and Santos (2002) emphasize this fluidity, while typologies from Triantafillidou et al. (2010), Collins-Kreiner (2010), Ebadi (2014) and Wong (2019) illustrate how visitors can embody roles from devout pilgrims into secular heritage tourists. Wong's categorization highlights that even leisure tourists may develop a genuine interest in sacred traditions, suggesting that the sacred-secular divide is a spectrum influenced by cultural and personal aspects. This nuanced understanding enriches our appreciation of the diverse experiences at sacred sites and the evolving nature of pilgrimage and tourism.

Recent studies (Doğukan Çıkı & Tanrıverdi, 2023; Prasad et al., 2023; Shi & Pandi, 2022; Singh et al., 2024) collectively identified three main types of tourists at religious sites: secular/leisure tourists, religious tourists and pure pilgrims. In her study of the Welcome Royal Lord Festival in Donggang, Taiwan, Tsai (2021) identifies four types of religious tourists: *sacred pilgrims*, who seek spiritual comfort; *believers*, who express devotion to Wang Yeh; *experience companions*, who attend mainly to accompany others; and *secular polytheists*, who engage casually with various deities. Tsai highlights that sacred pilgrims and believers report higher satisfaction due to their connections to cultural authenticity, emphasizing potential conflicts between tourism development and religious traditions. This underscores the need for organizers to address diverse visitor motivations while preserving the integrity of religious practices. Along similar lines, according to Liro (2024), visitors to pilgrimage centers in Poland exhibit diverse motivations, categorized into religious, tourist, recreational, social and commercial. Those driven by religious motivations view these sites primarily as places of prayer and personal growth, seeking spiritual fulfillment. In contrast, tourists emphasize cultural and architectural aspects, often perceiving pilgrimage centers as popular destinations rather than sacred spaces. Recreational visitors prioritize leisure and social interactions, while social visitors focus on family gatherings. Satisfaction levels vary significantly based on motivation; religious visitors report higher fulfillment regarding spiritual and community aspects, while tourists find satisfaction in cognitive and cultural experiences. This contemporary landscape of religious tourism reflects a blending of motivations, leading to hybrid visitor profiles, illustrating the complex interplay between motivations, perceptions, experiences, and satisfaction. Understanding this multifaceted nature is crucial for effectively managing pilgrimage sites to meet the diverse needs of all visitors. Recently, building on these insights, Lee and Cho (2025) developed a model that identified seven key scales characterizing visitor experiences at La Vang in Vietnam. Visitors reported significant self-discovery, gaining deeper self-understanding through spiritual engagement,

which often led to self-transformation and improved behaviors. Many found self-realization, achieving peace and clarity in resolving personal conflicts while seeking emotional release and comfort during their visits. Worship was emphasized as visitors expressed gratitude to Our Lady of La Vang, and engaging in religious practices like mass and prayer was common. Additionally, many reported sacred experiences, including witnessing the “miracle of the sun” and feeling healing effects.

In synthesizing the findings from the recent studies above, it is evident that visitor types at religious sites can be classified into overlapping categories, such as secular/leisure tourists, religious tourists, and pure pilgrims. Studies by Tsai (2021) and Liro (2024) both highlight the distinctions between visitors seeking spiritual fulfillment and those drawn by cultural or recreational interests, noting the varying satisfaction levels linked to these motivations. Tsai’s identification of four subcategories of religious tourist, including sacred pilgrims and experience companions, complements Liro’s broader classification, which encompasses social and commercial types. Additionally, Lee and Cho (2025) introduce the notion of self-discovery and emotional release, suggesting that even secular visitors may undergo significant personal transformations similar to those experienced by religious pilgrims. This interplay of motivations across the studies underscores the complexity of religious tourism, emphasizing the need for management strategies that respect the diverse needs of all visitor types while safeguarding the sanctity of religious sites. While different typologies have been developed to categorize types of visitors to Christian, Hindu, Buddhist and Jewish sacred sites, there remains a notable lack of empirical studies focused on Muslim Sufi hosts and their perceptions of visitors. This gap is significant as Sufi sites attract diverse visitors, yet their hosts’ perspectives are underexplored. Moreover, it is generally the pilgrims’ and tourists’ motivations, on-site experiences and the potential impacts of a visit on the sacred site and host religious community that are the most frequently researched topics. In their study, Cheraghi et al. (2025) applied stakeholder theory to analyze the dynamics between local communities, acting as hosts, and their interactions with tourists. This theoretical framework offers valuable insights into the perceptions of religious hosts regarding their relationships with different types of visitor. Furthermore, the findings underscore the significance of local community engagement in managing spiritual events, which reinforces the focus on how hosts perceive and respond to visitors at religious sites. This emphasis on community involvement is crucial for understanding the interactions between hosts and tourists, particularly in the context of spiritual tourism. This study aims to provide a unique contribution by focusing on the

Sufi mosque of El Sayed Ahmed El-Badawy, thereby enriching an understanding of how Sufi hosts perceive both Muslim and non-Muslim visitors. By categorizing visitors into distinct typologies based on host perceptions, this work seeks to enhance the dialogue around religious tourism and its implications for Sufi practices.

3. METHODOLOGY

Latest research, such as that by Zheng et al. (2022), Phi et al. (2025) and Shi and Pandi (2022), have utilized a combination of qualitative methods, including the case study method, on-site observations, reflective and academic journals, and semi-structured interviews to explore host perceptions in religious tourism contexts. These methodological approaches enabled them to capture the perspectives and embedded contextual meanings of the religious hosts and visitors. Similarly, the current study also adopted these same methodological approaches. This connection with existing literature enriches the understanding of visitor typologies in religious settings and this work builds on it by focusing explicitly on the Sufi context, thereby filling a critical gap. This nuanced exploration of Sufi perceptions enriches the broader discourse on Islamic spiritual tourism, emphasizing the need for more focused qualitative studies that recognize the unique characteristics and contributions of Sufi practices in the field of religious tourism. Moreover, the classification of visitors into distinct groups based on their behavior and motivations aligns with the pilgrim-tourist continuum proposed by Smith (1992) and Santos (2002). However, this study offers a unique contribution by expanding upon these classifications within the Sufi context, suggesting a more fluid interpretation of the pious pilgrim concept. By doing so, it not only builds on existing frameworks but also challenges them, illustrating how Sufi hosts perceive certain visitor behaviors as outside traditional classifications.

To address research objectives, a mix of qualitative methods was employed, including archival record analysis, documentary case studies, on-site observations, reflective journals, and semi-structured interviews with 16 sheikhs. Qualitative research investigates social issues in natural settings, aiming to develop a holistic understanding and elicit narratives from interviewees. Although the sample size is small, qualitative research provides rich data by focusing on interviewees with relevant insights (Mishra et al., 2024). It captures the real opinions of both researchers and participants, often beginning with “what”, “why”, and “how”, yielding diverse perspectives difficult to obtain through quantitative methods (Patton, 2015).

Adopting an integrative qualitative approach allows the authentic voices of sheikhs to emerge and interviews utilized a guide with specific questions and follow-up probes. The case study approach offers insights into how sheikhs perceive visitors, while on-site observations broaden the researcher's perspective. Field notes were recorded as narratives, facilitating the observation of mosque visitors' practices (Mishra et al., 2024).

While this study is limited to the Sufi mosque and tomb of El Sayed Ahmed El-Badawy in Tanta, Egypt, this focused approach allows for a rich, in-depth understanding of the nuanced views of Sufi hosts towards their visitors. By concentrating on a single site, the research provides insights into how Sufi hosts perceive and classify different types of visitor, reflecting the unique dynamics of host-guest interactions within the Sufi context. This case study method facilitates an exploration of the complexities inherent in the Sufi experience, which may otherwise be overlooked in broader works encompassing multiple case study sites. Thus, rather than detracting from the findings, the specificity of this study contributes to a deeper theoretical understanding of the concept of pious pilgrim within the Sufi tradition and the diverse types of visitors at the site, providing valuable insights that can inform future studies in similar contexts.

Literature on pilgrimage and religious tourism indicates that qualitative research effectively uncovers religious hosts' hidden experiences and enables a systematic analysis of Sufi hosts' perceptions (Elhadary, 2018). Studies by Shi and Pandi (2022) and Zheng et al. (2022) highlighted the lack of qualitative research on religious guides' attitudes toward visitors. Cheraghi et al. (2025) called for more qualitative studies to triangulate hosts' insights. They noted that further qualitative research on host-guest interactions would enhance the pilgrimage management literature. Additionally, they emphasized that many failures in marketing religious sites stem from neglecting the subjective perceptions of site guardians. The researcher adopted a social constructionist perspective, viewing reality as shaped by linguistic and cultural categories, with an inductive process guided by collected data identified common themes. In-depth, face-to-face interviews were used, as little is known about how religious hosts perceive visitors in a Sufi context. This method allows interviewees to express how Sufi tenets influence their perceptions of visitors (Tracy, 2024). Interviewees, employed at the site for 3 to 20 years, serve as "key informants" with deep understanding of visitor types and behaviors (Patton, 2015).

Interview questions addressed four main concerns:

1. What attracts visitors to the mosque?
2. What types of visitors attend?
3. How do visitors behave, and how do sheikhs manage inappropriate behaviors?

4. How do Sufi beliefs affect perceptions of visitors of other faiths?

All respondents, aged 45 to 60, understood the voluntary nature of their participation and were assigned pseudonyms for anonymity (Guest et al., 2006) with site visits and interviews being conducted over four months (April–July 2021). The researcher explained the study's purpose and answered respondents' queries. All information was kept confidential, and respondents signed consent forms for recording. Due to COVID-19, interviews were either face-to-face (13 participants) or online via Zoom (3 participants). The interview style was casual, with each session lasting 50 to 75 minutes. All interviews were recorded, transcribed, and translated into English for analysis, a professional translator from Cairo University being consulted to ensure accuracy. The researcher manually analyzed and coded the textual data to construct key categories based on the sheikhs' insights on visitor behaviors (Tracy, 2024).

3.1. DATA ANALYSIS

The researcher employed thematic content analysis to generate initial codes. The analysis began with an immersion in the data through repeated listening to interview recordings, reading transcripts, and examining field notes. A manual coding system was then used to allow the data to "speak for themselves" (Patton, 2015, p. 470). To enhance the reliability of the sheikhs' responses and reveal the meanings behind their perceptions, lengthy quotations from participants were presented. The qualitative analysis followed Tracy's (2024) recommendations, identifying common patterns across interviews and categorizing them accordingly. Similar content was grouped into overarching themes, derived inductively from the data. The coding process involved three stages: open, axial and selective. Open coding segmented the data into manageable parts and created labels. Axial coding linked and grouped similar categories, leading to the creation of more abstract categories while in the final selective coding stage, key themes were identified and refined, resulting in a five-fold visitor typology (Figure 1; Patton, 2015). The researcher also connected the data with the established literature for validation. Data saturation was reached, and the sample of respondents was not deemed a limitation, as careful attention was given to participant selection. The mosque management provided an initial list of 25 religious hosts, deemed effective for obtaining a purposive sample. All 25 participants were willing to participate, and after 16 interviews, no new themes emerged. To ensure data saturation, the researcher continuously analyzed the data, comparing categories until no new themes were identified. An audit trail was maintained to document the collection process and theme development. An

external researcher reviewed the findings and process to ensure credibility. Triangulation of data collection strategies, such as field notes and observations alongside transcribed interviews, addressed trustworthiness and reduced reliance on a single method (Patton, 2015). Before presenting the predominant categories, a general description of the case study site will be provided to offer important background information for understanding the findings.

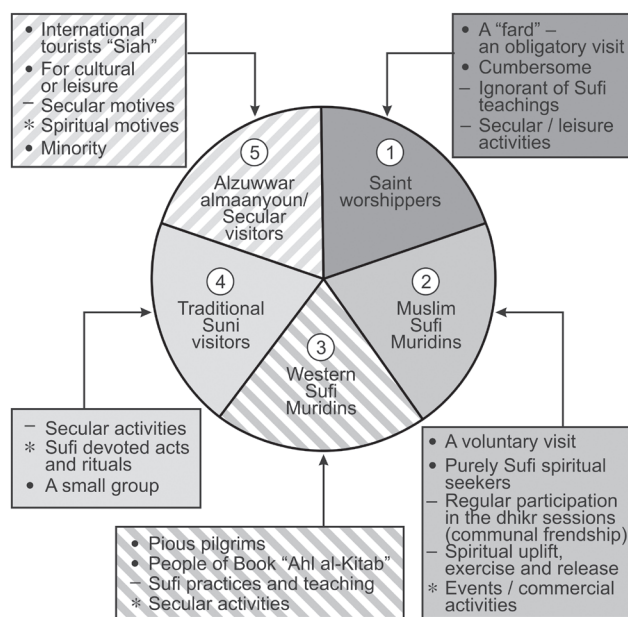


Figure 1. An overview of the five-fold visitor typology at the Sufi site
Source: author

4. BACKGROUND TO THE SUFI MOSQUE AND THE TOMB OF EL SAYED AHMED EL-BADAWY

The research site was deliberately chosen as it is the most prominent Sufi site in Egypt, providing a significant case for exploring visitors' behaviors from participants' perspectives. The Sufi mosque is located in Tanta, Egypt's fifth largest city, home to nearly one million people, situated between Alexandria and Cairo. Renowned for its Islamic and Coptic heritage, Tanta features restored religious sites, including Coptic churches and Sufi shrines, with ongoing pilgrimages to the graves of Sufi saints. The Sufi mosque is a key religious site in Tanta, offering free public access and prearranged guided tours for foreign dignitaries, journalists, international tourists, and academics. These 90-minute tours, led by bilingual sheikhs (faith guides) assigned by the government, are available throughout the day, except during the five daily congregational prayers, which last about 30 minutes. Observations indicated that the shrine

of El-Badawy within the mosque is the most popular spot, where visitors' prolonged presence can hinder the flow of others. The annual eight-day celebration of the saint's birth anniversary attracts hundreds of thousands of pilgrims, fostering a festive environment that appeals to merchants and visitors seeking local food, entertainment and products. Tanta welcomes over two million visitors annually, with a significant influx during the saint's anniversary (Aman, 2017). Preliminary observations revealed that the sheikhs are often the first contact for visitors, addressing inquiries and explaining Sufi principles to non-Muslim guests.

5. STUDY FINDINGS

5.1. A CLASSIFICATION OF VISITORS BASED ON SUFI HOSTS' PERCEPTIONS

Respondents noted that visitors cannot be described as a *zaer aam* (general type); instead, they categorized them into five types based on motives, activities, behaviors, and levels of knowledge about Sufism. The sheikhs used terms like *saint worshippers*, *Muslim Sufi Muridins*¹, *Western Sufi Muridins*, *traditional Sunni visitors* and *Alzuwwar almaanyoun* (secular visitors) to illustrate these distinctions, as shown in Figure 1.

5.2. RELIGIOUS HOSTS' PERCEPTIONS OF SAINT WORSHIPPERS

Many respondents expressed concerns about saint worshippers, viewing their behaviors as a risk to the shrine and an inconvenience to others. One participant stated:

They shout and loudly greet the saint. Many of them thrust themselves at the maqsura in exaltation... (Sheikh Salam).

Their visits are seen not merely as voluntary but as "like a fard" (an obligatory visit) to show gratitude and seek miracles. Their primary motives include prayers for "marriage", "passing exams", or "healing".

Collins-Kreiner (2010) describes similar phenomenon at the graves of saintly Jews in Israel, where *Masortiem* (traditional visitors), mostly Jewish women, brought with them prayers relating to health, marriage or some other individual need. The saint worshippers are obsessively interested in venerating the magical powers of the Sufi saint that are expected to produce miracles or to induce ecstatic visions (Hidayat, 2023; Huma, 2024). The Sufi hosts perceived the saint worshippers as "problematic visitors" with "a very low level of understanding of Sufism". Upon entering

the mosque, they often rush to kiss and touch the maqsura, seeking the saint's blessing. Observations confirmed the popularity of this behavior, as the researcher observed an incident involving a man and his young son and overheard the man advising his son in Arabic to swiftly "run and touch the maqsura to get sheikh El-Badawy's barakah (blessing)". There was a broad consensus among all respondents that the saint worshippers' visits were devoid of any types of commercial behaviour and many of the worshiping activities performed by this type of visitor were deemed as "bida" (innovation) or as "shirk" (polytheism). They are not regarded as "pious visitors" or "true believers" as indicated by Sheikh Nasser:

Visitors pay their respects to the saint by reciting prayers for him. ... They should not try to find God in humans.

This place saint worshippers in a limbo, neither fitting into the categories of true Sufi pilgrims nor secular visitors. This highlights the lack of research on visitor characteristics at Sufi sites.

5.3. RELIGIOUS HOSTS' PERCEPTIONS OF THE MUSLIM SUFI MURIDINS AND WESTERN SUFI MURIDINS

The second group includes Muslim Sufi Muridins and Western Sufi Muridins, who exhibit similar behaviors and activities as perceived by the sheikhs. They seek "spiritual comfort" and view their visits as non-obligatory spiritual practices. The site fulfils their wants and needs for "spiritual comfort" and offers them "a new world" (Sheikh Saad). The majority of the Sufi hosts confirmed that these two groups of visitors considered their site visit to be a non-obligatory spiritual practice. The hosts also classified Western Sufi Muridins as "siah" (international tourists) and sometimes as "Ahl al-Ketab" (People of the Book). These visitors, primarily non-Muslims (mostly European and North American Christians and Jews), are captivated by the saint's tariqa (mystical path)². As Sheikh Salah explained:

they are not Western converts to Islam, they are only captivated by the sheikh's tariqa. They want to access and sustain contact with inner divinity through his tariqa rather than through the Bible or Torah.

Sheikh Murad described the Western Sufi Murid as a visitor "of two halves: a true practicing Sufi, but a tourist". Many sheikhs referred to these visitors as "progressive followers", "knowledgeable guests", "pious Hujjaj (Sufi pilgrims)" or "genuine Sufis", with their motives centered on participating in dhikr for "inner tranquility" and "contemplating God's presence". The behaviours of the Muslim Sufi Muridins and Western

Sufi Muridins contrast sharply with saint worshippers where the former groups obviously believe that "only God should be worshipped" (Sheikh Khaled). In this context, the Muslim Sufi Muridins and Western Sufi Muridins do not perceive the saint as a mediator between people and God. In the eyes of the sheikhs, these visitors often paid genuine respect to the saint and seemed to constitute no threat to the sanctity and fabric of the shrine. In this respect, the findings by Wong (2019) on visitation to Pu-Tuo-Shan temple in China are of interest here as the behaviors of the "Buddhist Jushis" are also seemingly similar to the Muslim Sufi Muridins and Western Sufi Muridins. From the sheikhs' point of view, the Muslim Sufi Muridins and Western Sufi Muridins usually combine the Sufi spiritual activities with some forms of tourist activity such as "visiting coffee shops", "markets", "restaurants" and "meeting other visitors".

In this sense, one may describe them as spiritually-oriented tourists who search for spiritual fulfillment and a desire for escape from a post-modern society or an "empty secular society" (Tacey, 2004, p. 2). Their site visit can be regarded as "an aspiration to connect to the Divine" (Singh et al., 2023, p. 13) and "a journey from chaos into another cosmos, from meaninglessness into authentic existence" (Cohen, 1979, p. 191). These findings, while requiring further substantiation, potentially confirms scholars' arguments that materialism and secularism in Western countries (Polus et al., 2022; Singh et al., 2023), the rise of Islamic extremism, the skepticism about the strict interpretations of Islam by moderate Muslims, and the modernization efforts in the Muslim world have all led to a growing interest in meditation and spirituality outside of conventional institutional religion (Haq & Medhekar, 2020). It should be noted that, in the context of the visitor's separation from post-modern society, Sufi mosque visiting may offer a spiritual encounter with a sacred site that can be coded as distant, both temporally and spatially.

5.4. RELIGIOUS HOSTS' PERCEPTIONS OF SUNNI VISITORS

Traditional Sunni visitors tend to distance themselves from the saint's practices, viewing them as distractions. They constitute a small proportion of visitors, and many sheikhs observed that Sunni visitors generally do not believe in the saint's sacredness. The majority of the sheikhs are candid about the fact that the overwhelming majority of Sunni visitors are not Sufi devotees, and they combine traditional Islamic observances, such as daily prescribed prayers, with a range of leisure activities. From the sheikhs' viewpoint, Sunni visitors generally do not believe very deeply in the perceived sacredness of the saint and do not follow his spiritual practice. Accordingly, their behaviors and activities during the visit clearly reflect the traditional Islamic religious practices and norms found in regular mosques

in Egypt (e.g., performing *salāt al-jama* or congregational prayers, participating in the “public tilawa” or congregational recitation of the Qur’an, while attending *salāt al-jum’a* or Friday noon prayers) rather than the mystical world of Sufism. They also spend less time inside the mosque than do visitors from other groups. It was also clearly noted by many respondents that the Sunni visitors’ activities reflect the fact that their visit is largely devoid of “mystical experiences” and they use the Sufi mosque as a background for recreational activities. In short, although Sunni visitors generally perceive the Sufi mosque as a religious site to visit, secular-leisure activities seem to be the primary reason for it. The reason for this contradiction (as several sheikhs articulated) is that Sunni visitors perceived the mosque as a sacred place merely for Sufi adherents and not as their own selves. In other words, they did not have strong sense of belonging.

5.5. RELIGIOUS HOSTS’ PERCEPTIONS OF SECULAR VISITORS (ALZUWWAR ALMAANYOUN)

Alzuwwar almaanyoun (secular visitors) form a small minority, viewed positively by sheikhs for their respectful behavior. Sheikh Atif stated:

All *Alzuwwar almaanyoun* respect the sanctity of the site by behaving and dressing modestly. These kinds of behavior make me want to talk to them. For example, if they speak English, I’ll start a conversation with them and make them aware that Sufis like me believe in the brotherhood of all humanity and I hold believers and unbelievers in the mosque in high esteem.

Of interest is that, in almost all of the interviews, the sheikhs do not necessarily prefer Muslim visitors to secular visitors and Western Muridins, as they welcome increased Western (non-Muslim) attendance mainly for the opportunity to promote the mystical experience and spiritual aspects of Sufi teachings. It is imperative to underscore that during the interviews these sheikhs exhibit an explicit behaviour to undermine perceptions of difference by making a place for non-Muslims (secular visitors and Western Sufi Muridins) in their sacred site. The secular visitors, similar to Western Sufi Muridins, were perceived by the sheikhs as “siah” (international tourists) but these two groups of visitors constituted two differently driven groups with respect to their motives and the way they behaved on site. The Western Sufi Muridins visited the site with a specific interest and involvement in the spiritual practices of the saint. In contrast, according to the participants, the secular visitors generally have a fairly superficial knowledge of the Sufi site, and they learn of the existence of the place through “previous international tourists”, “the Egypt Tourism Authority’s website”, “tour agency brochures” or “videos channels in YouTube” that promote religious

and cultural tourism in Egypt. Three respondents also noted that secular visitors usually decide to visit the mosque since “it was close to Cairo and Alexandria”, “it was free to enter”, or “it was featured in some English guidebooks as an interesting religious site in Egypt with a well-known saint buried”.

According to the accounts of most of the respondents, unlike Western Sufi Muridins, secular visitors were not interested in the spirituality or religiosity of the site; rather they were interested in watching Sufi dances and religious festivities, interacting with religious hosts, buying souvenirs, trying local food and restaurant offerings, viewing icons of religious difference (e.g., pulpit and qibla “prayer hall”), and taking photos of the saint’s shrine and the courtyard’s façade. Finally, the responses of the interviewed sheikhs show a similar phenomenon between Western Sufi Muridins and secular visitors: unlike other groups, they often seek out “personal interactions” and “engagement” with the religious hosts. They often initiate casual conversations and interactions with them and engage with questions about Sufism and the saint’s way of life and his spiritual path.

6. CONCLUDING DISCUSSIONS AND RESEARCH CONTRIBUTIONS

6.1. CONTRIBUTION TO THE ACADEMIC LITERATURE

This study adds to the body of knowledge on religious tourism by providing a nuanced understanding of how Sufi sheikhs categorize and perceive Muslim and non-Muslim visitors. The findings suggest that visitors to Sufi sites seek a diverse range of experiences, from engaging with Sufi spiritual practices to exploring the cultural richness of the Sufi site. The sheikhs’ classification and perceptions indicate that visitors to the Sufi site do not consist of partially or exclusively motivated pilgrims, but of different types of visitor. According to the sheikhs’ categorizations, some visitors (saint worshippers, Muslim Sufi Muridins and Western Sufi Muridins) are primarily driven by religious/spiritual motivations, others by secular (recreational) incentives (secular visitors) and yet more by semi-religious motivations (Sunni visitors). This diversity indicates that motivations are not uniform; rather, they encompass a spectrum from purely religious to recreational (Liro, 2024; Tsai, 2021). It seems that the Sufi site takes different religious and tourism functions for its visitors depending on the type and motive. It appears also that Sufi tourism market encompasses a diverse array of products that are commonly linked to religious tourism, including Sufi pilgrimage trips or visits, the search for mystical and divine knowledge, attendance at the burial

sites to make specific appeals to Sufi saints, watching Sufi dances and religious festivities, interacting with religious hosts, buying souvenirs, trying local food and restaurant offerings, and viewing icons of religious difference (Elhadary, 2018). Sufi tourism occurs even though the visitors' motives for visiting and their behaviours and activities at these sites are diverse (Haq & Medhekar, 2020).

The sheikhs' identification of five distinct visitor types – each distinguished by particular behaviors, performances, and levels of knowledge about Sufism, provides a critical lens through which to perceive the intersection of spirituality and tourism. This approach moves beyond mere description and engages critically with existing literature. The typology presented in the current study (Figure 1) not merely aligns with the typological frameworks established in earlier (e.g., Collins-Kreiner, 2010; Ebadi, 2014; Wong et al., 2013) and later studies (e.g., Doğukan Çıkı & Tanrıverdi, 2023; Hidayat, 2023; Lee & Cho, 2025; Liro, 2024; Tsai, 2021; Zheng et al., 2022), but also expands the understanding of the “pious pilgrim” concept beyond traditional definitions. The concept of the “pious pilgrim” has often been framed within a Western-centric context that emphasizes obligatory religious practices (Polus et al., 2022). However, this study illustrates that the sheikhs define this term dynamically, incorporating visitors who engage with Sufism's spiritual teachings without necessarily adhering to traditional religious obligations. In other words, Sufi hosts interpreted this term in ways that diverge from traditional Western literature. For example, the saint worshippers are perceived as having a limited understanding of Sufism, contrasting sharply with the deeper spiritual engagement observed in both Muslim and Western Sufi Muridins. This critical engagement allows for a more nuanced interpretation of the pious pilgrim concept, suggesting that the term is dynamic and fluid, shaped by various, though not mutually exclusive, understandings and characteristics.

Hence, this study invites a re-examination of the pilgrimage-tourism continuum proposed by earlier scholars like Santos (2002) and Smith (1992), illustrating how such distinctions can obscure the complexities of visitor experiences. While these frameworks have provided foundational insights, the study findings highlight the need for a more inclusive and context-specific understanding of pilgrimage. For example, the sheikhs perceived the saint worshippers as unworthy of the term “pious Sufi pilgrims”. From a Sufi perspective, those who engage in devotional rituals centered on saint veneration, while avoiding secular activities, are excluded from the linear tourist-pilgrim continuum and saint worshippers were found to occupy an anomalous position, unable to be categorized. Unlike saint worshippers, traditional Sunni visitors showed less commitment to Sufi rituals and were more

interested in secular activities, placing them easily in the middle of the sacred–secular continuum. What distinguishes Western and Muslim Sufi Muridins from the other groups is their aim to experience the authenticity of Sufi practices while maintaining their own beliefs. Accordingly, only these two groups were considered “genuine Sufi spiritual visitors” by the sheikhs, positioning them closer to the pious end of the pilgrimage-tourism continuum. In summary, by analyzing the sheikhs' perspectives, the research underscores that visitor classifications are not static; they are influenced by a myriad of factors, including religious interpretations, socio-economic conditions, and cultural exchanges. This dynamic approach enriches the theoretical framing by situating the concept of the pious pilgrim within a broader discourse about identity, spirituality, and the interplay of religion and tourism.

A deeper reflection on the factors influencing the sheikhs' perceptions reveals the roles of power dynamics, gender and socio-political and -economic contexts. The sheikhs' narratives are not merely personal reflections; they are molded by their positions within a broader socio-political landscape that often marginalizes certain interpretations of Sufism (Çakmaktaş & Özçelik, 2025). For example, the classification of saint worshippers as less knowledgeable may reflect a power dynamic that privileges certain forms of religious expression over others, potentially sidelining the voices of grassroots practitioners who engage in these devotional practices. Also, gender may play a significant role in shaping how visitors are categorized. Interactions between male sheikhs and predominantly male visitors can influence the interpretation of behaviors deemed acceptable or pious. Future research could further investigate whether female visitors are perceived differently and how gender influences the types of spiritual engagement deemed authentic by Sufi hosts. Political and economic contexts also shape these perceptions. The increasing commercialization of Sufi sites can lead to tensions between maintaining spiritual integrity and catering to tourist expectations (Ghaderi et al., 2020). The sheikhs' welcoming stance towards secular visitors may serve as a strategy to promote a more moderate image of Islam in the face of negative global stereotypes, thereby reflecting a political motive to counteract narratives of extremism.

The exploration of host-guest dynamics reveals that Sufi sheikhs maintain an inclusive approach towards all visitors, fostering interfaith dialogue and mutual understanding. This approach transcends mere hospitality, functioning as a conscious negotiation of identity and representation in a globalized world (Milman & Oren, 2018). This perspective not only enriches the visitor experience, offering a potentially transformative encounter with Sufi spirituality, but

also promotes a more tolerant and nuanced view of Islam, countering prevalent stereotypes often amplified within the current socio-political climate. The inclusion of non-Muslim visitors challenges the traditional notion of exclusivity often associated with religious sites, aligning instead with theories of cosmopolitanism and intercultural exchange (Guia & Jamal, 2023). This suggests that Sufi spiritual spaces can actively serve as dynamic platforms for cultural exchange and dialogue, becoming contact zones where diverse worldviews intersect, negotiate, and potentially reshape one another. However, critical analysis should also consider the potential power dynamics inherent in such interactions, examining whether this inclusivity serves as a form of subtle proselytization or a genuine effort towards equitable exchange.

The findings also shed some light on the interplay between Sufism's cultural heritage and its spiritual practices. This duality shapes visitor's experiences and expectations, highlighting the complexities that religious hosts face in balancing the preservation of spiritual integrity and authenticity with the demands of tourism. The distinction between Sufism as heritage and Sufism as a living spiritual practice raises critical issues about commodification and authenticity in religious tourism (Singh et al., 2024). Understanding this distinction is important for recognizing how Sufi sites navigate the tensions between maintaining their sacredness and appealing to a broader audience. The commercialization of Sufi practices can lead to further tensions, particularly in maintaining authentic spiritual experiences while catering to tourist expectations. This critical engagement with the commercialization of spirituality underscores the need for Sufi hosts to navigate their roles as custodians of both tradition and tourism. This dynamic is important for understanding the evolving nature of Sufism within the framework of modern religious tourism, revealing how Sufi sites can adapt to contemporary demands while preserving their spiritual essence.

6.2. CONTRIBUTION TO PRACTICE

Integrating the perspectives of Sufi hosts into tourism management practices can significantly enrich the discourse on interfaith dialogue and cultural policy. As Sufi sheikhs exhibit a welcoming attitude towards both Muslim and non-Muslim visitors, their insights can serve as a foundation for fostering mutual understanding and respect among diverse religious communities. This aligns with broader debates on the role of tourism as a medium for interfaith engagement, where shared experiences at sacred sites can break down cultural barriers and challenge the stereotypes associated with Islam in Western societies (Ghaderi et al., 2020). By promoting Sufi spiritual practices and

narratives, tourism stakeholders can leverage these interactions to cultivate an environment of inclusivity, showcasing Sufism's moderate interpretations of Islam and its emphasis on universal brotherhood. Such initiatives not only enhance the visitor experience but also contribute to a more nuanced representation of Muslim cultures in the global tourism landscape (Haq & Medhekar, 2020). Moreover, the typology of visitors developed through this research provides valuable insights for cultural policy formulation, particularly in the context of managing sacred sites. Understanding the diverse motivations and behaviors of visitors, ranging from saint worshippers to secular tourists, enables site managers to tailor experiences that cater to different audience in segments of Figure 2. This segmentation is important in developing sustainable tourism strategies that respect the sacredness of Sufi sites while also accommodating the leisure interests of a broader audience. By promoting cultural exchange and fostering respectful interactions through targeted programming, Sufi sites can position themselves as exemplary models of how religious tourism can balance spiritual integrity with commercial viability. This approach not only safeguards the sanctity of these sites but also supports local economies, ultimately contributing to the cultural preservation and promotion of Sufi heritage in a globalized world.

While it is acknowledged that suppliers generally seek profits and may prioritize economic gains over the spiritual experiences of tourists (Lee & Cho, 2025), this study highlights an opportunity for a balanced approach to tourism management. By recognizing the distinct motivations and behaviors of different visitor types, Sufi hosts and local travel agencies can create tailored offerings that not only enhance spiritual engagements but also align with the commercial interests of the tourism sector. This dual focus can help ensure that visitors leave with meaningful experiences that resonate with their spiritual needs, while also contributing to the economic sustainability of Sufi sites. Such an approach encourages respectful interactions between tourists and hosts, fostering a deeper appreciation for Sufi practices and beliefs. By segmenting the visitor market based on discrete behaviors, motivations, and their levels of involvement in recreational activities, Sufi hosts can develop offerings that are both spiritually enriching and economically viable. For example, saint worshippers, who seek a deeper connection through spiritual practices, may require a strictly focused experience devoid of leisure elements, such as guided prayers or rituals centered around the veneration of the saint. In contrast, Muslim and Western Sufi Muridins, who often blend spiritual pursuits with cultural exploration and some recreational activities, might appreciate offerings that include opportunities for engaging in Sufi practices

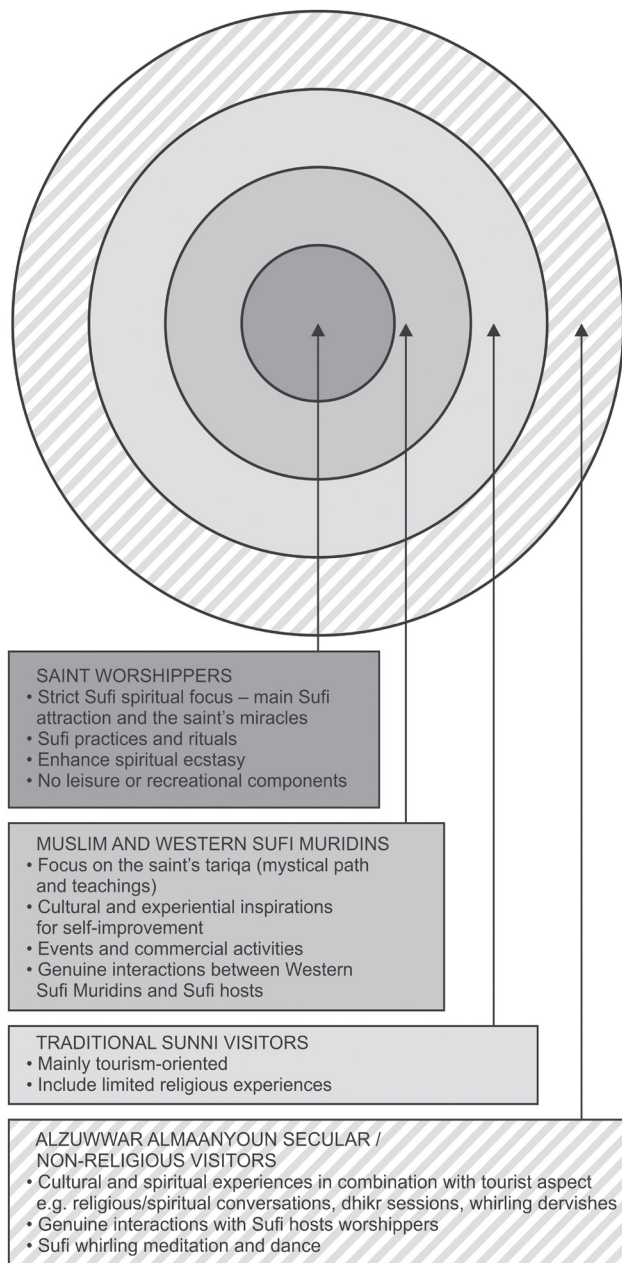


Figure 2. Summary of the ramifications during the development of Sufi spiritual tour packages

Source: author

alongside cultural and leisure experiences, such as local food tastings or music events. By designing these diverse experiences, Sufi hosts can cater to the different interests of visitors, creating a more inclusive environment that honors the essence of Sufism while also tapping into the broader tourism market. This strategic alignment can ultimately lead to increased visitor satisfaction and repeat patronage, fostering a sustainable tourism model that benefits both the community and its visitors.

Finally, Sufi hosts and tourism marketers should leverage promotional materials to market their cities as spiritual destinations by incorporating

Sufi traditions and rituals (Haq & Medhekar, 2020). They can embrace the digital age by promoting Sufi mosques on social media platforms like Twitter and Facebook. Collaboration among Sufi hosts, travel firms, and destination administrators can significantly boost international interest in Sufi mosques. With Sufi Sheikhs generally welcoming siah (Western Sufi Muridins and secular visitors), promoting existing Sufi sites in Egypt and beyond is advisable, as religious tourism provides Egypt with a valuable opportunity to rejuvenate its tourism sector and improve its reputation on the global stage (Adam, 2025). Figure 2 outlines essential considerations for Sufi hosts and travel firms when developing spiritual tour packages, based on the five-fold visitor typology. Additionally, Sufi mosque management should adopt proactive strategies to enhance visitor experience. This includes clear signage prohibiting touching or kissing the saint's tomb and limiting visitor numbers to prevent damage and ensure respectful behavior.

7. RESEARCH LIMITATIONS AND FUTURE DIRECTIONS

This research has inherent limitations. First, as it is based on a single case study site, generalization of the findings may be limited. Only the perspectives of Sufi hosts regarding visitors were examined, excluding actual visitor experiences. Future research should focus on visitors' motivations, experiences, and perceptions of Sufism, including their on-site interactions, to substantiate the five-fold visitor typology. The role of Sufi faith in facilitating positive host-guest interactions can also be further explored. The author plans to conduct such studies as a second stage of this research. Additionally, testing the applicability of the concepts of pious pilgrim and typology in other contexts, such as Shi'a mosques, Baha'i shrines, Jewish synagogues, and Christian sites, is recommended. Finally, qualitative findings could be complemented by quantitative methods to enhance understanding of the phenomenon, as suggested in previous research (Zheng et al., 2022).

ENDNOTES

¹ A Murid is a Sufi seeker or follower of a Sufi saint's devotional path of spiritual development. A Murid endeavors to attain a deeper connection with God through the pursuit of spiritual knowledge and the attainment of spiritual enlightenment.

² The term refers to Sufi saints' devotional path of spiritual development, which encompasses a series of stages involving contemplation and meditation, ultimately culminating in closeness and intimate communion with the Divine.

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EXPLORING LOCAL CUISINE DINING EXPERIENCES: A MULTISENSORY ANALYSIS FROM EAST JAVA

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ABSTRACT

This study examines the role of multisensory experiences in enhancing tourists' satisfaction with local culinary experiences and their intention to share these experiences online. It investigates how the interplay of sensory modalities influences tourists' perceptions and behavioral responses. A quantitative research approach was adopted, employing an online survey with a structured questionnaire. Data were collected from 250 tourists who had tested East Java's local cuisine, using a convenience sampling method. The relationships between sensory experiences, satisfaction and online sharing intention were analyzed using partial least squares structural equation modeling (PLS-SEM). The findings reveal that taste and aroma significantly influence tourist satisfaction, whereas visual, auditory and tactile experiences do not exhibit a direct impact. Furthermore, higher satisfaction levels are positively associated with tourists' willingness to share their culinary experiences online. This study contributes to the tourism and hospitality literature by highlighting the critical role of taste and aroma in shaping memorable culinary experiences. The findings provide practical insights for restaurant owners and destination marketers, emphasizing the need to design marketing strategies that leverage dominant sensory cues to enhance engagement and encourage electronic word-of-mouth (e-WOM) sharing.

KEYWORDS

Indonesia, dining experience, satisfaction, e-WOM intention

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1. INTRODUCTION

Tourism has become a leading and rapidly growing industry globally, closely tied to the attractiveness of natural landscapes and the variety of local cuisine offerings (Hernández-Rojas et al., 2021; Ullah et al., 2022). Understanding how incorporating local cuisine enhances tourists' culinary experiences is crucial for grasping their perception of a destination and predicting future behaviors, including their intention to revisit, share their experience, and their willingness to recommend the destination to others (Brahmah et al., 2024; Choe & Kim, 2018). Local cuisine serves as a marketing strategy for developing profitable tourist destinations and supporting socio-economic aspects (Hall & Gössling, 2013; Stalmirska, 2021). According to the World Food Travel Association (WFTA), tourists allocate 25% of their travel expenses to food and beverages (University of Central Florida, n.d.; Wolf, 2020). In Bali, the Head of Bank Indonesia Representative revealed that 65% of tourist expenditures are allocated to food and beverages (Muliantari, 2022; Mulya, 2024). This highlights how culinary tourism can benefit local communities and governments through taxation, contributing to area promotion and increased profits for hospitality, dining and transportation services. Additionally, it can help reduce unemployment rates, especially in rural areas with limited economic activity (Wolf, 2020).

Local cuisine, known for its unique flavors and cooking methods, has become a global culinary fascination. It refers to food and beverages that are part of a specific territorial food system, embodying the cultural, historical and social elements unique to that area. This includes not only traditional dishes but also contemporary and fusion foods that have been integrated into the local food culture (Stalmirska, 2021). The uniqueness of local cuisines goes beyond taste; it involves a combination of various sensory elements that collectively establish a meaningful connection to heritage and tradition. Local cuisines stand out not just for their flavors but also for the cultural significance they hold, reflecting the region's history, geography, traditions and social norms (Frisvoll et al., 2016; Huete-Alcocer & Hernández-Rojas, 2022; Stalmirska, 2021). Dining on local dishes offers visitors a chance to experience a culture, even if they are far from its place of origin (Ellis et al., 2018). Such a culinary experience can be as remarkable as tasting street food in Bangkok or New Delhi, or as comforting as savouring a traditional Italian meal in Rome (Ab Karim & Chi, 2010; Kaushal & Yadav, 2021).

Indonesia, with its vast archipelago, is recognized as one of the most culturally diverse nations in the world (Legge et al., 2026). This diversity makes Indonesia incredibly rich in cultural and environmental heritage,

offering significant potential in the tourism sector (PwC Indonesia, n.d.). Each region showcases unique local cuisines with distinct flavors, ingredients, preparation methods and presentation styles. This diversity becomes a tourist attraction, providing a different culinary experience. For instance, Indonesia offers a wide variety of *soto* dishes, ranging from Madura beef soup, Lamongan chicken soup, Betawi, to Aceh soup, each infused with a plethora of spices. The presentation varies, using earthenware cauldrons, *besekek* woven from bamboo, and *pincuk* made from banana leaves. Additionally, diverse processing methods, such as charcoal or bamboo, contribute to the unique taste of local culinary delights. Given its vast geographical and cultural diversity, Indonesian cuisine offers a rich array of flavors and experiences.

Eating and drinking are highly sensory experiences in our daily lives, influencing decision-making (Spence, 2020; Velasco & Obrist, 2021; Velasco et al., 2018). These experiences involve the interplay of various senses throughout the consumption process. The food's flavor not only affects overall enjoyment but also the presentation, ambient music, decor and the distinctive aroma of the dishes (Tran et al., 2023). Each dish has characteristics like color, shape, smell, texture, taste and sometimes even sound that impact how it is perceived. For visual sensation, color can indicate the freshness of ingredients or the use of natural or artificial coloring. Sound sensation includes the noise of food being bitten (e.g. a crunchy sound denoting crispiness, such as when eating *rempeyek kacang*, or crispy peanut crackers) or the music in the eating environment (e.g. Balinese, Javanese, or Sundanese gamelan accompaniment). Connected to smell and taste, traditional or local food has distinct qualities due to unique spices and cooking methods, resulting in a unique taste and aroma (Darsana & Susanti, 2022). Additionally, tactile sensation in food is often linked to its mouth texture, such as crispiness, tenderness or fibrous quality (Barbosa Escobar et al., 2022; Morgan, 2021).

The growth of sensory marketing in the restaurant industry is changing how we perceive dining. With an increasing number of tourists sharing their experiences on social media, these trends play a role in decision-making. However, there is a lack of attention paid to the multisensory aspects of local culinary diversity that could attract tourists (Silaban et al., 2023). Moreover, there is a significant gap in understanding the comprehensive dynamics of multisensory experiences. Current research often focuses on individual sensory elements like taste, aroma or visual presentation separately (e.g. Delwiche, 2012; Guedes et al., 2023). There is a need for a more holistic examination of how these sensory elements interact to create a unified and immersive dining experience.

This research aims to uncover the various layers of the local cuisine dining experience, exploring the diverse dimensions that contribute to its unique appeal. Specifically, the study seeks to:

- identify the multisensory aspects influencing overall dining satisfaction; and
- understand tourists' motivations for sharing their experiences online.

Using a quantitative research approach, the study examines how different sensory factors impact satisfaction with local cuisine dining and tourists' intentions to share their experiences online. Through an internet-based survey with a self-completion questionnaire, we aim to offer a comprehensive understanding of the multisensory aspects of local cuisine dining and their implications for the restaurant industry. In today's interconnected world, where globalization prevails, local cuisines serve as cultural ambassadors that represent national identity and heritage. This perspective aligns with the concept of gastrodiploacy, as seen in South Korea's use of cuisine as part of the Korean Wave to strengthen its cultural influence in Indonesia (Asy'ari et al., 2024). Similarly, Indonesia has advanced its culinary diplomacy in Saudi Arabia by opening restaurants and organizing food events to increase the visibility of its cuisine abroad (Renta et al., 2025). With skillful coordination of sensory elements, local cuisine establishments have the potential to go beyond mere culinary delights, crafting an unforgettable multisensory experience for their customers.

2. THEORETICAL FRAMEWORK

2.1. FOOD AND TOURISM

Food has transitioned from being merely a necessity for tourists to becoming a significant element of the travel experience (Hjalager & Richards, 2002; Kement et al., 2024). According to Kovalenko et al. (2023), tourists tend to learn about and discover a destination through its local cuisine. They also consider the variety and quality of places where food can be consumed, which significantly contributes to their overall satisfaction. Wondirad and Verheye (2023) also emphasize that local food as a tourism product remains a vital factor in tourists' destination choices.

Recent studies highlight the significant role of culinary experiences in shaping tourists' overall travel experience. Björk and Kauppinen-Räsänen (2019) states that tourists are increasingly drawn to unique culinary experiences that reflect the cultural identity of a destination. Yang et al. (2024) support this view, find that the quality and diversity of a destination's cuisine significantly influence tourists' satisfaction and

their intention to revisit. Furthermore, the geography and climate of a specific region dictate the types of locally used foods: spices, herbs and ingredients that can be grown there, creating a unique and distinctive flavor in the local cuisine, which provides tourists with a memorable culinary experience (Boesen et al., 2017; Roy, 2024; Smith & Xiao, 2008). However, only a small proportion of tourists actively seek authentic local food, and such experiences are often difficult to access in tourist-oriented areas unless visitors venture beyond mainstream routes or rely on local knowledge (Charzyński et al., 2015).

Tourists find motivation to search for local cuisine in several ways. For some, this involves appreciating and enjoying local or regional cuisine as part of the travel experience (Palupi & Abdillah, 2019). For others, food itself becomes the primary motivation for their journey, leading them to participate in activities specifically centered around culinary experiences (Huete-Alcocer & Hernández-Rojas, 2022; Palupi & Abdillah, 2019; Sooi et al., 2025). This indicates that food serves not only as a basic need but also as a crucial means for exploring and understanding a place. Therefore, to capitalize on food as a main attraction and develop effective marketing strategies around culinary experiences, marketers should first understand the perspectives of their target customers and the factors that attract travelers interested in exploring diverse culinary offerings.

2.2. TOURIST SATISFACTION

Tourist satisfaction encompasses a range of tourists' attitudes about specific aspects of their vacation experiences (Brammah et al., 2024; Pizam et al., 1978). Oliver (2010) expands this definition, stating that tourist satisfaction results from a judgment that a product or service feature has provided a pleasurable level of consumption-related fulfilment, whether it meets, exceeds or falls short of expectations. This satisfaction process typically involves comparing perceived product/service performance against a set of standards or expectations (Ryu, Um & Leet et al., 2012; Soebandhi et al., 2020; Yi, 1990). Bakti et al. (2020) describe satisfaction as an emotional state that arises when there is a minimal gap between what customers expect and what they perceive to receive from a service provider.

Tourist satisfaction is influenced by destination attributes (Baitalik et al., 2022). Previous studies such as those by Carvalho (2022), Ragavan et al. (2014) and Valduga et al. (2020), have assessed tourist satisfaction by evaluating factors such as food, accommodation, image, attractions, climate, accessibility, culture and price. When these attributes meet tourists' expectations, satisfaction levels are high, whereas unmet expectations lead to dissatisfaction (Asmelash & Kumar,

2019; Braimah et al., 2024). These findings highlight the importance of effectively managing destination attributes to ensure tourist satisfaction and foster positive emotional responses.

2.3. MULTISENSORY DINING EXPERIENCE

The literature on multisensory dining underscores the importance of engaging all the senses for an immersive and memorable experience. While individual sensory elements like taste, aroma, sound, texture and visual presentation have been studied separately, it is their harmonious interplay that turns a meal into a multisensory journey (Chang, 2020; Hultén et al., 2009). For instance, the taste of a dish is not only experienced through actual tasting but also influenced by its presentation and aroma. Moreover, factors beyond taste, including aesthetics, background music and fragrances, together with the authenticity of local settings such as street food stalls, contribute to an enjoyable dining experience (Chompupor et al., 2024; Spence, 2015; Spence, 2020). Engaging all senses serves as the initial stimulus that influences consumer attitudes and emotions, highlighting the significant potential of multisensory approaches in shaping consumer decision-making within local food experiences during tourist visits (Silaban et al., 2023). Therefore, understanding the importance of sensory elements is crucial in creating memorable dining experiences.

2.3.1. VISUAL

A common saying among culinary experts emphasizes this notion: "You eat with your eyes first". Visual perception holds a significant influence as people are naturally drawn to what they see (Liu et al., 2022). This phrase highlights that unappealing-looking foods are often left uneaten (Delwiche, 2012). The visual aspect is powerful because it not only captures attention, raises awareness, and shapes an image but also deeply impacts consumers' emotions (Schifferstein et al., 2013; Schifferstein et al., 2022). Research indicates that incorporating visual elements into the dining experience significantly enhances tourists' satisfaction with local cuisine (Ryu, Lee & Kim, 2012). Based on the above discussion, we develop the following hypotheses:

H₁: Visual experience will increase tourist satisfaction while eating local cuisine.

2.3.2. OLFACTION

Exposure to food-related sensory cues, particularly olfactory stimuli, can elicit physiological responses that significantly influence appetite and food consumption (Morquecho-Campos et al., 2020; Stevenson, 2009). For instance, the aroma of pizza can increase the desire

to eat it. The sense of smell also shapes memories and emotions during meals, activating specific brain regions and generating positive feelings like enjoyment, satisfaction, relaxation and valuable memories (Chang, 2020; Krishna & Schwarz, 2014). While enjoying local dishes, the olfactory experience can significantly enhance the overall dining experience, influenced not only by the aroma of the food itself but also by surrounding kitchen scents and cooking processes. These environmental aromas contribute to the perceived authenticity and memorability of a meal, leaving tourists with a heightened sense of satisfaction (Schifferstein et al., 2022; Silaban et al., 2023). Based on this explanation, we propose the following hypothesis:

H₂: Olfaction experience will increase tourist satisfaction while eating local cuisine.

2.3.3. TASTE

Culinary traditions from different regions and nations offer diverse tastes and unique experiences. Flavor characteristics are crucial in contributing to the diversity and distinctiveness of each destination (Hoang & Tučková, 2021). The perception of taste plays a central role in shaping food preferences and choices, arising from the integration of all the senses (Chamoun et al., 2019; Guedes et al., 2023). Taste and smell are closely connected, and taste is intertwined with other sensory experiences (Liu et al., 2022). For example, specific aromas like vanilla or caramel are perceived as "sweet" and can enhance taste intensity (Guedes et al., 2023; Stevenson et al., 1999). Visual sensations also impact taste; the colors of foods and beverages can influence taste perceptions and experiences (Spence, 2019). Exploring the unique tastes and textures of local dishes can significantly enhance travelers' journeys and leave them feeling content (Schifferstein et al., 2022). Trying traditional cuisine is an essential activity for any tourist seeking an immersive and authentic adventure.

Beyond its sensory function, taste in culinary tourism should be understood as a holistic experience that is embedded in the social and cultural contexts in which food is consumed. Tourists do not perceive taste in isolation; rather, it is interpreted through cultural familiarity, local dining norms, and shared social interactions that accompany the eating experience. These contextual elements can enhance emotional engagement and strengthen perceptions of authenticity, allowing taste to function as a medium through which tourists connect with local culture rather than merely as a source of hedonic pleasure (Björk & Kauppinen-Räisänen, 2016; Mak et al., 2012).

In addition to these sensory and cultural dimensions, tourists' evaluations of local cuisine also involve cognitive judgments related to perceived value. Research suggests that assessments of food quality are often

balanced against expectations regarding portion size and price, indicating that satisfaction emerges when taste aligns with perceptions of fairness and economic value (Ge et al., 2023). This perspective is further supported by studies analyzing Google Maps reviews, which show that online consumer feedback frequently integrates evaluations of food quality, price/value and dining atmosphere as interconnected components of overall satisfaction (Koç & Şahin, 2023).

Drawing on existing literature, taste experience in local cuisine is embedded in broader cultural, social, and value-related contexts and is expected to influence tourists' satisfaction during culinary encounters. Accordingly, the following hypothesis is proposed:

H₃: Taste experience will increase tourist satisfaction while eating local cuisine.

2.3.4. SOUND

Concerning dining, sound plays a crucial role in influencing consumers' emotions, preferences, behaviors and eating habits (Alpert et al., 2005; Hoang & Tučková, 2021; Randhir et al., 2016). Various aspects of music, including volume, style, rhythm and genre, affecting the auditory senses, can influence consumers' emotional states (Liu et al., 2022). For instance, calming music can enhance meal enjoyment, while background noise like traffic or restaurant chatter can diminish it (Spence, 2012; Spence & Shankar, 2010). Değermen Erenkol and MK (2015) and Mathiesen et al. (2020) also suggest that upbeat music tends to energize consumers and prompt quicker eating. Enhancing the culinary experience for tourists can be achieved by providing an exceptional auditory experience, undoubtedly boosting the overall enjoyment of local dishes and contributing to their overall travel satisfaction. Based on the explanation above, we propose the following hypothesis:

H₄: Sound experience will increase tourist satisfaction while eating local cuisine.

2.3.5. TACTILE

When we touch and assess food directly with our hands, we can gather important information about its temperature, freshness and ripeness or tenderness. Various forms of "finger food" establish a direct tactile connection between our hands and the food we are eating. The tactile interactions involved in handling food contribute to our overall dining experience and can heighten sensory enjoyment during meals (Spence, 2022). Research by Nederkoorn et al. (2018) emphasized the importance of food texture, especially in influencing food acceptance among children. This suggests that children, who are typically more sensitive to touch, might be more inclined to reject certain foods due to their dislike of texture or mouthfeel. Beyond visual

and auditory experiences, the tactile encounter also significantly influences the overall satisfaction derived from local cuisine (Chang, 2020; Silaban et al., 2023). The texture and mouthfeel of a dish can profoundly affect the overall enjoyment, even when the flavors are delightful. Based on this information, the following hypothesis is proposed:

H₅: Tactile experience will increase tourist satisfaction while eating local cuisine.

2.4. E-WOM INTENTION

Word of mouth (WOM), traditionally an informal exchange of opinions among consumers about products and services, has been transformed with the advent of internet technology and social media (Doan Do et al., 2024; Hapsari et al., 2024). This evolution has given rise to electronic word of mouth (e-WOM), enabling users worldwide to share their experiences, opinions and feedback about products and services through online platforms (Goyal & Taneja, 2023; Pandey & Sahu, 2020; Puspitasari et al., 2019). In the context of tourism, consuming local cuisine plays a significant role in shaping tourists' likelihood of sharing their experiences (Bigné et al., 2001; Braimah et al., 2024). Satisfied tourists are likely to recommend and promote local food, while dissatisfied tourists often share negative experiences even more actively, highlighting the dual nature of e-WOM (Poyoi et al., 2023). Evidence from studies on tourists' culinary experiences in New Delhi shows that memorable food experiences enhance satisfaction and the intention to share them (Piramanayagam et al., 2020). Based on this premise, we propose the following hypothesis:

H₆: Satisfaction will increase tourists' e-WOM intention about local cuisine.

2.5. CONCEPTUAL FRAMEWORK

As shown in Figure 1, the research's conceptual framework is built on six hypotheses. In this model, satisfaction and e-WOM intention are the dependent variables.

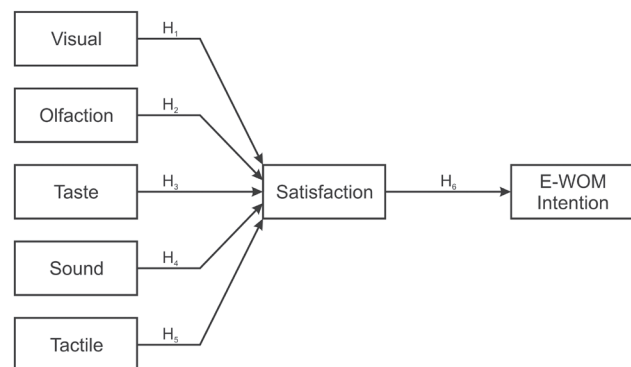


Figure 1. Research framework
Source: authors

Simultaneously, independent variables encompass multisensory experiences related to sight (visual), smell (olfaction), taste (taste), sound (auditory) and touch (tactile) since they are crucial factors influencing customer satisfaction.

3. METHODS

3.1. POPULATION AND SAMPLING

Data was gathered through online questionnaires using a convenience sampling method (Ullah et al., 2022). The population for this study consists of domestic tourists who have experienced East Javanese cuisine. East Java was chosen as the focal area due to its diverse cultural and natural attractions (Pemrov Jatim, 2023), which are significant for tourism research. Importantly, it also records the highest number of domestic tourist arrivals in Indonesia (Antara – Indonesian News Agency, 2024), further underscoring its relevance as a setting for examining multisensory culinary experiences. Following the recommendations of Hair et al. (2019, p. 280), we applied a 10:1 ratio of respondents to indicators, requiring a minimum of 240 respondents for 10 indicators. This approach is also recommended by other researchers such as Memon et al. (2020) and Rahman (2023). Since the study was conducted at local culinary venues, which do not track the exact number of visitors, we applied this ratio as a guideline to determine an appropriate sample size. We received a total of 265 responses, exceeding the required baseline of 240, which confirms the adequacy of our sample size for survey-based research. However, 15 responses were excluded because the locations visited by these tourists were not within East Java.

3.2. MEASURES

A survey was conducted with participants who had visited East Java, sampled East Javanese cuisine, and were at least 15 years old. This age threshold is deemed suitable because individuals aged 15 and older are generally capable of offering informed and reliable responses. Additionally, they already have established preferences, which can provide valuable insights into the study (Borgers et al., 2000).

The questionnaire was structured into three main sections to facilitate comprehensive data collection. The first section introduced the topic and established eligibility criteria for survey participation, ensuring respondents understood the study’s purpose and confirmed their eligibility. The second section collected demographic information such as age, gender, education level and other pertinent variables, providing insights

into participant backgrounds and ensuring sample representativeness. In the third section, which focused on specific research variables concerning respondents’ experiences and opinions regarding East Javanese cuisine, a 5-point Likert scale was employed to gather detailed information for achieving the study’s objectives.

Survey questions were based on existing research and were translated into Indonesian to align with the original English version. The questionnaire encompassed various sensory aspects: visual aspects included inquiries about food presentation, servers and restaurant layout; auditory aspects addressed background sounds; tactile aspects examined physical items and the food served; taste aspects focused on perceptions of food and beverage flavors; and olfaction aspects explored aroma perceptions. These questions were adapted from studies by Lv et al. (2023), Silaban et al. (2023), Tran et al. (2023) and Wiedmann et al. (2018).

4. RESULTS AND DISCUSSION

An analysis of respondent profiles, presented in Table 1, using descriptive analysis, shows a slightly higher representation of female respondents at 55.6% ($n = 139$) compared to male. Respondents’ ages range from 15 to more than 40, with the largest segment falling in the ≥ 40 age category, making up 40.8% of the total ($n = 102$). Initially, we focused on the age range up to 40 due to Indonesia’s predominant population of Generation Z and Millennials (IDN Research Institute, 2024), as 78% of Millennials express a strong interest in exploring local cuisine. However, the survey results unexpectedly revealed a notable number of respondents aged over 40, adding an additional perspective to the findings. In addition to gender and age, employment status provides further insight into the respondent profile. The majority of respondents work in the private sector, representing 39.2% of the sample ($n = 98$).

Table 1. Respondent profile ($n = 250$)

Variables		Number	%
Gender	Female	139	55.6
	Male	111	44.4
Age	<20	13	5.2
	20–24	47	18.8
	25–29	17	6.8
	30–34	37	14.8
	35–39	34	13.6
	≥ 40	102	40.8

Employment	Students	58	23.2
	Private sector	98	39.2
	Self-employed	20	8.0
	Professional	45	18.0
	Others	29	11.6
Monthly spending (million Rp) ^a	<5	142	56.8
	5–10	75	30.0
	11–19	25	10.0
	>20	8	3.2

^a Exchange rate based on Bank Indonesia (29 September 2025): 1 EUR ≈ IDR 19,681.06.

Source: authors.

Building on prior studies that emphasize gender-related differences in sensory sensitivity and food-related perception, the present analysis examines whether such distinctions are also reflected in the multisensory dining context investigated in this study. Following the presentation of respondent demographics, gender-based differences in perceived multisensory dining experiences are explored using ordinal descriptive statistics, reported as the median and interquartile range (Q25–Q75), and subsequently assessed using the Mann-Whitney U test. Gender was selected as the grouping variable because previous research has documented systematic differences between males and females in sensory processing, particularly in taste, olfactory and tactile domains that are central to multisensory dining experiences (Koubaa & Eleuch, 2020; Puleo et al., 2021; Ullah et al., 2023). In contrast, age was not employed as a comparison variable, as age-related influences are more closely associated with long-term physiological changes in sensory functioning, such as declines in taste and olfactory sensitivity, rather than perceptual evaluations formed within a dining encounter (Honnens de Lichtenberg Broge et al., 2021; Methven et al., 2012). Descriptively, the results reveal largely similar perception patterns across genders, as indicated by the same median scores for visual (16), auditory (11), tactile (20), olfactory (12), satisfaction (12) and e-WOM intention (12). For taste perception, male respondents report a slightly higher median score (13) than female (12); however, the interquartile ranges overlap substantially (Q25–Q75 = 12–15 for both genders), suggesting limited practical differentiation. These descriptive tendencies are supported by the Mann-Whitney U test results, which indicate no statistically significant gender-based differences across all constructs, including visual ($U = 7454.00$; $p = 0.643$), auditory ($U = 7315.50$; $p = 0.478$), tactile ($U = 7460.00$; $p = 0.651$), taste ($U = 7258.50$; $p = 0.410$), olfactory ($U = 7590.50$; $p = 0.824$), satisfaction ($U = 7447.50$; $p = 0.622$), and e-WOM intention ($U = 7612.00$; $p = 0.855$).

Although minor variations in mean ranks are observed, such as slightly higher ranks for females in visual and auditory dimensions and for males in tactile and taste dimensions, these differences do not reach statistical significance, indicating that they reflect modest distributional variability rather than meaningful experiential divergence. Overall, the findings suggest that multisensory dining experiences and their associated evaluative and behavioral outcomes are perceived in a broadly comparable manner across genders, providing a stable empirical basis for subsequent structural equation modeling that focuses on the relationships among sensory dimensions, satisfaction, and behavioral intention rather than on demographic segmentation.

Building on these descriptive insights, the next stage of analysis focuses on validating the measurement model to confirm the clarity and comprehensibility of the questionnaire items used in the study for the respondents. When using data analysis methods like partial least squares, an indicator's validity relies on its outer loading score. The outer model, or measurement model, evaluates indicators with latent variables, measuring how effectively the indicator can explain its corresponding latent variable. Convergent validity (outer model) is confirmed if loading factor values range from 0.50 to 0.60, indicating sufficiency. Indicators with loading scores between 0.5 and 0.7 can be removed, as long as the average variance extracted (AVE) score and indicator commonality both exceed 0.5 (Hair et al., 2022, pp. 117–126).

All indicators used have met the criteria for convergent validity based on the data processing results (Table 2). This suggests that the questions posed to the respondents were clear and well-understood. Convergent and discriminant validity are assessed using the AVE and composite reliability (CR). Average variance extracted values, ranging from 0.784 to 0.938, surpass the acceptable threshold of 0.5, indicating strong convergent validity. Additionally, CR values, falling between 0.830 and 0.957, surpass the 0.7 benchmark, indicating robust internal consistency (Hair et al., 2014).

Table 2. Value of average variance extracted (AVE), composite reliability (CR), and R-squared

Variables	AVE	CR	R-squared
Visual	0.814	0.887	–
Olfaction	0.917	0.941	–
Taste	0.924	0.946	–
Auditory	0.787	0.830	–
Tactile	0.784	0.888	–
Satisfaction	0.938	0.957	0.678
e-WOM intention	0.859	0.894	0.487

Source: authors.

To establish discriminant validity, the analysis examined cross-loadings for each indicator. The findings revealed that all indicator loadings on their respective constructs exceeded their loadings on other constructs, confirming discriminant validity. Moreover, R -squared calculations indicated values of 0.678 for satisfaction and 0.487 for e-WOM intention. These values signify that the independent variables predict the dependent variable. However, it's worth noting that the R -squared value for e-WOM intention is relatively low, below 0.5, suggesting a comparatively modest influence on the dependent variable (Hair et al., 2011; Hair et al., 2014).

Next, to scrutinize the suggested hypotheses, we conducted a path analysis and evaluated the results using critical t -values at 1.96 (at a 5% significance level). Figure 2 offers a summary of the path analysis outcomes, indicating that H_1 , H_4 and H_5 were not supported.

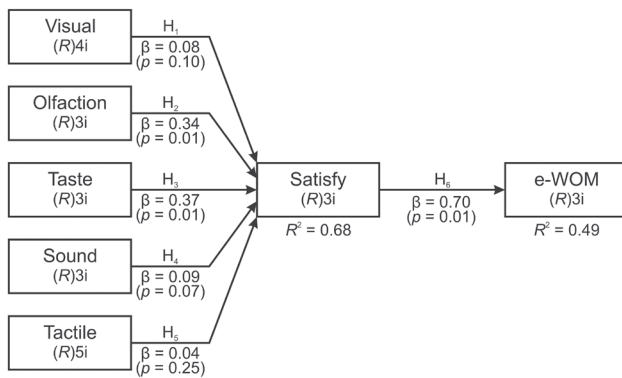


Figure 2. Hypotheses testing results
Source: authors

The investigation into multisensory local cuisine dining experiences reveals the complex interaction of sensory elements and cultural significance in the restaurant industry. This section delves into the findings, emphasizing the crucial role of the five senses – taste, smell, touch, sight and sound – in shaping tourist satisfaction and e-WOM intention.

The visual aspect of food plays a crucial role in shaping the overall dining experience, as presentation reflects the essence of the cuisine. Local eateries often incorporate traditional elements to enhance cultural authenticity, immersing diners in a distinctive culinary atmosphere (Schifferstein et al., 2022). However, our findings indicate that visual factors do not significantly impact tourist satisfaction. This suggests that tourists prioritize authenticity over elaborate presentation, particularly in traditional establishments where food is served with minimal embellishment. Furthermore, the ambiance of traditional restaurants differs from modern dining settings, which may explain the limited influence of visual appeal on overall satisfaction. These findings align with previous research emphasizing that

visual elements do not determine satisfaction (Kim et al., 2020; Silaban et al., 2023).

The sense of smell further enhances the culinary experience, as olfactory cues contribute to both anticipation and enjoyment of food. Our findings highlight a strong correlation between olfaction and tourist satisfaction, supporting the notion that individuals who can discern distinctive food aromas experience greater contentment. The use of region-specific ingredients, such as *petis* (a fermented shrimp paste) in dishes like *rujak cingur* (a traditional salad made with vegetables, fruits, rice cake and slices of cooked cow snout served with a savory *petis* sauce) and *tahu campur* (a noodle and tofu dish enriched with *petis* broth and fresh vegetables), creates memorable sensory experiences that reinforce cultural identity. These results are consistent with previous research emphasizing the significant role of olfactory perception in shaping customer satisfaction (Satti et al., 2021).

Similarly, taste plays a pivotal role in determining tourist satisfaction with local cuisine. The distinct flavors of regional dishes, shaped by centuries of culinary evolution, offer a sensory link to cultural heritage. Our findings confirm a positive relationship between taste and satisfaction, indicating that individuals who appreciate the complexity of flavors are more likely to report higher levels of enjoyment. East Javanese cuisine, known for its distinctive blend of saltiness and spiciness, exemplifies regional diversity in preparation methods and local ingredients. These unique taste profiles significantly enhance the dining experience and contribute to overall tourist satisfaction, aligning with prior studies that emphasize the dominant role of taste in shaping consumer preferences (Schifferstein et al., 2022; Soebandhi et al., 2023; Wiastuti & Rashid, 2024).

Auditory elements, such as background music or ambient noise, are often considered essential in enhancing the dining experience. Traditional or contemporary music can create an immersive cultural environment, reinforcing the connection between food and local heritage. However, our results contradict the assumption that sound significantly affects satisfaction. Tourists appear to place little emphasis on auditory factors, suggesting that music and surrounding noise do not substantially influence their dining enjoyment. This finding supports previous studies that highlight the limited role of auditory cues in shaping consumer behavior (Lv et al., 2023; Silaban et al., 2023).

The tactile experience, including food texture and temperature, also contributes to the sensory richness of local cuisine. The variety of textures, from crispy to tender, enhances the complexity of traditional dishes and provides a unique culinary experience. Despite this, our study reveals that tactile sensations do not significantly impact tourist satisfaction. Factors such as food texture, temperature and restaurant set-up appear

to be secondary considerations for tourists, who tend to prioritize the uniqueness of local specialties over the physical attributes of the dining experience. This challenges previous findings that suggested a stronger relationship between tactile sensations and consumer satisfaction (Chang, 2020; Silaban et al., 2023).

Beyond the multisensory aspects of dining, tourist satisfaction plays a crucial role in influencing e-WOM intentions. Satisfied tourists are more likely to share their positive dining experiences and recommend local cuisine to fellow travelers. Our findings align with existing literature, which suggests that customer satisfaction directly impacts the likelihood of engaging in e-WOM and sharing positive recommendations online. When tourists experience a high level of satisfaction, they tend to communicate their experiences through online platforms, influencing the perceptions and decisions of other potential visitors (Jeong & Jang, 2011; Prayag et al., 2017).

5. CONCLUSION

This study highlights the role of sensory elements in shaping dining experiences, showing that taste and olfaction contribute most strongly to satisfaction, while visual presentation, auditory ambiance and tactile sensations serve more as complementary factors. Tourists appear to value the authenticity and memorability of flavor and aroma above other sensory cues. In turn, higher satisfaction increases the likelihood of sharing experiences through e-WOM, underscoring the importance of focusing on core sensory elements to enhance memorable dining experiences and foster stronger connections with customers.

The study contributes to both academic research and industry practice. Theoretically, it deepens the understanding of multisensory dining dynamics by exploring how sensory modalities shape satisfaction and e-WOM intentions. The proposed evaluation framework offers a valuable reference for scholars and industry professionals, highlighting the role of sensory engagement in enhancing consumer experiences. Practically, the findings provide insights for the restaurant industry. Identifying key sensory drivers of satisfaction can guide improvements in menu design, restaurant ambiance and overall dining experiences. These insights help businesses develop strategies that increase customer engagement and encourage positive word-of-mouth promotion.

While this study focuses on East Java, further research is needed to explore multisensory dining experiences across different cultural and regional contexts. Future studies could extend the analysis beyond domestic settings by including international tourists, whose cultural

backgrounds may shape different perceptions of local food experiences. Considering demographic factors such as age, income, gender and digital literacy in combination with cultural diversity would provide a more comprehensive understanding. A comparative approach would thus yield deeper insights into both universal patterns and context-specific aspects of sensory dining experiences.

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FROM VIEWS TO VISITS: THE ROLE OF YOUTUBE INFLUENCERS IN SHAPING TRAVEL DESTINATION CHOICES IN JAPAN

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ABSTRACT

Social media play a key role in how people choose where to travel with influencers shaping many of these choices. This study investigates how YouTube influencers shape travel destination related interest in Japan by analyzing viewer comments on two highly popular itinerary travel videos. Viewer comments were collected using Python scripts and prepared for analysis through standard data-cleaning procedures. The analysis combines transformer-based language models and aspect-based sentiment analysis to examine sentiment, emotions, key destinations and itinerary-related themes in viewer comments. The findings show that itinerary-focused influencer content generates mainly positive sentiment and emotional engagement, along with planning-related viewer responses such as itinerary consideration, destination-specific questions, and reflections on past or intended future travel. The study offers practical insights for the tourism industry, policymakers and destination management organizations (DMOs) by showing how influencers' content supports destination visibility and interest formation, with implications for promoting lesser-known destinations and managing overtourism.

KEYWORDS

sentiment analysis, YouTube comment mining, social-media influencers, large language models, user-generated content

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1. INTRODUCTION

Social media play a significant role in shaping travel destination choices and travel planning, with public dependence on digital platforms continuing to grow worldwide. The number of social-media users has

increased from 2.73 billion in 2017 to 5.17 billion in 2024 and it is projected to exceed six billion by 2028 (Slota, 2025).

In recent years, travelers are increasingly using social media not only for entertainment but also as a primary source of travel inspiration and planning.



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Consumers now engage with social media in a more interactive way, increasingly sharing their experiences and opinions about the products and services they use in daily life (Cambria et al., 2013; Kim et al., 2017). Such traveler-generated content, commonly referred to as user-generated content (UGC), plays an important role in tourism decision-making because it reflects peer experiences rather than institutional promotion (Abad & Borbon, 2021; Zeng & Gerritsen, 2014).

The spread of information and communication technologies and social media have made it easier for travelers to share experiences, images and reviews online, increasing the visibility and influence of UGC in destination representation and tourism communication (Lian & Yu, 2017; Lund et al., 2018; Marchiori & Cantoni, 2012; Pantano & Di Pietro, 2013). Among visual social-media platforms, Instagram, TikTok and YouTube have become particularly influential in tourism contexts due to their ability to combine imagery, narrative and interaction. These platforms not only inspire potential visitors but also provide practical information relevant to trip planning. As a result, many travelers increasingly rely on recommendations, reviews and experiential narratives shared by influencers and peers when forming destination preferences (Hussain et al., 2024; Wei et al., 2025).

Prior research suggests that social-media influencers contribute to shaping travel and hospitality decisions by affecting perceptions of destinations, accommodation options and tourism brands through experiential storytelling and practical, experience-based content (Khaled et al., 2025; Topbaş & Oktay, 2024).

To guide this study, a conceptual framework (Figure 1) is based on the customer-journey perspective of travel decision-making. This perspective views destination choice as a process that develops in stages, beginning with initial exposure and progressing through evaluation, planning consideration, experience

and post-visit sharing. In this view, travel decisions emerge not as spontaneous reactions, but as outcomes of gradual reflection and consideration over time (Solomon, 2019).

The first stage is exposure. Viewers encounter influencer content that may generate initial interest in a destination. At this stage, individuals make initial impressions as they interpret travel-related information encountered online (Kim & Fesenmaier, 2008). As interest develops, viewers may begin to think more deeply about possible travel plans and may consider destinations, routes or timing, and express questions or trip planning ideas. These actions represent intermediate stages where initial inspiration progresses into structured planning considerations.

After the trip, individuals may contribute to electronic word-of-mouth (e-WOM) by online sharing of travel experiences and opinions, which can influence future audiences' perceptions and decisions (Litvin et al., 2008). The progression between stages is not strictly linear. Individuals may revisit earlier stages, reconsider options or refine their plans as they continue engaging with travel content.

In 2024, Japan experienced record inbound tourism, creating both economic opportunities and management challenges. Popular destinations such as Kyoto, Nara and Mount Fuji faced congestion, with over 30% of international visitors reporting overtourism-related issues ("Japan faces overtourism challenges...", 2024; Japan Tourism Agency, 2024). The *White Paper on Tourism in Japan* suggests promoting regional destinations through engaging digital content as a key strategy to disperse tourist flows and enhance distinctive local experiences (Japan Tourism Agency, 2024).

Although a growing body of research has examined how social-media influencers shape travel decision-making, less attention has been given to how audiences express their thinking of the travel journey after exposure to influencer content. Much of the existing literature concentrates on influencer characteristics, branding strategies or effectiveness, while audiences are often positioned as passive recipients rather than active interpreters and evaluators (Abidin, 2016; Hudders et al., 2021). Based on the customer journey framework, this study explores how viewer comments reveal audience travel thinking rather than actual travel decisions.

YouTube long-form format enables structured narrative presentation of destinations, and its comment sections provide space for viewers to respond, question, evaluate and sometimes describe their own travel considerations, making it well suited for examining how user-generated content shapes destination image and travel decision-making (Burgess & Green, 2018; Hudson & Thal, 2013; Xiang & Gretzel, 2010). These audiences' interactions create an opportunity to examine how travel-related thinking becomes visible in public discussion.

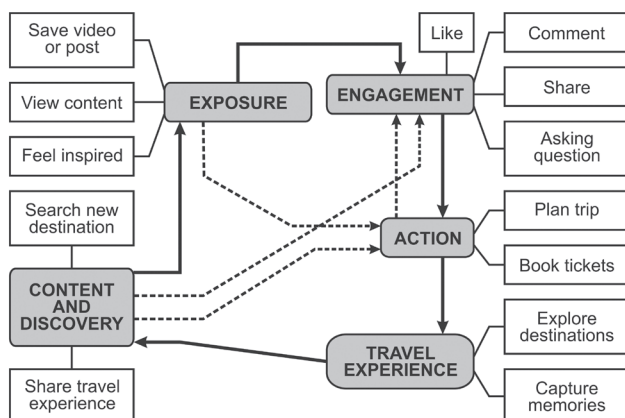


Figure 1. A conceptual framework of social-media-influenced travel decision-making

Source: authors own conceptualization, informed by customer journey and tourism literature

Addressing this gap, the present study adopts an exploratory, case-based approach to examine viewer comments on two itinerary-focused YouTube travel videos about Japan. Itinerary-based videos are especially appropriate because their structured presentation encourages viewers to consider destinations, routes and travel timing within the decision journey. The study approaches comments as expressions of interest opinion, and planning within the travel decision-making process, rather than treating engagement metrics as direct evidence of travel behavior. By analyzing patterns of sentiment, emotional tone and common themes in audience comments, the study aims to understand how influencer content contributes to viewers' travel thinking and planning. The findings are not intended to establish causal claims or broad generalizations, instead, they offer insight into how online interaction can reveal different stages of travel planning.

The primary contribution of this study is methodological. By integrating large language models (LLMs) supported comment analysis with tourism research, the study shows how large-scale audience discussions can be examined systematically. Conceptually, this study also shows how comment-based interaction makes early stages of travel planning visible within the overall travel decision-making process.

Accordingly, this study addresses the following research questions:

RQ₁: How do viewers express sentiments, emotions and destination-related evaluations in comments on YouTube travel influencer itinerary videos about Japan?

RQ₂: What key destination-related themes and travel intentions emerge from audience comments, and how do these patterns differ across two influencer channels?

The remainder of this paper is organized as follows. Section 2 presents a literature review on how social media and influencers shape tourist behavior. Section 3 outlines the methodology, while Section 4 provides the analysis, including sentiment analysis, aspect-based sentiment analysis, emotion detection and zero-shot classification of selected video comments. This is followed by discussion of potential policy implications. The last part concludes with research limitations and possible directions for future studies.

2. LITERATURE REVIEW

2.1. SOCIAL MEDIA AND THE TRANSFORMATION OF TOURIST DECISION-MAKING

Social media have increasingly influenced tourists travel behavior in recent years (Tang et al., 2024). Research consistently shows that digital platforms influence how individuals search for destinations, compare options

and plan trips (Dai et al., 2021; Matikiti-Manyevere & Kruger, 2019). Social-media platforms influence multiple stages of the tourism decision-making process, including inspiration, planning and post-trip reflection (Hudson & Thal, 2013). More recent studies confirm that social media affect both pre-trip planning and post-trip reflection, which in turn influence future travel considerations (Thi Van Hanh & Tuyen, 2023; Yang et al., 2025).

User-generated content (UGC) plays an influential role in shaping destination image. As digital media has expanded, user-generated travel content has become a key source of information and evaluation in tourism contexts (Choi et al., 2007; Xiang & Gretzel, 2010). Empirical studies demonstrate that UGC contributes to destination image formation (Lam et al., 2020), and destination image has been consistently linked to visitor satisfaction, revisit intention and recommendation behavior (Wang & Hsu, 2010).

The interactive nature of social media allows travelers to adjust plans dynamically based on shared experiences, recommendations and reviews (Chilembwe & Gondwe, 2020). Overall, this literature suggests that tourist decision-making is increasingly continuous and socially influenced rather than linear or individual.

Although prior research shows that social media influence destination perceptions and travel intentions, much of this evidence relies on surveys or aggregate engagement metrics. Little attention has been given to how travel-related thinking and opinions are expressed within interactive spaces where audiences respond publicly to content. In particular, limited research has examined how comment-based interactions reflect the development of interest and planning within the travel decision-making process.

2.2. THE RISE OF SOCIAL-MEDIA INFLUENCERS IN TOURISM

Building on the broader role of social media, research increasingly highlights social-media influencers as influential actors in tourism. Social-media influencers act as opinion leaders who shape destination perceptions and influence travel-related decisions (Gaenssle & Budzinski, 2021; Jalilvand, 2017). Unlike traditional advertising, influencers are often perceived as more authentic and relatable, which helps build trust and stronger connections with their audiences (Abidin, 2016; Casaló et al., 2020).

Research suggests that influencers can affect decision-making across multiple stages, from generating initial awareness to shaping planning and booking considerations (Lou & Yuan, 2019; Wei et al., 2025). Influencer content shapes an ongoing evaluative process, with destinations reassessed over time rather

than at a single decision point (Hudson & Thal, 2013; Pourazad et al., 2025).

At the same time, important distinctions remain between engagement and influence. Metrics such as views, likes and comments are often treated as indicators of impact, but they do not necessarily reflect actual travel behavior. Likewise, expressed inspiration or intention may not lead to concrete action. These differences highlight the need to look beyond surface-level metrics to better understand how influence works in social-media interaction spaces.

Platform dynamics also shape visibility and exposure. Algorithmic recommendation systems may amplify already popular destinations, reinforcing attention toward highly visible locations and contributing to uneven tourism distribution (Banerjee et al., 2023; Müllner et al., 2025). This suggests that influencer impact must be understood within broader platform structures.

2.3. EMPIRICAL EVIDENCE ON INFLUENCER IMPACT ON DESTINATION CHOICE

Empirical research indicates that social-media influencers shape audience attitudes and destination perceptions, with particularly strong engagement among Millennials and Generation Z, who are highly active on digital platforms (Hudders et al., 2020; Khamis et al., 2017). Influencers, often described as micro-celebrities, create personalized and relatable content that can affect how audiences interpret and evaluate destinations, including travel-related contexts (Gaenssle & Budzinski, 2021). Recent academic studies indicate that influencer-generated content across social-media platforms can affect destination visibility as well as travel-related interest and behavioral intentions (Mqwebu, 2024; Pourazad et al., 2025).

At the same time, much of this evidence relies on self-reported intention measures or aggregate engagement data, which do not necessarily demonstrate actual travel behavior. The relationship between exposure, expressed intention and actual visits remains complex and context-dependent. Several cases illustrate that influencer-driven exposure can also generate sudden surges in visitor numbers. Viral content has been linked to rapid increases in visits that may exceed local carrying capacities, as documented in empirical research in China (Wengel et al., 2022). Similar patterns have also been reported in media coverage of destinations in Italy (Giuffrida, 2025). These examples suggest that influencer exposure can increase destination visibility but may also contribute to overcrowding and capacity pressures. They highlight the need to examine how audience responses are formed, rather than assuming a direct link between online engagement and travel behavior.

2.4. YOUTUBE AS A DESTINATION MARKETING PLATFORM

YouTube has emerged as a powerful destination marketing platform where travel vlogs contribute to destination image formation and influence travel intentions (Arora & Lata, 2020; Mirzamurodova Kizi et al., 2025). Its long-form video format enables influencers to combine visual storytelling with practical guidance, making it effective for presenting travel itineraries and destination experiences (Hussain et al., 2024). Research suggests that YouTube travel content can enhance destination knowledge and positively influence visit intentions, particularly when perceived as credible and engaging (Chen et al., 2022; Huertas et al., 2017).

Beyond visual content, YouTube also supports sustained comment-based interaction. Viewers use comment sections to share opinions, ask questions, and reflect on past or intended travel. Compared to surveys or engagement metrics, these interactions show better how audiences express travel interest and planning.

Despite the platform's relevance, relatively limited research has examined large-scale YouTube comment discussion as a platform where travel-related thinking becomes visible. Most existing studies focus on influencer credibility, content strategies or self-reported intentions, leaving comment-based interaction under-explored. By viewing comments as signs of interest and planning, this study goes beyond engagement metrics while acknowledging data limitations.

2.5. THEORETICAL SYNTHESIS AND RESEARCH GAP

Previous research shows that social media and influencers shape destination awareness, image and reported travel intentions. However, engagement indicators such as views and likes are often treated as signs of influence, even though they do not necessarily reflect travel behavior. The gap between intention and action is well documented in tourism research.

In addition, platform structures such as recommendation algorithms can sometimes promote specific destinations, influencing their visibility beyond individual choices. These issues suggest that influence cannot be assessed solely through engagement metrics or assumed behavioral outcomes.

Despite substantial research on social media and tourism, little is known about how travel-related thought processes become visible within online interaction. Most prior studies rely on surveys, interviews or broad engagement indicators, which offer limited understanding of how audiences express their reactions after viewing influencer content.

This study addresses this gap by analyzing YouTube comments as a place where viewers share destination interest, evaluation and initial planning interest in

response to influencer travel videos. The study also shows how LLM-based text analysis can be applied to large number of comments to identify patterns of travel consideration that are not captured through standard engagement metrics.

3. METHODOLOGY

3.1. VIDEO SELECTION

This work follows an exploratory, case-based design to examine how audience comments on YouTube travel-influencer videos reflect destination-related evaluations and travel intentions. Two itinerary-based travel videos about Japan were selected as analytical cases. Rather than aiming for statistical representativeness, the study focuses on analytical depth, using carefully chosen cases to explore how viewers engage with and interpret influencer-generated travel vlogs.

Videos were identified through a keyword search on YouTube using “14 days travel itinerary in Japan”. From the results, videos were selected based on three criteria: an itinerary-based structure covering multiple destinations, a high level of audience engagement measured through views and comments, and the availability of a substantial comment dataset. Itinerary-based videos were chosen because they present destinations in a sequential and experiential format, which is relevant for examining planning-related audience responses.

The first selected video was published on the Abroad in Japan channel, operated by a Japan-based international influencer. Titled *How to Spend 14 Days in JAPAN: Ultimate Travel Itinerary*, the video was uploaded in November 2023 and had received over four million views at the time of data collection. The itinerary begins and ends in Tokyo, with intermediate visits to Kamakura, Yokohama, Kanazawa, Shirakawa-go, Takayama, Kyoto (including a day trip to Nara), Osaka and Hakone (Abroad in Japan, 2023). The second video, titled *How to Spend 14 Days in Japan: A Japan Travel Itinerary*, was published on Allan Su’s channel in February 2021 and had accumulated over eleven million views. This itinerary follows a different spatial sequence, starting in Osaka and moving through Koyasan, Nara, Kyoto, Kanazawa, Takayama and Tokyo (Allan Su, 2021).

Using two popular videos from different influencers allows for a comparative examination of audience discourse across distinct presentation styles and audience groups. The analysis is not intended to generalize across all YouTube travel content but to offer insight into how audience engagement and interpretation may vary across popular itinerary-based travel videos.

3.2. DATA COLLECTION AND PRE-PROCESSING

Viewer comments were collected using YouTube Data API through Google Developer Console. Data extraction and processing were conducted in Python. All comments available at the time of collection were retrieved for each video.

Before analysis, the data were pre-processed to improve consistency. Duplicate comments, hyperlinks, emojis, non-textual symbols and very short entries without meaningful content were removed. Comments unrelated to travel or destination discussion were also excluded. Only English-language comments were retained.

The restriction to English comments was applied because the analytical models used in this study were trained primarily on English-language data. While this decision limits linguistic diversity and may exclude culturally specific expressions, it allows for more reliable interpretation of sentiment, emotion and thematic classifications. This limitation is acknowledged in the discussion.

After pre-processing, 1,461 comments from the Abroad in Japan (2023) video (out of 2,313) and 1,935 comments from the Allan Su (2021) video (out of 2,736) remained for analysis. No personal or identifying information about commenters was collected or analyzed.

3.3. ANALYTICAL APPROACH AND VALIDATION

The analysis combines sentiment analysis, emotion detection, aspect-based sentiment analysis and zero-shot topic classification to capture multiple dimensions of audience discussion. These methods were selected to examine broader sentiments, emotional expression, destination-specific judgements and broader thematic patterns within comments.

Model reliability was assessed through manual validation. A simple random sampling procedure was implemented in Python using random selecting 100 comments from each influencer’s dataset ($n = 200$). These comments were manually reviewed and compared with model-generated labels for sentiment, emotion and zero-shot topic classification. Performance was evaluated using accuracy and weighted F_1 score to account for class imbalance. Although the validation subset represents a small portion of the full dataset, it provided a contextual reliability check appropriate for the exploratory design.

As the study is exploratory, the aim was not to test predictive accuracy but to ensure consistent and reasonable interpretation of the results. It is also acknowledged that YouTube comments do not represent neutral or random samples of traveler opinion. Commenters are typically self-selected and may reflect higher levels of engagement and interest.

Platform dynamics, such as algorithmic visibility and social interaction among users, may further shape comments content. These characteristics are not treated as methodological flaws but as defining features of audience discussion within influencer-driven environments.

4. RESULTS AND FINDINGS

4.1. TOP 10 MOST LIKED COMMENTS ON BOTH VIDEOS

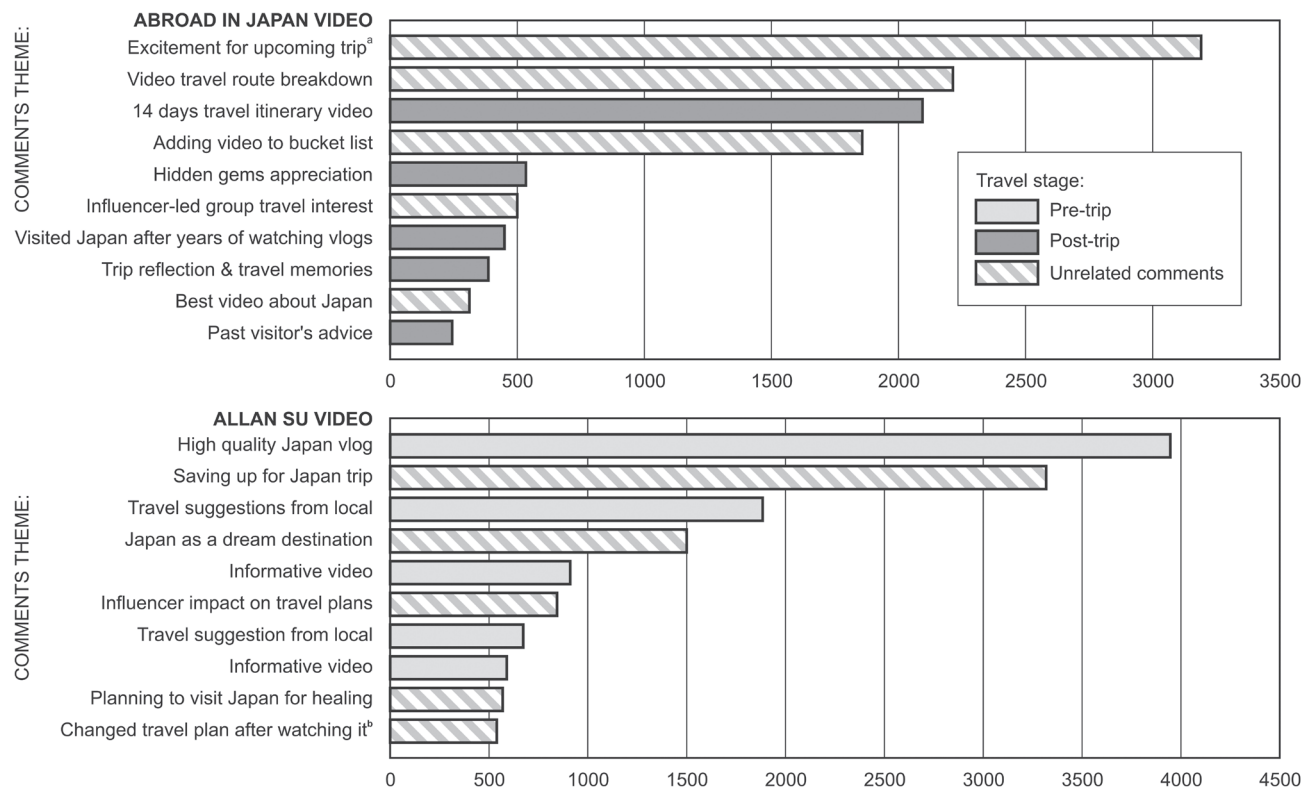
Figure 2 summarizes the dominant themes and travel stages associated with the ten most-liked comments for each video, together with the number of likes received by each comment. The vertical axis represents comment themes, while the horizontal axis indicates the number of likes, which reflects audience endorsement rather than behavioral intensity. Each comment is also categorized by travel stage (pre-trip, post-trip or unrelated), enabling a comparative interpretation of audience engagement across the two videos.

In the Abroad in Japan video, the most liked comments are concentrated within the pre-trip and post-trip stages. Themes such as excitement for an upcoming trip, itinerary appreciation and planning-related

engagement suggest that viewers are interacting with the content in relation to some upcoming trip. For example, the comment “I’m actually going on a 14-day trip starting Friday next week so I was delighted to see this title” illustrates a direct connection between video exposure and imminent travel planning (Abroad in Japan, 2023).

By comparison, the Allan Su video shows a more varied distribution of comment themes and travel stages. Although several highly endorsed comments refer to destination aspirations and planning considerations, a larger share of top-liked comments are categorized as unrelated to specific travel stages. Nevertheless, some comments explicitly indicate reconsideration of travel plans, such as “I was originally going to do Tokyo → Kyoto → Osaka next March, but this vlog really changed my mind” (Allan Su, 2021).

Overall, the comparison suggests that the Abroad in Japan video attracts a more travel-focused audience, as reflected in the higher concentration of travel intention-oriented comments among the most-liked entries. In contrast, the Allan Su video appears to generate broader forms of engagement, with fewer highly endorsed comments directly linked to pre-trip or post-trip stages. These findings reflect differences in audience discussion and engagement patterns rather than evidence of actual travel behavior.



Original Comments: ^aI'm actually going on a 14 day trip starting Friday next week so I was delighted to see this title
^bI was originally going to do Tokio → Kyoto → Osaka next March, but this vlog really changed my mind

Figure 2. Travel decision stages reflected in the 10 most-liked viewer comments
 Source: authors

4.2. SENTIMENT AND ASPECT-BASED SENTIMENT ANALYSIS

Sentiment analysis, also known as opinion mining, is a natural language processing (NLP) technique used to identify the emotional tone or sentiment (positive, negative or neutral) expressed in written text (Liu, 2017). Aspect-based sentiment analysis (ABSA) extends this approach by examining how users express sentiment toward specific aspects or features discussed in the text (Mehra, 2023; Sabeeh & Dewang, 2019). In this study, sentiment analysis was conducted using RoBERTa (Robustly Optimized BERT Approach) model implemented via the Hugging Face Transformers library. The model achieved accuracy and weighted F_1 scores above 0.80 in both videos, confirming the reliability of the classification.

Analysis of viewer comments on the two 14-day Japan itinerary videos indicates that most comments

in both cases were classified as positive. The sentiment distributions across the two videos were broadly similar, with positive sentiment accounting for the largest share of comments, followed by neutral and negative categories (Figure 3). This pattern reflects a generally favorable audience response to the content. The predominance of positive sentiment should be interpreted with caution. YouTube audiences are self-selecting, and viewers who watch itinerary-based travel videos may already have an interest in the destination. In this context, positive sentiment may reflect alignment between audience expectations and the content rather than direct behavioral impact.

These patterns capture viewers' favorable reactions and perceptions, which are often linked to destination image and interest formation in tourism research (Hussain et al., 2024). While such responses indicate positive engagement and approval, they do not demonstrate confirmed travel behavior but instead show how viewers express positive impressions within the travel decision-making process.

4.2.1. ASPECT-BASED SENTIMENT ANALYSIS

Aspect-based sentiment analysis was then applied to identify the main aspects discussed within each sentiment category. Comments were first grouped according to RoBERTa-derived sentiment labels (positive, neutral and negative) and subsequently processed in Python using Natural Language Toolkit (NLTK).

Word clouds are used as a descriptive visualization of frequently mentioned adjective-noun pairs and are interpreted as an exploratory illustration of selected video

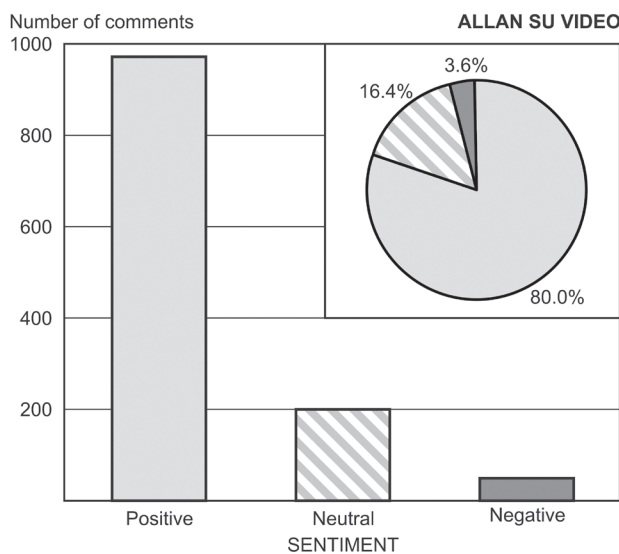
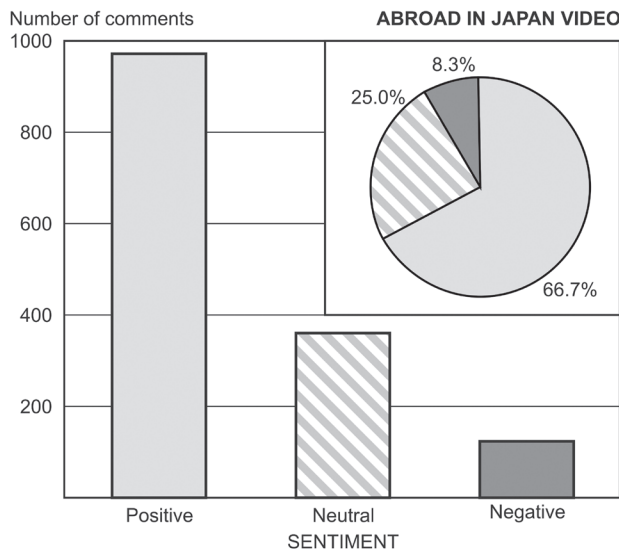


Figure 3. Dataset distribution graph for sentiment analysis
Source: authors



Figure 4. Word clouds of frequently mentioned pairs in viewer comments
Source: authors

comment with word size indicating relative frequency. As shown in Figure 4 (cf. p. 161), viewers of the Abroad in Japan video more frequently refer to pairs related to upcoming trips, itinerary use and specific destinations, reflecting a stronger orientation toward planning-related and destination-focused discourse. In contrast, word cloud of the Allan Su video more often emphasize aspects related to video quality, presentation and overall enjoyment, suggesting a more general evaluative focus on content and production style.

Figure 5 presents the ten most common aspects identified across both videos. While both comment sets share general aspects such as Japan and video, notable differences emerge in the prominence of other terms. Comments on the Abroad in Japan video more frequently highlight aspects such as trip, itinerary,

ryokan and Hakone, indicating deeper engagement with travel details and planning considerations. By comparison, comments on the Allan Su video emphasize aspects such as thanks, country and people, reflecting broader appreciation of the content and creator rather than specific planning elements. These differences point to variations in how audiences engage with itinerary-based content across influencer channels, without implying direct behavioral outcomes.

4.3. EMOTION DETECTION

Emotion detection was conducted on viewer comments using a DistilRoBERTa-based transformer model (j-hartmann/emotion-english-distilroberta-base), which classifies English text into seven emotion categories. In

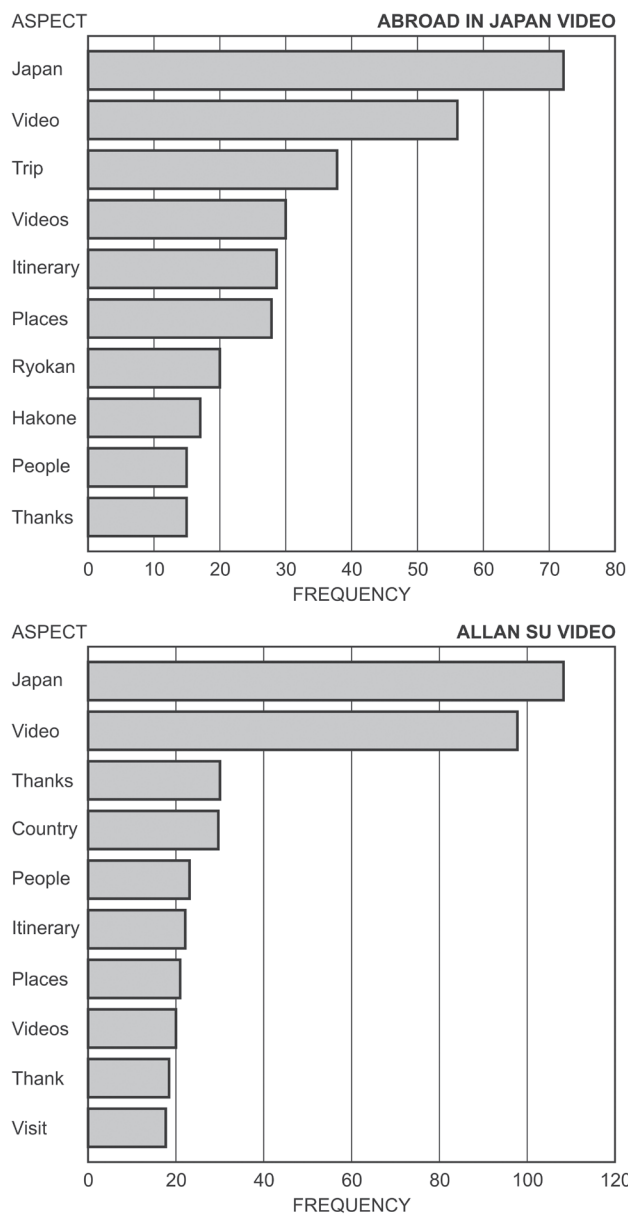


Figure 5. Top 10 extracted aspects from YouTube comments
Source: authors

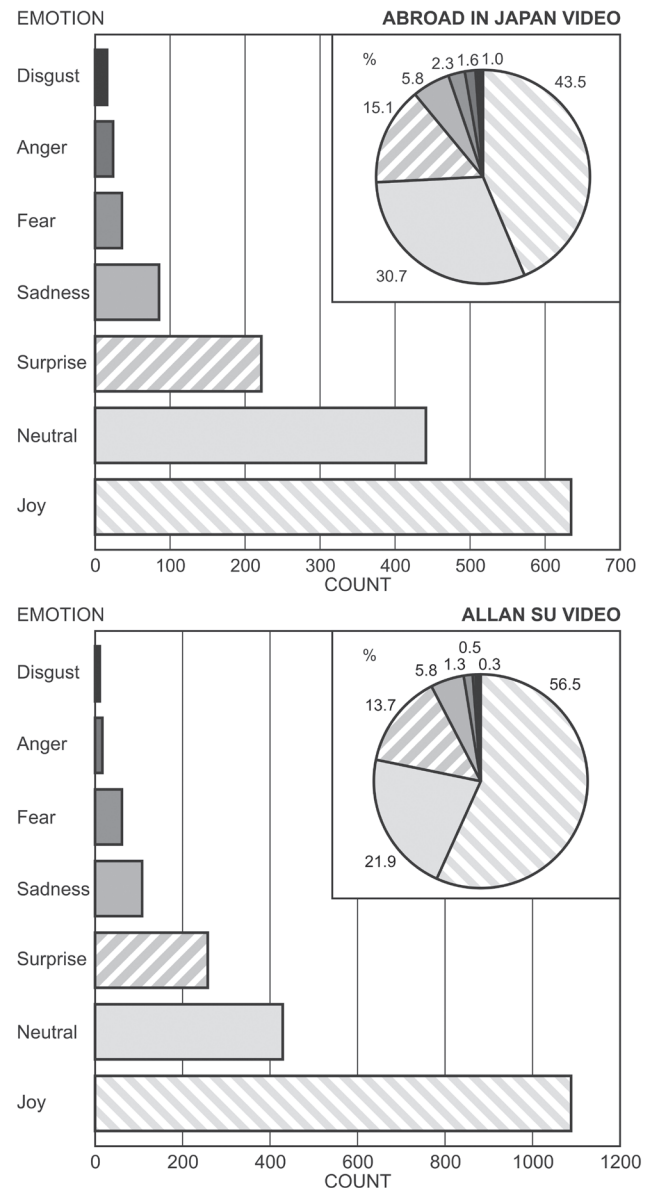


Figure 6. Detected emotions in Abroad in Japan vs. Allan Su travel vlogs
Source: authors

this study, the model achieved accuracy and weighted F_1 scores above 0.80, indicating stable performance for analysis. Figure 6 presents the distribution of emotions identified across comments for both videos. The results show that viewer responses were largely characterized by joy, surprise and neutral reflection, indicating predominantly positive affective reactions. These emotional patterns suggest favorable reception of the content rather than evidence of confirmed travel behavior. In tourism research, positive emotional responses are often associated with interest formation and favorable destination perception.

Prior research indicates that emotionally positive content on social media is linked to higher interaction and engagement levels (Deng et al., 2025). Studies further show that users frequently express enjoyment and enthusiasm when discussing travel experiences online, shaping how destinations are perceived and circulated within digital communities (Blanco-Moreno et al., 2024). In this study, emotion detection is therefore

used to capture emotional audience responses to influencer content, rather than serving as indicator of actual travel decisions.

4.4. ZERO-SHOT CLASSIFICATION

Zero-shot classification enables text to be categorized into previously unseen labels without task-specific training by leveraging natural language inference (NLI). In this work, the facebook/bart-large-mnli model, implemented via the Hugging Face Transformers framework, was applied to YouTube comments using a predefined set of 44 candidate labels reflecting different forms of audience engagement and discussion. Examples include “the viewer plans to follow the advice or itinerary in the video” and “the viewer is planning or dreaming of a future trip to Japan”. Labels such as “the viewer is giving general feedback and not about trips” were also included to identify comments unrelated to travel planning (Table 1).

Table 1. Candidate labels used during zero-shot classification model along with manually assigned topics

No.	The viewer...	Mapping with topic
1	... finds the video helpful for planning	Informative and helpful video
2	... learned something useful from the video	
3	... is praising the editing, visuals, or narration	
4	... is thanking the creator for making the video	
5	... is giving positive feedback about the video	
6	... is asking a travel-related question	Japan trip-related questions
7	... is requesting itinerary advice	
8	... is asking about places to visit or stay in Japan	
9	... is unsure about travel timing or logistics	Planning Japan trip with this itinerary
10	... is planning a trip using the video	
11	... wants to follow the video itinerary	
12	... is inspired to use this plan for a future trip	
13	... is organizing a trip with similar destinations	
14	... finds the video is perfect for their upcoming trip to Japan	
15	... thinks that the video timing is perfect as the viewer is preparing to visit Japan	
16	... intends to follow the itinerary for their upcoming Japan visit	
17	... is feeling excited to visit Japan soon and follow the video itinerary	
18	... is planning a trip to Japan with specific travel dates	
19	... feels inspired to visit Japan	Inspired to travel Japan
20	... wants to go to Japan after watching	
21	... expresses fascination or emotional love for Japan	
22	... is dreaming of traveling to Japan someday	

Table 1 (cont.)

No.	The viewer...	Mapping with topic
23	... is reminiscing about a past trip	Bringing back travel memories
24	... is sharing travel memories	
25	... has visited Japan and relates to the video	
26	... recalls visiting places shown in the video	
27	... is suggesting places to visit in Japan	Viewers suggestions about Japan travel
28	... is giving travel advice or tips	
29	... is recommending alternative spots	
30	... is sharing experiences for future travelers	
31	... already visited places from the video	Followed the itinerary
32	... has followed the same travel plan	
33	... retraced the video itinerary during their trip	
34	... followed the suggestions in the video during travel	
35	... regrets not seeing the video before	Regret not seeing this earlier
36	... missed something on their past trip	
37	... feels the trip could have been better with this info	
38	... is recommending this video to others	Electronic word-of-mouth
39	... is spreading positive word of mouth	
40	... says they will share the video with friends	
41	... encourages others to watch or follow the channel	
42	... is making a casual or humorous comment	Others
43	... is giving general feedback but not discussing travel	
44	... is comparing Japan with other countries	

Source: authors.

To improve interpretability and reduce label fragmentation, fine-grained labels were subsequently grouped into broader thematic categories. Labels were merged when they reflected conceptually similar forms of engagement, such as “planning Japan trip with this itinerary”, “Japan trip-related questions”, “following the itinerary”, “informative and helpful video” feedback, “post-visit reflection”, or “electronic word-of-mouth”. A manual reassessment of a subset of classified comments was conducted to examine the coherence of label assignments and to support the strength of the grouping process. This approach allowed the analysis to move beyond individual labels and to focus on broader patterns of audience discussion.

For the *Abroad in Japan (2023)* video, comments were grouped into nine topic categories, including “informative and helpful video”, “Japan trip-related questions”, “planning Japan trip with this itinerary”, “inspired to travel Japan”, and “followed the itinerary”. The distribution of these topics suggests that a large share of audience engagement is inclined toward

information seeking, itinerary evaluation, and expressed interest in future travel. In the case of the Allan Su (2021) video, comments were grouped into eight categories, such as “informative and helpful video”, “inspired to travel Japan”, and “trip-planning-related questions”, indicating a similarly positive but a slightly less trip planning-focused pattern of engagement (Figure 7). These differences appear to reflect variation in channel positioning and audience composition. A Japan-specialized channel may attract viewers already engaged in destination consideration, leading to more detailed planning-oriented discourse. A broader YouTube channel may generate inspiration-driven engagement without the same depth of itinerary-specific discussion. Importantly, these topic patterns represent expressed interest and planning rather than confirmed travel behavior. They provide insight into how viewers express travel decision-stage thinking in response to itinerary-based influencer content, rather than demonstrating direct behavioral outcomes.

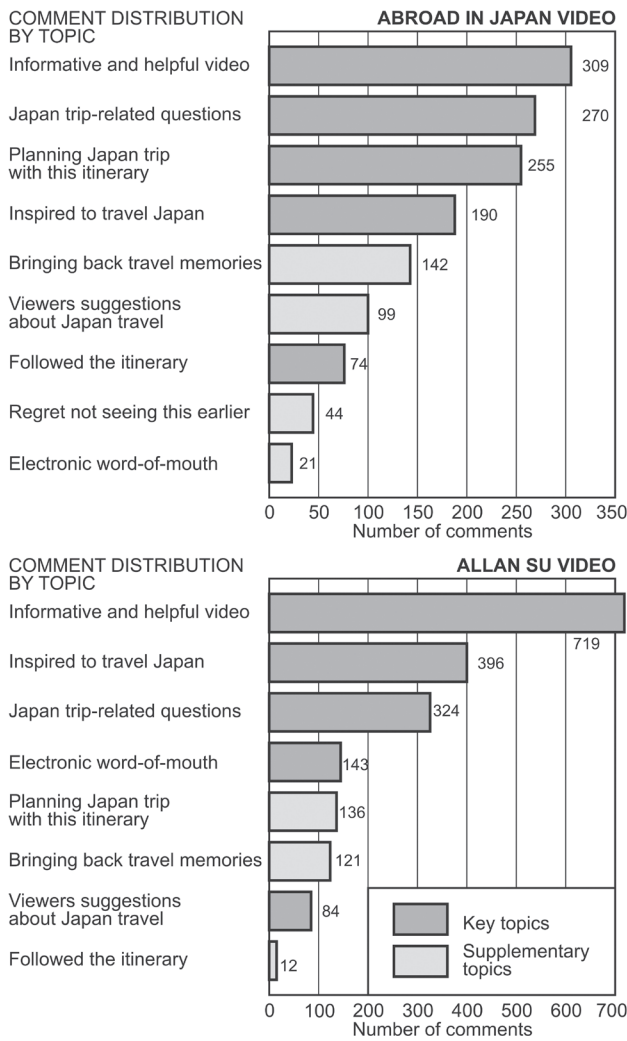


Figure 7. Final topics from the zero-shot classification
Source: authors

4.4.1. ABROAD IN JAPAN AND ALLAN SU VIDEOS KEY TOPIC COMPARISON

Figure 8 shows clear differences in engagement patterns between the two videos. Comments on Abroad in Japan more frequently include planning-related discussion, such as itinerary use, destination-specific questions and trip preparation. This suggests that many viewers were already at an active consideration stage within the travel decision-making process. In contrast, comments on Allan Su more often emphasize inspiration, informational value and general appreciation. While interest in Japan is present, fewer comments refer to concrete planning steps. Engagement in this case appears more aligned with early-stage inspiration.

These differences may reflect influencer specialization and audience segmentation. Destination-focused channels such as Abroad in Japan are more likely to attract viewers already interested in Japan, which may explain the higher share of planning-oriented comments. In contrast, broader travel channels like Allan Su may attract audiences at earlier stages of

inspiration and destination exploration. Platform recommendation systems may further reinforce this alignment.

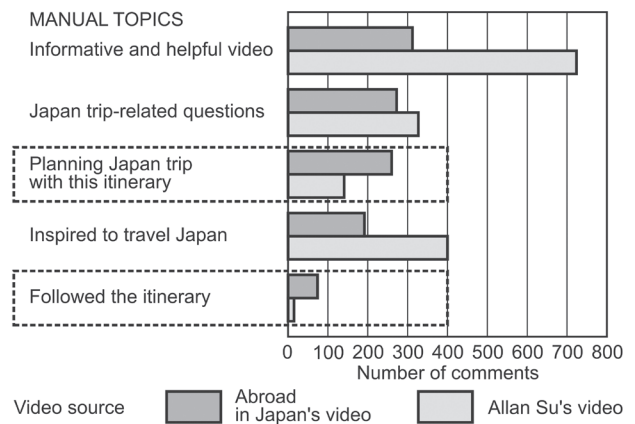


Figure 8. Abroad in Japan and Allan Su videos key topic comparison
Source: authors

5. DISCUSSION AND POLICY IMPLICATIONS

YouTube’s long-form travel videos combine visual storytelling with practical itinerary guidance, contributing to destination image formation and shaping destination-related interest (Huertas et al., 2017; Jara-Amézaga, 2023). Based on customer journey perspective, the findings suggest that influencer content is reflected mainly in early and intermediate stages of travel consideration. Viewer comments reveal reflections on destinations, routes, timing and possible future travel plans. These expressions indicate interest and planning consideration rather than confirmed travel behavior. The findings also indicate that engagement cannot be used as a single measure of influence. Metrics such as views, likes or general sentiment offer only limited understanding of how audiences process travel content. In contrast, comments provide clearer evidence of cognitive engagement, including itinerary comparisons and destination-specific questions. Within the customer journey framework, these patterns align with evaluation and planning stages rather than final decisions.

Conceptually, the study shows that comment-based analysis can make stages of the travel decision-making process discursively visible. In this sense, influence is best understood as a gradual process reflected in how viewers express interest, comparison and planning-related thinking, rather than as a direct behavioral outcome.

From a practical perspective, itinerary-focused influencer content may promote more detailed destination consideration. However, its implications for destination management should be interpreted

carefully. Comment data cannot show changes in visitor patterns, instead, it may serve as an early signal of emerging interest and help inform communication and content strategy.

6. CONCLUSIONS

This study contributes to research on social media and tourism by examining how viewer comments on YouTube reflect destination evaluation and travel consideration in response to influencer-led travel content. By analyzing large-scale comment data using sentiment analysis, aspect-based sentiment analysis, emotion detection, and zero-shot classification, the study shows how audience responses can be used to understand travel intentions and opinions to itinerary-based travel videos. The integration of YouTube comment analysis with an LLM-supported analytical approach offers a structured way to examine audience engagement beyond views and likes.

The findings indicate that itinerary-focused influencer content is associated with destination interest and trip planning-related discussion, particularly among viewers engaging with destination-specific YouTube channels. These responses should not be interpreted as evidence of actual travel behavior; instead, they reflect how viewers share their interest, opinions and planning intentions within the travel decision-making process.

From a policy perspective, the study suggests that influencer collaborations may contribute to destination visibility and emerging interest patterns. However, implications for destination management should be approached with caution. Key limitations include the focus on two videos, English-only comments, and the use of automated language models. Future research could expand this approach using larger, multilingual and cross-platform datasets.

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ENERGY REDUCTION TECHNOLOGIES AS CATALYSTS FOR DIGITAL TRANSFORMATION AND SUSTAINABLE OPERATIONS: EVIDENCE FROM THE HOTEL INDUSTRY

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ABSTRACT

The hospitality sector is facing growing scrutiny over its energy consumption and carbon emissions, placing hotels under pressure to pursue net-zero greenhouse gas (GHG) targets while maintaining high service quality. This study investigates the adoption of energy reduction technologies in the Irish hotel industry and their link to sustainable hotel operations through digital transformation, specifically via the adoption of robotics, AI and service automation (RAISA). Survey responses were collected from various star category hotels within Ireland. Valid survey responses were included in the data analysis which involved linear regression and bootstrapping. The theoretical underpinning of the study was diffusion of innovations theory. Results indicated an uneven adoption, with energy software and automation systems being more prevalent among innovators and early adopters, while technologies such as smart thermostats are more common among the late majority. Energy software strongly correlates with overall RAISA adoption, highlighting its role as a digital enabler. The study indicates that the adoption of sustainability-driven energy reduction technologies can bolster broader digital adoption. By demonstrating how sustainability-driven energy reduction technologies can catalyse broader digital transformation, the study provides actionable insights for hotel managers seeking to enhance operational efficiency and sustainability, as well as for policy-makers aiming to design targeted interventions that accelerate technology adoption across the sector. The research also contributes theoretically by linking energy management to RAISA adoption within the framework of the diffusion of innovations, offering a model for understanding technology adoption pathways in the hospitality sector.

KEYWORDS

energy reduction technologies, RAISA, diffusion of innovations, digital transformation, sustainability

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1. INTRODUCTION

Globally, the hotel industry is facing a multitude of challenges, including rising operational costs, increasing energy consumption, stringent environmental regulations, and heightened customer expectations. Hotels are highly resource-intensive, and sustainable operations have become a pressing concern, requiring the sector to reduce greenhouse gas (GHG) emissions while maintaining high levels of service and profitability. Achieving this balance is critical not only for environmental responsibility but also for long-term competitiveness and financial performance.

Linking sustainability and digitalisation, the European Commission (2021) highlights that sustainability transitions can benefit from digital technologies which in turn can drive innovation, creating new opportunities for competitiveness. Digital sustainability refers to the deployment of smart technologies that support sustainable economic growth while integrating the United Nations Sustainable Development Goals (Mondejar et al., 2021). Organisations seeking to elevate their digital maturity need to undergo a comprehensive digital transformation across every facet of their operations (Aslanova & Kulichkina, 2020). With advancements in technology, hotels have increasingly adopted robotics, artificial intelligence and service automation (RAISA) solutions such as in-room smart technologies which may enable hotels not only to reduce costs, waste and energy consumption but also to enhance operational efficiency, design innovative service experiences, boost revenue while transforming business models and the nature of work (Webster & Ivanov, 2019).

This study was carried out in Ireland. The Irish government is committed to reducing GHG emissions by 30% by 2030 (Conefrey & Hanrahan, 2022). However, the Environmental Protection Agency (2025) projects that, under current trends, Ireland is likely to achieve only a 23% reduction, requiring comprehensive policy implementation across all sectors, including hospitality. Hotels are facing steep increases in energy costs, with reports of an 88% year-on-year rise ("Irish Hotels Federation [IHF] members report escalating business costs", 2022). To address this, many Irish hotels have begun adopting RAISA technologies and innovative energy-reduction solutions. For example, Sligo Park Hotel has upgraded boilers, implemented LED lighting, and actively monitors energy use to reduce its carbon footprint (Sustainable Energy Authority of Ireland, n.d.).

This exploratory study investigates the adoption of energy-reduction technologies in the Irish hotel industry and examines their relationship with the broader uptake of RAISA technologies. The study is guided by the following research question: To what

extent and through what mechanisms does the adoption of energy technologies predict the uptake of RAISA in Irish hotels?

The study has the following four objectives, to:

1. Measure the adoption rate of RAISA technologies across Irish hotels.
2. Explore the distribution of RAISA adoption rates by hotel star category within the four provinces of Ireland (Ulster, Munster, Connacht, Leinster).
3. Classify hotels into the five adopter categories based on the diffusion of innovations.
4. Investigate the impact of energy monitoring and conservation technologies on overall RAISA adoption, identifying which energy technologies most strongly influence digital transformation in the sector.

The study limits its scope to examining patterns of association between the adoption of energy reduction technologies and RAISA adoption, identifying which energy technologies are most strongly linked with broader digitalisation. Due to the cross-sectional survey design, these analyses measure association rather than causal impact. The primary data is visualised through the theoretical lens of diffusion of innovations theory (Rogers et al., 2014).

2. LITERATURE REVIEW

This section is divided into four sub-sections. It begins with a review of energy technologies and sustainability, followed by a review of digitalisation and RAISA. The third sub-section examines the integration of these domains, and the final section presents the grand theory of diffusion of innovations that guides this study.

2.1. ENERGY TECHNOLOGIES AND SUSTAINABILITY

Climate has changed significantly due to the change in the proportionality and concentration of GHGs in the atmosphere, and the global average temperature has gradually increased (Mikhaylov et al., 2020), leading to climate change. The United Nations' COP27 summit emphasised the urgent need for climate action (Frangoul, 2022). Climate change is a significant crisis facing humanity (Conefrey & Hanrahan, 2022). The primary sources of GHG emissions in the hospitality sector come from lighting, heating, cooling and cooking (Dube & Nhamo, 2021).

The new technological revolution (Industry 4.0) could help to combat climate change (Ben Youssef & Zeqiri, 2022). For instance, adopting smart Industry 4.0 technologies, such as internet of things (IoT) enabled systems and smart heating, ventilation and air conditioning (HVAC) controls, present significant opportunities

for improving energy efficiency in hotels (Karvounidi et al., 2024) and reducing their carbon footprint. Specifically, energy management systems (EMSs) are integrated platforms that monitor, control, and optimise the energy consumption of buildings in real time by collecting data from subsystems such as HVAC, lighting and other loads. Modern EMSs incorporate IoT sensors, advanced analytics and AI to support fault detection and automated control of energy use, thereby enhancing operational efficiency and sustainability (Akbulut et al., 2025; Kozlovska et al., 2023).

With the development of technology, the advantages of innovative solutions are recognised, which lead to savings in resources and energy sources in hotels, and they become the subject of research, innovation, and implementation in the hotel industry (Floričić, 2020). For instance, Kong et al. (2022) asserted that under experimental and field conditions, occupancy-based HVAC control systems, which include smart thermostats or occupancy sensing, can reduce HVAC energy consumption by approximately 17% and 24% compared to traditional constant-setpoint control. Predictive maintenance, enabled by IoT sensors and AI analytics, can contribute significantly to energy savings in hotels by ensuring that equipment such as HVAC, refrigeration and other building systems operate at optimal efficiency and by preventing energy-intensive malfunctions (Anubala, 2023). Arfiansyah and Arifin (2021) observed that the room control automation system in the Grand Hyatt Hotel Jakarta, in 62 days, led to 29.06% electricity savings. Yousef and Chaer (2025) underscored the potential of IoT-driven smart metering systems to optimise energy efficiency by analysing energy consumption patterns of 11 hotels in London and then conducting a detailed investigation in one selected hotel where IoT-enabled smart metering was implemented. Guercio et al. (2023) studied a 5-star hotel located in southern Italy, characterised by high energy consumption. They used TRNSYS software to simulate replacing the existing air conditioning system with one powered by renewable energy.

The adoption of these energy monitoring and conservation technologies may facilitate greater digitalisation and RAISA adoption among hotels.

2.2. DIGITALISATION AND ROBOTICS, ARTIFICIAL INTELLIGENCE AND SERVICE AUTOMATION (RAISA)

Digital transformation involves leveraging new technologies to revolutionise business processes, enhance customer experiences and develop innovative business models (Aras & Büyüközkan, 2023).

The Fourth Industrial Revolution or Industry 4.0 (IR 4.0) revolution, characterised by emerging technologies such as automation, robotics, artificial intelligence, cloud computing, IoT, big data, 3D printing and blockchain

(Falwadiya & Dhingra, 2022), significantly influences the hospitality and tourism sectors (Osei et al., 2020).

Substantial advancements have been observed globally within the domains of RAISA (Sharma & Aggarwal, 2024; Yan et al., 2025). RAISA has facilitated numerous service innovations, such as mobile check-in and check-out, keyless room access, in-room AI assistants, robotic services and AI-driven chatbots (Yan et al., 2025). Although these technologies have the potential to boost operational efficiency, lessen staff workloads and elevate guest experiences, their broader implementation in the hospitality sector is still constrained by factors such as uncertain return on investment (ROI), data privacy concerns, early-stage technological development, and the sector's continued reliance on human-centred service (Ozdemir et al., 2023). Accordingly, the extent and pace of RAISA adoption may differ between different countries. For example, Fu et al. (2026) observed that hotels in China have implemented more sophisticated AI and robot-enabled services, facilitated by rapid national digitalisation, lower technology-acquisition costs, and strong partnerships with domestic technology providers. By contrast, hotels in Australia have largely concentrated on more established mobile-based technologies. Australian hotel managers associated the slower uptake of RAISA with several contextual constraints, including narrower profit margins resulting from higher operating costs, a more risk-averse business culture, stringent data privacy regulations, geographic distance from global innovation hubs and cost-effective suppliers, and a less technologically competitive domestic market. Together, these institutional and market-specific factors help account for differences in RAISA adoption between the two countries and provide important context for understanding cross-national variation. Furthermore, different hotels within the same country can have different speeds of digitalisation, as was underscored by García-López et al. (2025), who concluded that digitisation in Andalusian (Spain) hotels flows at different speeds. Yang et al. (2024) used diffusion of innovations theory to suggest that in the Chinese hospitality market, budget hotels may focus on specific digital tools for operational efficiency while high-star hotels engage in more intensive and comprehensive digital transformation. The different rates of RAISA adoption by different hotels may be influenced by several factors. For instance, Nikopoulou et al. (2023), based on the 502 responses of an online questionnaire sent to managers of hotels in Greece, concluded that the intention to adopt digital technology is influenced by the digital maturity of organisations, financial resource availability and government regulations.

These studies underscore that the diffusion of innovative technologies is influenced by different factors, and different countries or different provinces

within the same country can be at different stages of diffusion and thus may fall under different categories of adopters, as discussed under the theoretical framework of the study.

2.3. ENERGY TECHNOLOGIES AND RAISA FOR SUSTAINABLE OPERATIONS

Contemporary sustainability discourse increasingly recognises that sustainability extends beyond environmental protection to include social and economic dimensions, often conceptualised as the triple bottom line of planet, people and profit (Dube & Nhamo, 2021; Elkington, 2020). Within the hotel sector, sustainability initiatives are no longer driven solely by environmental compliance but also by operational efficiency, workforce challenges and long-term competitiveness. Recent studies indicate that hotels that adopt sustainability-oriented technologies often achieve improved financial performance, enhanced employee productivity and stronger brand positioning (Jones et al., 2016).

Across Europe, the hospitality sector is currently facing significant challenges, including labour shortages linked to declining birth rates. Ireland's total fertility rate (TFR) has been declining, reaching 1.5 births per woman in 2023, well below the 2.1 replacement level (United Nations – Department of Economic and Social Affairs Population Division, 2022). RAISA technologies, including AI-enabled service systems, robotics and automated customer interaction platforms, have been increasingly recognised as potential solutions to mitigate workforce constraints while enhancing guest experience, cost savings and operational efficiency (Ivanov & Webster, 2021; Kim et al., 2022).

Simultaneously, rising energy costs pose a major operational challenge for hotels, particularly in Europe, where energy price volatility and climate policy targets are reshaping industry priorities (Karvounidi et al., 2024; Thomas, 2022). The adoption of energy monitoring and conservation technologies, such as IoT-enabled EMS, predictive maintenance systems and smart HVAC controls, has demonstrated substantial potential to reduce operational costs while supporting environmental sustainability goals (Akbulut et al., 2025; Bekele et al., 2024; Kozlovska et al., 2023; Pastor, 2025). However, the adoption of environmental technologies, which may lead to greater digital maturity, may be constrained by several barriers, such as high purchase and implementation costs (Chan et al., 2020; García-López et al., 2025). To offset the high cost of expensive technologies, government grants and subsidies can exert a statistically significant effect on a hotel's willingness to adopt such technologies (Ezzaouia & Bulchand-Gidumal, 2020; Oloso, 2025).

A few researchers (Ka et al., 2023; Nikopoulou et al., 2023; Zaragoza-Sáez et al., 2024) suggest that

the adoption of one class of technology can serve as a stepping stone toward broader digital transformation, particularly among sustainability and efficiency-focused operators. For instance, the introduction of property management systems (PMSs) may reshape hotels' daily operations and enhance their digital maturity (Ka et al., 2023). Despite increasing recognition of the potential complementarities between sustainability-driven energy technologies and digital transformation initiatives, there remains limited empirical evidence examining the extent to which the adoption of energy technologies predicts RAISA uptake for sustainable operations, particularly within the Irish hotel sector. Addressing this gap, the present study investigates how the adoption of energy monitoring and conservation technologies may catalyse RAISA adoption in Irish hotels, thereby contributing to the broader discourse on sustainable and digitally enabled hospitality operations.

2.4. THEORETICAL FRAMEWORK: DIFFUSION OF INNOVATIONS THEORY

To investigate how RAISA and, particularly, energy management technologies are being adopted within the Irish hotel sector, this study employs Everett Rogers' diffusion of innovations theory as a foundational theoretical framework. Rogers (2014) asserts that the characteristics of an innovation determine its rate of adoption and the five attributes of innovations are (a) relative advantage, (b) compatibility, (c) complexity, (d) trialability and (e) observability.

The diffusion of innovations theory is particularly effective for examining the rate and pattern of adoption of innovation among various user groups. The diffusion of innovations theory segments adopters into five categories based on their behaviour and timing of adoption. This segmentation provides valuable insights into how innovations permeate the sector:

1. Innovators (2.5% of the total sample): These are the pioneers who adopt the technology first. These may be forward-thinking hotel groups or luxury brands that lead experimentation, often piloting cutting-edge technologies such as advanced EMS that leverage real-time data, AI-driven analysis and building automation to optimise energy use.
2. Early adopters (13.5% of the total sample): This group consists of strategic leaders who are acutely aware of the need for change. Typically, boutique or upscale hotels that view innovation as a strategic differentiator may fall under this category. Their endorsement helps shape industry benchmarks and accelerates broader uptake.
3. Early majority (34% of the total sample): While not being leaders themselves, these individuals or organisations tend to embrace innovation after they are presented with clear evidence of the benefits

- of adopting the innovative product or idea. Mid-range or business-focused hotels that implement proven solutions, having observed benefits such as cost reduction and improved service efficiency among early adopters, may fall under this category.
4. Late majority (34% of the total sample): More risk-averse operators who adopt only after clear evidence of industry-wide success, regulatory support and peer endorsement. Typically, smaller, independently owned hotels with limited resources may fall under this category.
 5. Laggards (16% of the total sample): They are the traditionalists, resistant to change and the most difficult to convince. They may not necessarily be low on resources, but may believe, "Why fix it if it's not broken?". Satisfied with their legacy systems, they may be reluctant to replace them with innovative technologies.

Figure 1 demonstrates the classic adoption curve, with time depicted on the horizontal axis and the cumulative percentage of adopters implementing an innovation on the vertical axis.

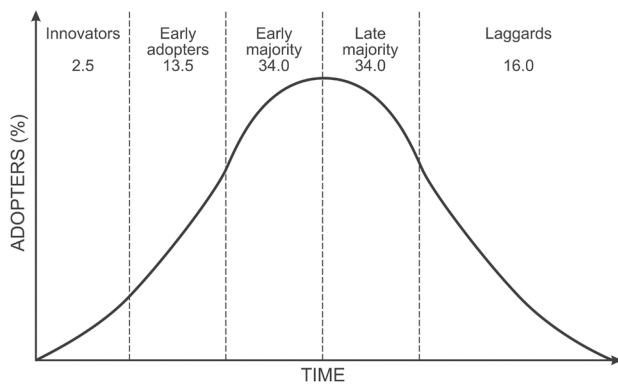


Figure 1. Diffusion of innovations theory
Source: authors, based on Rogers (1984)

By proposing a metric for RAISA adoption and examining its distribution across hotel star categories and provinces, the study applies the diffusion of innovations framework to segments of the Irish hotel sector accordingly. Furthermore, the theory supports the investigation of how specific technologies, such as energy monitoring and conservation systems, influence the overall RAISA adoption rate, thereby helping to identify which innovations act as potential catalysts for wider digital transformation in the sector.

3. METHODOLOGY

This study was the first baseline study on the rate of adoption of innovative RAISA-backed technologies by the Irish hotel sector. There are four provinces in

Ireland: Ulster, Connacht, Leinster, and Munster. At the time of the study, 833 hotels were registered with Fáilte Ireland, the Irish tourism board. The distribution of hotel star ratings in the Irish hotel sector indicates a strong concentration in the mid-to-upper categories. Specifically, there are 365 four-star hotels and 283 three-star hotels, together forming the majority of the sector. At the higher end, there are 36 five-star hotels, representing a smaller but significant premium segment. In the lower tiers, the sector includes 77 two-star hotels and 72 one-star hotels. This distribution highlights a sector dominated by mid-range to upscale properties, with relatively fewer establishments at both the luxury and budget ends of the spectrum (Fáilte Ireland, 2024).

A survey questionnaire was designed with a list of innovative RAISA-backed technologies for both front-end and back-end hotel operations, for online circulation among the entire population of 833 listed hotels in Ireland. The questionnaire was developed particularly to capture emerging energy-reduction technologies in the hotel sector, for which, to the best of our knowledge, no previously validated unified measurement scale exists. Survey items were generated through an extensive review of academic literature, industry reports and online sources documenting technologies currently implemented or under consideration in hotel operations. To strengthen content validity and enhance clarity, the draft questionnaire was reviewed by experts. Feedback from this review was incorporated to refine item wording, improve relevance and enhance the overall quality of the questionnaire.

While the initial population of interest included 833 hotels, at the time of data collection between May 2024 and 2025, many hotels were being used as asylum centres mainly for Ukrainian war refugees and were therefore not operating as conventional hotels. This significantly reduced the response to the survey. Furthermore, it is speculated that the lack of any incentive for the respondents, whether in cash or in kind, may have contributed to the limited number of responses. Only 91 responses were obtained, which, after data cleaning, were reduced to 79. This low response rate was mitigated by bootstrapping.

3.1. BOOTSTRAPPING

Given the limited availability of hotel-level data in Ireland, particularly regarding the adoption of innovative technologies, the sample size was very small, comprising only 79 valid responses. A traditional statistical analysis based on large sample assumptions would not have yielded reliable or robust insights. To address this constraint and enhance the validity of the analysis, a bootstrapping approach was employed. From the original dataset of 79 responses,

1,000 bootstrap samples were generated. Each sample was constructed by randomly selecting observations with replacement, maintaining the same sample size as the original. For each bootstrap sample, key summary statistics and model estimates, such as adoption rates by hotel star rating and province, were recalculated. Bias-corrected confidence intervals were derived from the resulting distributions, offering more accurate and stable measures of uncertainty. The bootstrapping approach provided several benefits in this context: it improved generalisability, required no assumptions about the underlying data distribution, enhanced model robustness by mitigating the influence of outlier observations, and enabled better estimation of variability in the results. A 0.632 version of the same methodology was applied to confirm the results of a normal bootstrap.

3.2. CONSTRUCTION OF THE ADOPTION RATE VARIABLE

To quantify the extent of innovative technologies adoption across Irish hotels, a composite “adoption rate” score was developed based on responses to three key survey questions. This score serves as a numeric proxy for the intensity of technology adoption at both the individual hotel and broader sectoral level, or sector-wide levels. At individual hotel level, the first component was a binary indicator capturing actual usage, derived from responses to the question: “Do you use innovative technologies like robotics, artificial intelligence and service automation in your hotel operations?” responses were coded as 1 for *yes* and 0 for *no* resulting in the variable “use of technology”, representing the presence or absence of such technologies in the respondent’s hotel. The second component measured perceived hotel-level adoption through the question: “In your opinion, the current level of adoption of innovative technologies in your hotel operations is: ...”, with responses ordinally coded as 1 (*low*), 2 (*moderate*) and 3 (*high*), creating the variable “hotel technology level”. The third component captured perceptions of sector-wide adoption via the question: “As per your knowledge, the current level of adoption of innovative technologies in the hotel sector of Ireland is:”, with identical ordinal coding to form the variable “sector technology level”. These three variables were combined into a simple additive index: “adoption rate = use of technology + hotel technology level + sector technology level”. This resulted in a continuous measure ranging from 2 to 7, where a score of 2 reflects limited usage and uniformly low perceptions of adoption, while a score of 7 indicates active usage and high levels of perceived adoption both within the hotel and across the sector. The internal consistency of the three-item scale was assessed using both standard Cronbach’s

alpha and ordinal alpha. The standard alpha, based on numeric coding of the items, was 0.60. Although classical guidelines often cite 0.70 as a typical threshold for acceptable reliability, values between 0.60 and 0.70 may be acceptable or tolerable for early or exploratory research, especially with short scales (George & Mallery, 2024; Nunnally, 1978). Ordinal alpha based on polychoric correlations, which more appropriately accounts for ordinal and dichotomous response formats, yielded a higher estimate of 0.73, consistent with recommendations that reliability coefficients above 0.70 indicate satisfactory internal consistency in social science measurement (DeVellis & Thorpe, 2021; Gadermann et al., 2012). The average inter-item correlations (0.34 for standard and 0.47 for ordinal) further suggest moderate coherence among the items, supporting the overall internal consistency of the scale.

For this exploratory study, a composite index (unweighted) was used. Weighted indices or factor-analytic models were considered, but due to the modest sample size and the heterogeneous nature of the indicators (dichotomous, ordinal and perceptual), which violates key assumptions underlying latent variable modelling, a parsimonious additive index was selected as a transparent and theoretically defensible approach consistent with the study’s exploratory objectives. So, a composite index (unweighted), which integrated actual behaviour (usage), organisational self-assessment (internal perceptions), and broader market awareness (external perceptions), capturing both tangible and attitudinal dimensions of innovation uptake, was used. This multidimensional structure aligns with the diffusion of innovations theory (Rogers et al., 2014), which emphasises the role of both individual and contextual factors in innovation diffusion.

3.3. LINEAR REGRESSION MODELLING

To examine the relationship between the adoption of innovative technologies (RAISA) and the implementation of energy reduction systems within the Irish hotel industry, a multiple linear regression model was employed. This analytical approach enables the quantification of the extent to which variations in energy-related innovations can predict or explain the adoption of broader innovative technologies (RAISA). Linear regression is a commonly used statistical method that models the relationship between a dependent variable and one or more independent (predictor) variables. In this study, we applied a multiple linear regression framework because there are several predictors involved.

The general form of the multiple linear regression model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \epsilon$$

Where:

1. Y is the dependent variable (e.g. innovative technology adoption rate);
2. X_1, X_2, \dots, X_n are independent variables (e.g. use of energy-saving systems, smart thermostats, lighting automation, etc.);
3. β_0 is the intercept;
4. β_1, \dots, β_n are the coefficients representing the influence of each predictor;
5. ϵ is the error term capturing unexplained variation.

In this study, the dependent variable Y represents a log-transformed version of the adoption rate of innovative technologies in hotels. The independent variables included key indicators of energy-efficiency efforts, such as the adoption of smart energy management systems and motion-based lighting systems.

This regression model estimates the degree to which the adoption of each energy-related technology influences the likelihood or intensity of adopting broader RAISA-driven innovative systems. The underlying assumption is that hotels that invest in energy-reduction technologies are more likely to adopt other innovative technologies for eco-efficient operations. This association may reflect a broader strategic commitment to sustainability and a higher level of digital readiness.

Model estimation was conducted using the ordinary least squares (OLS) method. Given the small sample size ($n = 79$), bootstrapping was applied to generate robust confidence intervals for the regression coefficients, thereby improving the reliability of statistical inference.

4. RESULTS AND DISCUSSIONS

This section presents the outputs and findings from the demographic, regression and bootstrapping analyses.

4.1. PROVINCE AND STAR-BASED PATTERNS OF INNOVATION ADOPTION IN THE IRISH HOTEL SECTOR

Table 1 and 2 present a detailed distribution of innovation adopter categories (laggards, late majority, early majority, early adopters and innovators) within the Irish hotel industry. The tables are organised into several sub-panels to reveal both regional and star-based dimensions of technology adoption.

Table 1 (left) displays the overall distribution of adopter categories across the four provinces: Connacht, Leinster, Munster and Ulster. Here, Leinster emerges as the most innovation-forward region, with 14% of hotels categorised as early adopters and 24% as early majority. In contrast, Connacht and Ulster have

a higher concentration of laggards and late majority adopters, indicating a more cautious approach to technological innovation. Munster shows a relatively even spread, but with very few innovators (1%). This finding substantiates the study by García-López et al. (2025) that concluded that digitisation in Andalusian (Spain) hotels flows at different speeds.

Table 1. Distribution of innovation adopter categories across Irish provinces and hotel star ratings (% of hotels)

Adopter category	Province (% of hotels)				Hotel star rating (% of hotels)			
	Connacht	Leinster	Munster	Ulster	2 star	3 star	4 star	5 star
Laggards	6	13	5	4	0	6	19	3
Late majority	6	15	0	3	1	10	11	1
Early majority	3	24	0	0	3	9	13	3
Early adopters	0	14	1	0	0	4	9	3
Innovators	0	5	1	0	3	0	3	1

Source: authors.

Table 1 (right) focuses on the relationship between hotel star ratings and adopter categories. A clear trend emerges that the higher star ratings correlate with earlier adoption. Four-star hotels are notably progressive, with 13% representing the early majority and 9% representing the early adopters. Five-star hotels, though smaller in number, have a good presence of innovators (1%) and early adopters (3%). On the other hand, two-star and three-star hotels are predominantly laggards or part of the late majority, highlighting the lag in adoption among lower-tier establishments. This pattern is consistent with findings by Yang et al. (2024) that higher-category hotels exhibit earlier and more intensive adoption of digital technologies.

Table 2. Cross-tabulation of innovation adopter categories by Irish province and hotel star ratings (% of hotels)

Province	Adopter category	Hotel star rating (% of hotels)			
		2 star	3 star	4 star	5 star
Connacht	Laggards	0	8	33	0
	Late majority	0	25	17	0
	Early majority	0	0	17	0
	Early adopters	0	0	0	0
	Innovators	0	0	0	0

Table 2 (cont.)

Province	Adopter category	Hotel star rating (% of hotels)			
		2 star	3 star	4 star	5 star
Munster	Laggards	0	17	50	0
	Late majority	0	0	0	0
	Early majority	0	0	0	0
	Early adopters	0	17	0	0
	Innovators	17	0	0	0
Leinster	Laggards	0	5	9	4
	Late majority	0	7	13	2
	Early majority	4	13	14	4
	Early adopters	0	4	13	4
	Innovators	2	0	4	2
Ulster	Laggards	0	0	60	0
	Late majority	20	20	0	0
	Early majority	0	0	0	0
	Early adopters	0	0	0	0
	Innovators	0	0	0	0

Source: authors.

Table 2 provides a more granular view by cross-tabulating adopter categories by star rating within each province. These provincial breakdowns reveal nuanced regional disparities. For instance, in Leinster, five-star hotels include early adopters (4%) and innovators (2%), reinforcing Leinster’s advanced technological posture. Conversely, Ulster exhibits a concentration of laggards (60%) in four-star hotels, with no hotels in the early adopter or innovator categories, suggesting significant barriers to innovation in that region. Connacht is characterised by a dominance of late majority and laggards across three- and four-star hotels, with no presence of early adopters or innovators. Munster exhibits some variation, with 17% innovators in the two-star hotel category, which is likely an outlier due to a small sample size.

Taken together, Tables 1 and 2 underscore the uneven diffusion of innovative technologies across Ireland’s hotel sector. Both geographic location and hotel star rating appear to be influential factors, with higher-star hotels in more urbanised or economically active regions, such as Leinster, being more receptive to innovation. These results support the earlier studies (e.g. Akbulut et al., 2025; Bekele et al., 2024; Fu et al., 2026; Kozlovskaja et al., 2023; Nikopoulou et al., 2023; Pastor, 2025; Yang et al., 2024) that commitment to sustainability, resource availability and digital transformation readiness play crucial roles in shaping adoption behaviour. For

policymakers and industry leaders, these insights underscore the need for targeted strategies to promote innovation adoption in lagging regions and among lower-rated establishments.

4.1.1. NON-RESPONSE BIAS ASSESSMENT

Although the response rate was modest (79 usable responses from a population of 833 hotels), an assessment of non-response bias was undertaken by comparing the distribution of responding hotels with that of the population across observable characteristics, namely star rating and geographic region. Descriptive comparisons are presented in Table 3 (star rating distribution) and Table 4 (region distribution).

Table 3. Star rating comparison

Star rating	Population (%)	Sample (%)
1	9	0
2	9	6
3	34	29
4	44	54
5	4	10

Source: authors.

Table 4. Regional distribution comparison

Region	Population (%)	Sample (%)
Ulster	9	6
Connacht	19	15
Munster	33	8
Leinster	39	71

Source: authors.

Chi-square goodness-of-fit tests indicate statistically significant differences between the sample and population distributions for both star rating ($p < 0.05$) and regional location ($p < 0.05$). Specifically, the sample over-represents higher-category hotels and properties located in urban regions, while lower-category and rural hotels are comparatively under-represented.

This pattern is consistent with non-response marked in previous studies. For instance, in a study carried out by Nikopoulou et al. (2023), the final sample consisted of 502 hotels in Greece out of 5800 in total. The response rate was around 10%. While the results of this study suggest the presence of non-response bias on observable characteristics, they do not invalidate the study’s findings. Rather, they may imply that the results are most reflective of hotels that are comparatively more engaged with or receptive to

the adoption of RAISA. Nevertheless, the implications of sample composition are carefully considered in the interpretation of results, and caution is exercised when generalising the findings to smaller, lower-category, or more rurally located hotels.

4.1.2. DISTRIBUTION OF TECHNOLOGY USE BY HOTEL STAR CATEGORY

Table 5 presents the adoption rates of selected energy management and smart building technologies across hotel categories. Overall, the results indicate a differentiated pattern of technology uptake, with higher-category hotels demonstrating greater engagement with advanced energy and automation solutions. Energy management systems (EMS) show relatively consistent adoption across categories, ranging from 45% in three-star hotels to 57% in five-star hotels, suggesting that basic energy monitoring has become a widely accepted practice irrespective of hotel classification. Smart HVAC systems are more prevalent in higher-category hotels, with adoption rates increasing from 27% in three-star hotels to 71% in five-star hotels, reflecting the higher capital capacity and infrastructural sophistication of upscale properties. In contrast, more advanced or data-driven technologies such as predictive maintenance systems and intelligent defrost systems exhibit notably low adoption across all categories, highlighting the nascent stage of advanced digital transformation in the sector. Motion sensor lighting and room automation systems display adoption across all categories of hotels, showing uniform adoption across the range. In contrast, predictive maintenance applications show moderate uptake across categories, possibly due to their high costs of purchase and implementation, reported as a barrier to adoption of environmental technologies (Chan et al., 2020; García-López et al., 2025).

Table 5. Adoption of energy use reduction technologies by hotel star rating

Technology	Hotel star rating (% of hotels adopting the technology)			
	2 star	3 star	4 star	5 star
Energy management system (EMS)	50	45	58	57
Motion sensor lighting (MSL)	50	91	78	29
Intelligent defrost system (IDS)	0	18	11	14
Room automation system (RAS)	25	18	19	29
Predictive maintenance (PM)	0	0	17	14

Mobile applications (MA)/ computer software (CS), such as Dexma, Energy Intelligence, Inavitas, Energis.Cloud etc.	25	0	31	29
Building automation (BA)	25	0	14	29
Smart thermostats (ST)	25	18	42	14
Smart heating, ventilation and air conditioning (HVAC)	50	27	50	71

Source: authors.

Taken together, these findings suggest that while energy efficiency technologies, for example motion sensor lighting (MSL), with clear operational or cost-saving benefits, are increasingly adopted across hotel categories, the implementation of more sophisticated RAISA-enabled systems, for example, HVAC, remains uneven and largely concentrated in higher-category hotels. This pattern suggests that digital transformation in the hotel sector maybe driven less by a comprehensive sustainability strategy and more by pragmatic considerations such as cost, ease of implementation and perceived return on investment.

4.1.3. UNIFIED ANALYSIS

Figure 2 compares the uptake of different technologies by location and the average adoption rate for each technology.

Figure 2 illustrates the regional distribution of energy management technology adoption across hotel categories in Ireland. The results reveal clear regional disparities and category-specific adoption patterns, suggesting that digital transformation and RAISA-related implementation remain uneven across the sector.

In the Munster region, adoption appears relatively balanced across several foundational technologies, particularly EMS and MSL, which show moderate uptake across hotel categories. However, more advanced technologies, such as predictive maintenance and intelligent defrost systems, exhibit minimal adoption, indicating that technology integration in this region is primarily focused on basic energy-efficiency measures rather than advanced automation or predictive digital solutions.

The Ulster region demonstrates a strong concentration of adoption in motion sensor lighting and smart thermostats, particularly among higher-category hotels, while adoption of predictive maintenance, room automation and intelligent defrost technologies remains limited. This pattern suggests selective technology uptake driven by cost efficiency and operational convenience rather than comprehensive digital transformation strategies.

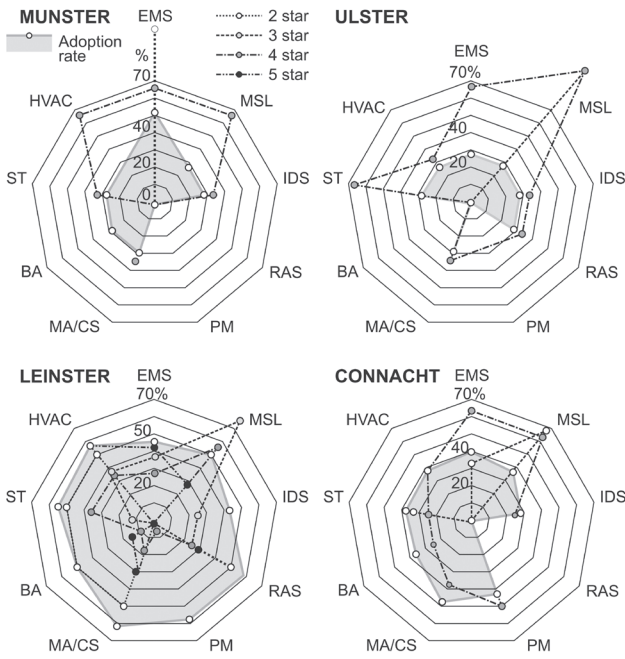


Figure 2. Comparing the distribution of technology uptake and the average adoption rate across location and hotel star rating

Note: EMS – energy management system, MSL – motion sensor lighting, IDS – intelligent defrost system, RAS – room automation system, PM – predictive maintenance, MA/CS – mobile applications/ computer software (such as Dexma, Energy Intelligence, Inavitas, Energis.Cloud etc.), BA – building automation, ST – smart thermostats, HVAC – smart heating, ventilation and air conditioning
Source: authors

Leinster displays the most diverse and advanced adoption profile among the regions. Several technologies, including room automation systems, predictive maintenance, and mobile or software-based energy management applications, exhibit relatively higher adoption rates across multiple hotel categories. This may reflect stronger digital readiness, greater access to technological resources, and higher levels of competitive or urban market pressure, encouraging broader implementation of RAISA-enabled solutions.

In contrast, Connacht demonstrates a more selective and uneven adoption pattern. While certain technologies, particularly motion sensor lighting and predictive maintenance, show moderate uptake, other automation and smart building systems remain comparatively underutilised. This may reflect structural and resource constraints typically associated with smaller or regionally dispersed hospitality markets.

Across all regions, a consistent trend emerges whereby foundational energy-saving technologies such as EMS, MSL and HVAC systems demonstrate wider adoption, while advanced automation and predictive technologies remain at an early stage of implementation. Furthermore, higher-category hotels generally display greater adoption across most

technologies, suggesting the influence of financial capacity, technological infrastructure and strategic orientation toward innovation.

Collectively, these regional and categorical variations suggest that RAISA adoption within the Irish hotel sector remains nascent and context dependent. Adoption appears to be driven primarily by immediate operational and energy efficiency benefits rather than by fully integrated digital transformation or sustainability strategies.

4.2. DISTRIBUTION OF INNOVATIVE TECHNOLOGY ADOPTION SCORES

To explore the overall level of innovative technology adoption among Irish hotels, a kernel density plot was constructed based on the composite adoption rate derived from survey responses (recall the calculation of the adoption rate given in the methodology section). As shown in Figure 3, the distribution is right-skewed, indicating that a majority of hotels have relatively low to moderate adoption rate, while a smaller subset demonstrates significantly higher engagement with innovative technologies.

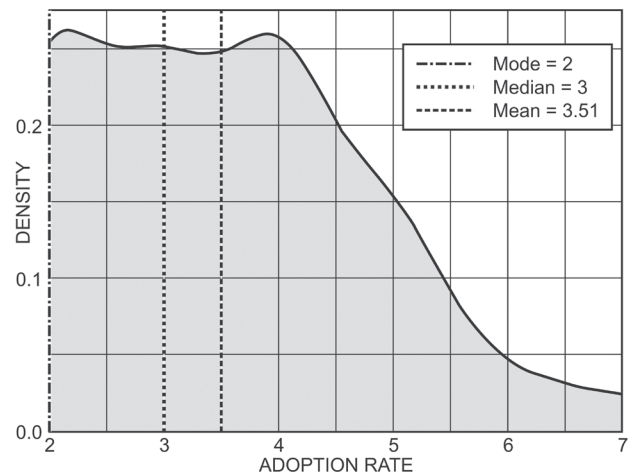


Figure 3. Density plot of innovative technology adoption scores in Irish hotels, showing a right-skewed distribution
Source: authors

The mode of the distribution is 2, meaning that the most frequently occurring adoption rate among respondents was the minimum possible on the adoption rate scale (the scale goes from 2 to 7). The median is 3, suggesting that 50% of hotels scored at or below this level. However, the mean is higher at 3.51, which reflects the influence of a tail of hotels with relatively high adoption levels. This asymmetry in the distribution implies that while adoption is still in its early to intermediate phases for many hotels, there is a growing segment of the sector that is investing more heavily in advanced systems and innovative technologies.

Notably, the distribution of the “adoption rate” variable was found to be positively skewed, suggesting that while a minority of hotels report high adoption, a substantial proportion remain at early or non-adopter stages. This skewness was considered in the selection and transformation of variables for subsequent regression modelling.

4.3. DISTRIBUTION OF INNOVATIVE TECHNOLOGIES: ADOPTION ACROSS ADOPTER CATEGORIES

To better understand the diffusion of RAISA technologies within the Irish hotel industry, the distribution of adoption rates was examined and categorised using Rogers’ diffusion of innovations theory. As shown in Figure 4, the density plot represents the full spectrum of RAISA adoption levels across surveyed hotels, divided into five adopter categories: innovators, early adopters, early majority, late majority and laggards. These categories were assigned based on percentile segmentation of the adoption index, a continuous measure constructed from multiple technology implementation indicators.

The shape of the distribution suggests a slightly right-skewed pattern, with the bulk of hotels falling within the early majority and late majority categories. This suggests that while RAISA technologies are becoming increasingly common, many hotels are still in the process of fully utilising them. A smaller proportion of hotels appear at the far right of the distribution, classified as innovators, reflecting early experimentation and leadership in advanced automation. Conversely, a similar proportion of “laggards” exists on the lower end, comprising hotels with minimal or limited adoption of RAISA systems.

The relative thickness of the early majority and late majority regions, characterised by lower adoption scores, highlights the potential need for policy and investment focus, particularly in supporting hotels that are on the cusp of broader technological integration but may lack the necessary resources or strategic guidance to proceed. As stated in Section 4, the government can exert a statistically significant effect on a hotel’s willingness to adopt high-cost technologies by offering subsidies and grants (Ezzaouia & Bulchand-Gidumal, 2020; Oloso, 2025).

Overall, Figure 4 reinforces the conclusion that the Irish hotel industry is progressing through the intermediate stages of innovation adoption. Encouragingly, the presence of innovators and early adopters suggests a growing receptiveness to RAISA, which may gradually influence peers and contribute to a more technology-forward hotel sector, because, according to the diffusion of innovations by Rogers (2014), observability is one of the five key attributes of an innovation that determines its rate of adoption.

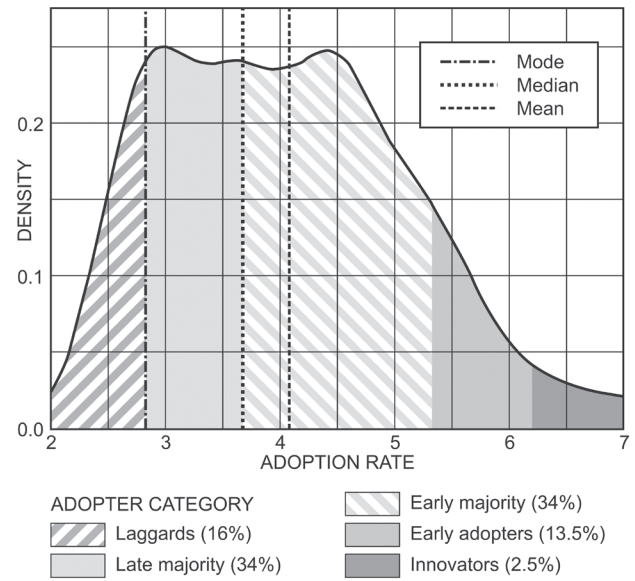


Figure 4. Density distribution of technology adoption scores in Irish hotels, segmented into adopter categories based on percentile thresholds (indicated inside brackets in the legend) Source: authors

4.4. ENERGY WASTE REDUCTION TECHNOLOGY

Table 6 and Figure 5 illustrate the mean adoption rates and variability (standard deviation) for a range of energy reduction technologies implemented in hotel operations. The users of these technologies are categorised using Rogers’ diffusion of innovations theory, highlighting where each innovative technology adopter lies along the adoption continuum from innovators to late majority.

Table 6. Adoption of energy reduction technologies across adoption categories in Irish hotels, with means and standard deviations of adoption rates reported for each technology

Energy reduction technology	Mean adoption rate	Standard deviation adoption rate	Adoption category
All of the above	6.0	1.4	Innovators
Room automation system	4.0	1.3	Early majority
Building automation	3.8	1.4	Early majority
Energy software	3.7	1.0	Early majority
Predictive maintenance	3.7	0.5	Early majority
Smart heating, ventilation and air conditioning (HVAC)	3.6	1.3	Early majority

Table 6 (cont.)

Energy reduction technology	Mean adoption rate	Standard deviation adoption rate	Adoption category
Motion sensor lighting	3.3	1.1	Late majority
Energy management system (EMS)	3.3	1.2	Late majority
Smart thermostats	3.2	1.2	Late majority
None of the above	2.9	0.8	Late majority
Intelligent defrost system	2.6	1.0	Late majority

Source: authors.

As shown in both the table and the chart, the most comprehensively adopted solution, indicated by the highest mean score (6.0), is “all of the above”, which represents hotels actively integrating multiple technologies and aligns with the innovators category. Technologies such as room automation systems, building automation, energy software, predictive maintenance and smart heating/AC exhibit mean scores between 3.6 and 4.0, positioning their users within the early majority category. These results suggest that a significant segment of the hotel industry is proactively engaging with automation and predictive control systems, likely due to their tangible impact on operational efficiency and cost savings (Kim et al., 2022; Ivanov & Webster, 2021). Conversely, hotels using technologies such as motion sensor lighting, EMS, smart thermostats and intelligent defrost systems exhibit lower mean adoption scores (between 2.6 and 3.3), falling within the late majority. This suggests that these technologies are either more basic and commonly used, placing them at the lower end of the RAISA adoption spectrum, or that the hotels using them have not yet adopted

more advanced technologies, and therefore consider themselves lower in RAISA maturity.

The standard deviations captured in Figure 5 emphasise the variation in adoption patterns across hotels, with technologies such as smart heating/air conditioning and room automation systems showing wider variability. This indicates that while some hotels have advanced significantly in their adoption journey, others remain in the early stages or have not yet implemented these innovations. Together, these findings underscore a stratified pattern of technology diffusion, where full integration remains limited to a smaller group of forward-thinking hotels, while broader adoption is still emerging across the sector.

The spread of the data also reflects a range of digital maturity levels across the sample, reinforcing the importance of understanding contextual factors, such as size, location and star rating, that may influence adoption behaviours. These findings provided a basis for further regression analysis, in which the relationship between adoption rate and specific predictors (e.g. energy-saving technologies) was examined to identify key enablers of digital transformation in the sector.

4.5. LINEAR REGRESSION MODELLING OUTPUT

To further investigate the impact of specific energy reduction technologies on the overall RAISA adoption rate, a linear regression analysis was conducted, with the adoption rate serving as the dependent variable. Table 7 presents the estimated coefficients, standard errors and *p*-values for each predictor. The intercept value of 3.71 (*p* < 0.001) represents the baseline adoption rate in the absence of specific technology adoption. While several predictors exhibited positive or negative coefficients, none of the technologies reached conventional levels of statistical significance (*p* < 0.05). Among the variables, intelligent defrost showed the largest negative association with adoption

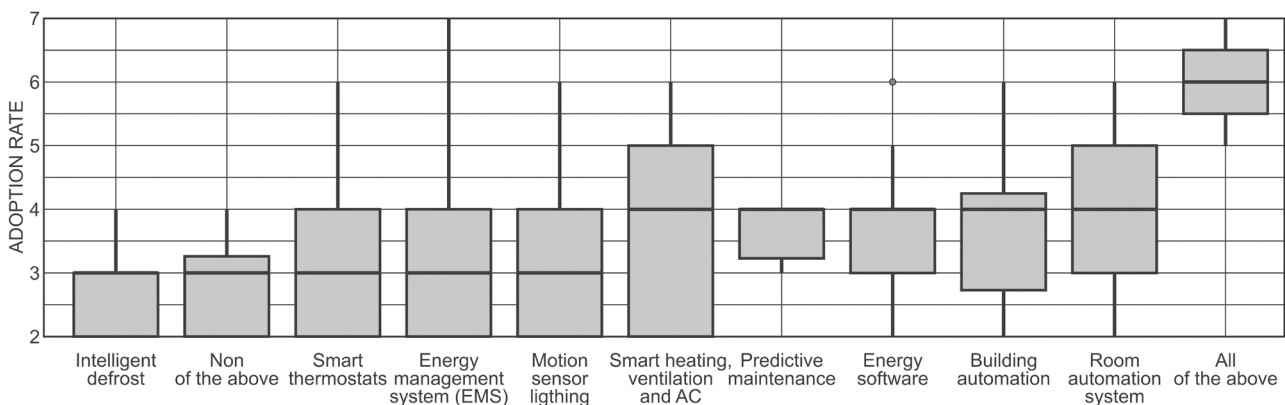


Figure 5. Distribution of adoption rates by energy reduction technologies
Source: authors

rate (estimate = -0.91 ; $p = 0.08$), indicating a potential inverse relationship, though it falls short of statistical significance. Conversely, energy software (estimate = 0.71 ; $p = 0.13$) and room automation system (estimate = 0.51 ; $p = 0.25$) demonstrated positive effects, suggesting that their presence may be associated with higher adoption levels, although not significantly so.

Table 7. Linear regression results illustrating the impact of individual energy technologies on the adoption rate. Coefficients for each technology indicate the estimated change in adoption rate that can be achieved by implementing the technology

Term	Estimate	Standard error	p -value
(Intercept)	3.71	0.25	0.00
Motion sensor lighting	-0.20	0.32	0.53
Energy management system (EMS)	-0.32	0.36	0.38
Smart heating, ventilation and air conditioning (HVAC)	0.05	0.33	0.87
Energy software	0.71	0.46	0.13
Building automation	0.23	0.55	0.68
Predictive maintenance	-0.01	0.62	0.99
Room automation system	0.51	0.44	0.25
Smart thermostats	-0.63	0.40	0.12
Intelligent defrost	-0.91	0.52	0.08

Source: authors.

This study was limited to examining patterns of association between the adoption of energy-reduction technologies and overall RAISA adoption, rather than identifying causal mechanisms underlying these relationships. Some technologies, including motion sensor lighting, energy management systems, smart thermostats, and smart defrost systems, show negative associations with overall RAISA adoption. This may reflect that these more common or specialised systems are often implemented by hotels with lower digital maturity or by hotels with very specific operational requirements, which tend to adopt only a limited set of technology solutions. In contrast, more advanced or strategically focused systems, such as predictive maintenance, room automation, and energy software, are typically adopted by hotels with greater digital ambition and broader technology portfolios, which explains the observed positive associations. While these explanations remain speculative, they provide a plausible context for the observed trends and highlight the need for future research to explore the underlying factors influencing these adoption patterns in greater depth.

These findings suggest that while individual technologies may influence overall adoption tendencies, the variations are not strong enough to be isolated as significant predictors in this model. This could indicate either a cumulative or context-dependent effect of these technologies, warranting further investigation with a larger sample or additional covariates.

4.6. BOOTSTRAPPING OUTPUT

To improve the robustness of inference given the limited sample size ($n = 79$), a bootstrapping approach was applied to both descriptive adoption rates and regression modelling.

Table 8 presents the bootstrapped mean adoption rates for each energy-reduction technology, along with their corresponding standard deviations. Notably, the bootstrapped means closely align with the original sample means, demonstrating internal consistency. Technologies such as room automation systems, building automation and energy software continued to show relatively high adoption rates across resampled datasets. In contrast, intelligent defrost systems and smart thermostats exhibited lower adoption rates, suggesting a more cautious approach among hotel operators.

Table 8. Comparison of original and 0.632 bootstrapped mean adoption rates for energy reduction technologies, indicating comparable adoption rates across technologies

Technology	Mean original	Mean bootstrap	Mean bootstrap 0.632	Standard deviation bootstrap
All of the above	6.00	6.01	6.01	0.71
Room automation system	4.00	4.02	4.01	0.36
Building automation	3.75	3.74	3.74	0.45
Energy software	3.73	3.74	3.74	0.26
Predictive maintenance	3.67	3.65	3.66	0.19
Smart heating, ventilation and air conditioning (HVAC)	3.61	3.61	3.61	0.22
Motion sensor lighting	3.31	3.31	3.31	0.17
Energy management system (EMS)	3.28	3.29	3.28	0.22
Smart thermostats	3.21	3.21	3.21	0.26
None of the above	2.88	2.85	2.86	0.27
Intelligent defrost	2.57	2.58	2.58	0.34

Source: authors.

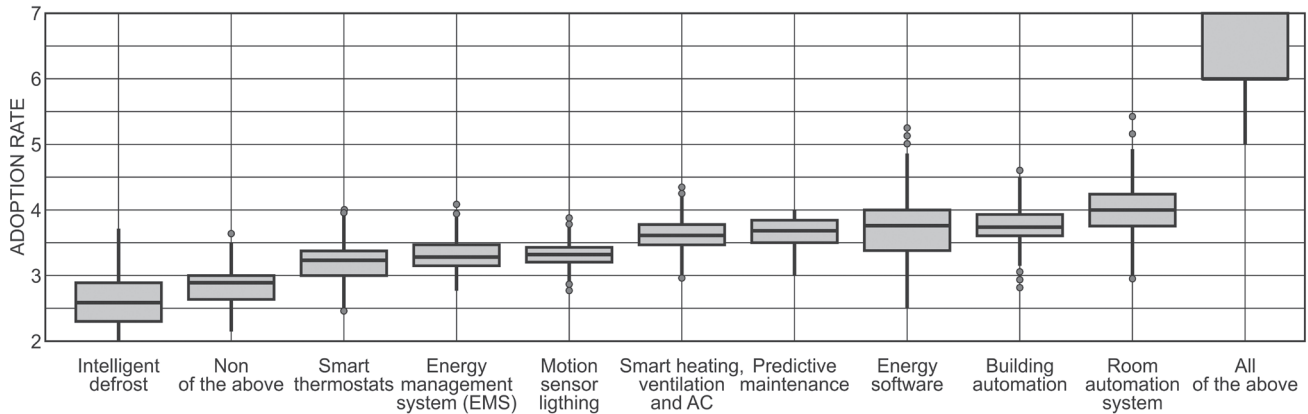


Figure 6. Bootstrapped mean adoption rate distribution of the various energy reduction technologies
Source: authors

Figure 6 visually reinforces these findings, highlighting variation in adoption rates across the range of technologies. The technologies positioned toward the right of the figure (e.g. “all of the above”, “room automation system”) correspond to higher bootstrapped adoption means, consistent with the innovators and early majority adopter categories described earlier. Meanwhile, technologies with lower mean values (e.g. “intelligent defrost”) align with the late majority or laggards, indicating slower diffusion across the industry.

Table 9. Bootstrapped linear regression coefficients with 95% confidence intervals. Estimates reflect the effects of individual energy reduction technologies on the adoption rate of innovative technologies, based on 1,000 bootstrap samples

Technology	Mean coefficients [CI]
Intercept	3.71 [3.18, 4.29]
Motion sensor lighting	-0.26 [-0.95, 0.37]
Energy management system (EMS)	-0.25 [-0.97, 0.65]
Smart heating, ventilation air conditioning (HVAC)	0.08 [-0.56, 0.67]
Energy software	0.71 [-0.04, 1.37]
Building automation	0.17 [-1.10, 1.39]
Predictive maintenance	-0.07 [-1.26, 1.02]
Room automation system	0.49 [-0.38, 1.50]
Smart thermostats	-0.60 [-1.20, 0.07]
Intelligent defrost	-1.00 [-1.75, -0.19]

Source: authors.

Building on this, Table 9 displays bootstrapped linear regression coefficients with 95% confidence intervals, modelling the effect of individual technologies on the overall adoption rate of innovative systems. Most coefficient intervals include zero, suggesting weak

or non-significant individual effects. However, the “energy software” variable shows a positive association (mean coefficient = 0.71; 95% CI: [-0.04, 1.37]), indicating a potential role in predicting broader adoption, albeit with marginal statistical confidence. In contrast, “intelligent defrost” demonstrates a significant negative effect (mean coefficient = -1.00; 95% CI: [-1.75, -0.19]), suggesting that its adoption is inversely associated with the broader implementation of innovative technologies, possibly due to perceived higher cost, complexity, or perceived lack of necessity of more advanced technology by hotels that use “intelligent defrost” technology.

In summary, the bootstrapped findings support the descriptive trends observed in the raw data and underscore the variation in adoption across technologies. They also emphasise the importance of considering the individual impact of each technology on overall innovation readiness. While some technologies may signal early adoption behaviour, others may indicate slower digital transformation trajectories within the Irish hotel industry.

5. CONCLUSION AND IMPLICATIONS

Using a combination of descriptive statistics, linear regression modelling and bootstrapping techniques, the research aimed to identify patterns of adoption, categorise adopter behaviour, and explore the adoption of energy-reduction technologies within the Irish hotel sector and their relationship to the broader uptake of intelligent RAISA technologies for sustainable operations. Within the scope of this exploratory study, we conclude that implementing energy software may positively affect RAISA adoption.

The data suggests that RAISA adoption within the Irish hotel sector is uneven. Furthermore, energy-related technologies are not adopted uniformly across the sector. A trend is observed, with certain technologies

aligning with early adopters (innovators and early majority) while others remain within the late majority category. Technologies such as room automation systems, building automation and energy software exhibited higher average adoption rates, indicating that these technologies may be more associated with cost saving and operational efficiency. Conversely, the data suggests that hotels that use tools like intelligent defrost systems, smart thermostats and EMS tend to lag behind, possibly due to cost, complexity or unclear return on investment (ROI).

The regression analysis further illuminated these patterns. While many predictors failed to show statistically significant individual effects, energy software exhibited a moderately strong positive relationship with the RAISA adoption rate. This aligns with its role as a digital interface that may facilitate further integration of intelligent systems. In contrast, for the intelligent defrost systems negative association trend is observed, possibly indicating resistance to niche or low-perceived-value technologies among adopters. The variance in coefficient stability across technologies suggests that not all energy innovations contribute equally to the digital transformation journey.

In alignment with previous studies (Ka et al., 2023; Nikopoulou et al., 2023; Zaragoza-Sáez et al., 2024), these results indicate that implementing specific technological solutions such as energy-efficiency systems may act as a catalyst for more extensive digital transformation, especially for businesses prioritising sustainable operations. Higher adoption rates of technologies like energy software and room automation systems may act as gateways to more advanced intelligent automation.

Bootstrapped regression analysis suggests that some technologies have directional influence, even when statistical significance is marginal. Innovator behaviour is associated with bundled or integrative approaches to technology adoption (“all of the above”), suggesting that comprehensive sustainability strategies may predict readiness for digital transformation. This supports the previous research (e.g. Akbulut et al., 2025; Kozlovská et al., 2023) that organisations desiring sustainable operations are more likely to invest in innovative technologies.

While this research highlights a nuanced landscape of technological adoption within Ireland’s hotel sector, the study overall contributes to the growing body of literature on sustainable innovation and digital adoption in the hospitality sector. The findings of this study carry implications for sustainability policy, hotel management strategy, and the digital transformation agenda within the Irish hospitality sector.

First, the identification of energy software and automation systems as potential enablers of broader RAISA adoption highlights the value of leveraging existing energy-management tools as strategic entry points

for digital innovation. For instance, energy software designed to help hotels monitor, analyse and optimise energy use may enable managers to observe tangible financial and operational improvements through energy monitoring, thereby increasing their confidence in digital systems. As per the diffusion of innovations theory by Rogers (2014), observability, or the degree to which the results or benefits of an innovation are visible, leads to greater levels of adoption. Furthermore, the growing observability may build the organisational readiness, legitimacy and positive expectations necessary to support the diffusion of RAISA technologies across properties and departments. This suggests that investments in sustainability-friendly energy management tools can be environmental choices and can also serve as catalysts for technological competitiveness.

Second, as observed from the data, the uneven adoption landscape underscores the need for differentiated engagement strategies, potentially recognising that hotels at different stages of innovation readiness may respond to distinct drivers and barriers. For policymakers and tourism authorities, this may hint towards the necessity of more targeted interventions, particularly for hotels that stagnate in the late majority phase, through financial incentives, sector-specific training and industry benchmarking. Additionally, for technology providers, the study tries to highlight the importance of demonstrating tangible ROI and ease of integration, especially for niche or underutilised systems. Finally, by showing a trend that early-stage sustainability technologies can act as springboards to more advanced RAISA adoption, the study supports a phased approach to digital transformation, one that aligns with hotels’ operational realities and resource constraints while still advancing long-term goals for smart and sustainable hospitality. Overall, the results try to provide a roadmap for evidence-based decision-making that balances operational efficiency, technological innovation and sustainability goals.

6. LIMITATIONS AND FUTURE RESEARCH

While this study provides valuable insights into the nexus between energy-reduction technologies and RAISA adoption in the Irish hotel industry, several limitations must be acknowledged. These constraints offer a roadmap for future scholarly inquiry.

The primary limitation of this study is the relatively small sample size, which may have constrained the statistical power necessary to detect small-to-moderate effects. While bootstrapping techniques were employed to enhance the robustness of estimates, the current dataset limits the generalisability of the findings beyond

the surveyed group. Subsequent studies should aim for a larger and more diverse sample to improve statistical power and allow for a more definitive generalisation of results to the broader global hospitality sector.

The study relied on self-reported survey data, which may be subject to a social desirability bias. Respondents might have overestimated the extent of RAISA adoption or technology use to align with perceived industry norms or sustainability expectations. Although anonymity was assured to reduce such bias, the influence of self-reporting cannot be entirely ruled out. Future research could mitigate this limitation by triangulating survey responses with objective data sources, such as system usage logs or operational records, to obtain a more accurate assessment of technology adoption.

The cross-sectional nature of the data restricts the ability to infer causality. The results indicate a positive association between energy software adoption and RAISA uptake, suggesting that energy management technologies may facilitate digital transformation. However, causal interpretation was not warranted given the study design. Future longitudinal studies would be especially beneficial, enabling researchers to explore changes in adoption behaviour over time and more confidently infer causality.

A limitation of this study is that the regression model does not incorporate potentially influential covariates such as hotel category, location, capacity and chain affiliation, all of which may affect the rate of technology adoption. The exclusion of these variables may limit the analytical depth and explanatory power of the findings. However, the study was limited to examining patterns of association between the adoption of energy reduction technologies and RAISA adoption. Despite this limitation, the current analysis provides valuable preliminary evidence on the role of energy-reduction technologies in shaping the adoption of RAISA within the sector. Future research could incorporate additional hotel-specific covariates, such as chain affiliation, to examine more nuanced patterns of adoption.

The regression analysis examining the influence of energy use reduction technology implementation on RAISA adoption did not yield statistically significant coefficients. This lack of significance warrants careful consideration rather than dismissal. First, the sample size, while adequate for exploratory analysis, may have limited the statistical power required to detect small or moderate effects, particularly given the early stage of RAISA adoption across the Irish hotel sector. Second, several technology implementation variables exhibited conceptual overlap, raising the possibility of multicollinearity, which can inflate standard errors and reduce the likelihood of statistically significant estimates despite meaningful underlying relationships. Third, the measurement of technology implementation

relied on relatively coarse indicators reflecting presence or absence rather than depth or maturity of use, which may have constrained variance in the predictors. Beyond methodological explanations, the findings may also reflect that RAISA adoption in Irish hotels appears to be nascent and may be often driven by pragmatic operational concerns such as staff shortages, cost containment and regulatory pressures, rather than by the level of technology implementation alone. Consequently, the relationship between technology implementation and RAISA adoption may be indirect, mediated by organisational readiness or strategic orientation, or may manifest over time rather than in cross-sectional data. To mitigate this, future models should refine measurement approaches, examine mediating organisational mechanisms, and integrate external contextual influences such as digitalisation subsidies or regulatory pressures to better capture the complexity of RAISA adoption pathways.

This study was exclusively quantitative, prioritising broad patterns over experiential narratives. Consequently, the findings do not capture the underlying “sense-making” processes or the specific organisational motivations and barriers that influence a manager’s decision to adopt RAISA. Future studies can incorporate qualitative methods, such as in-depth interviews or case studies, which would enrich the literature by exploring the human and strategic priorities behind technology adoption.

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WHY (DON'T) WE TRAVEL SUSTAINABLY? GENERATION Z AND THE THEORY OF PLANNED BEHAVIOUR

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ABSTRACT

Generation Z, the cohort born approximately between 1995 and 2010, represents a generation shaped by digital technology, social connectivity and global awareness, who exhibit distinct attitudes, behaviours and values that differentiate them from previous generations. These differences are also reflected in travel behaviour. The main purpose of this study is to investigate the determinants of sustainable travel behaviour among university students, using the theory of planned behaviour (TPB), augmented by knowledge, as a predictor, and based on survey data and regression analysis. Using a structured questionnaire and a sample of 217 students, this research measures five key constructs: attitudes, subjective norms, perceived behavioural control, behavioural intention and actual behaviour. Data were analysed using Spearman's correlation and regression analysis. Results indicate that all core TPB components, individually, significantly predict sustainable travel behaviour, with behavioural intention emerging as the strongest predictor. The findings confirm the presence of an intention-behaviour gap, highlighting the importance of strengthening social support and perceived behavioural control. Knowledge, however, did not emerge as a significant predictor of behaviour. This study contributes to the sustainable tourism literature by integrating cognitive and social aspects of decision-making, while also addressing the often-overlooked economic and social dimensions of sustainability. Additionally, it offers rare empirical insight into the sustainable travel behaviour of young Serbian tourists.

KEYWORDS

Gen Z, sustainable travel behaviour, sustainable tourism, knowledge, university students

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1. INTRODUCTION

Members of Generation Z (or Gen Z) represent a highly digitalised generation, financially responsible and open to change, while often leading such change themselves. Among these shifts is a greater orientation towards sustainable behaviour, contributing to a more sustainable future. Generation Z actively seeks unique and authentic experiences, often through travel, which simultaneously represents a context for the expression of their sustainable values and behaviour. Tourism, as a powerful form of cultural exchange and self-expression, has become one of the main ways through which Generation Z interacts with the world, which positions them as a particularly relevant demographic for studying sustainable travel behaviour.

In order to explain and predict individual behaviour, especially in the context of socially responsible action, the theory of planned behaviour (TPB) (Ajzen, 1985) offers a well-established framework that explains human behaviour based on several preceding dimensions: attitudes, subjective norms, perceived behavioural control, behavioural intention and the behaviour itself.

The aim of this study is to examine whether the TPB, extended by the inclusion of a knowledge dimension, can be applied to sustainable travel behaviour among university students at the University of Novi Sad, Serbia. Given the multidimensional structure of the theory, it is expected that its application will enable a deeper understanding of the factors that influence sustainable behaviour among young people.

Although TPB has been frequently applied in tourism research, there remains a lack of studies that combine this theory with sustainability-related knowledge in the context of Generation Z, particularly within Serbian university settings.

Accordingly, this study investigates the determinants of sustainable travel behaviour among university students, using the elements of the TPB augmented by knowledge as a predictor, through survey-based data and regression analysis. This research contributes to the theoretical refinement of TPB by testing its extended form in a new demographic and cultural context. Additionally, it offers practical insights into the travel-related decision-making processes of young people who are likely to shape the future of sustainable tourism.

2. LITERATURE REVIEW

This section presents the key characteristics of Generation Z and their approach to sustainable travel, followed by a theoretical overview of the TPB as the conceptual framework guiding this study.

2.1. GENERATION Z AND SUSTAINABLE TRAVEL

Immediate conditions and socio-technological changes in the environment create a setting in which individuals within a community tend to behave, think and make decisions in a similar manner (Dolot, 2018). Members of a particular generation are usually linked by shared life values and circumstances (Entina et al., 2021), while events experienced during childhood also significantly shape generational identity (Vojvodić, 2019). Establishing clear age boundaries between generations proves to be difficult (Dolot, 2018; Ruspini & Corbisiero, 2018), with Generation Z being especially challenging to define precisely in terms of age (Dolot, 2018). Although exact boundaries remain unclear, for the purposes of this research, Generation Z is defined as individuals born after 1995, following the parameters adopted by Diaconu and Dutu (2020) and Jayatissa (2023).

The concept of sustainable tourism decisions refers to the choices made by authorities, companies, communities and individual tourists when engaging in tourism-related activities, regardless of their specific roles (Puiu et al., 2022). Many destinations currently face sustainability challenges that conflict with the principles of sustainable tourism development. While various initiatives and campaigns are being implemented to address these issues, tourists themselves play a crucial role in advancing sustainability through their behaviour and engagement.

At the same time, Generation Z is recognised as a crucial segment of the future tourism market (Entina et al., 2021), with its share steadily increasing (Tănase et al., 2023). Today, young travellers represent nearly one quarter of global tourism demand (World Youth Student and Educational Travel Confederation, n.d.). Travel has become less of a luxury and more of a necessity, especially among young people for whom frequent travel is becoming a regular part of life.

Among the most significant factors influencing travel planning among young people are socialisation, finances and experience. Social interaction plays a key role in their travel decisions, as younger travellers seek meaningful experiences and connections with locals and fellow tourists (Robinson & Schänzel, 2019).

Financial responsibility is an important part of Generation Z and also influences how they plan and budget for travel (Kubíková & Rudý, 2024) and in many cases, financial limitations, particularly among students, encourage sustainable practices such as participation in the sharing economy (Kalabova & Petru, 2021). Bernardi (2018) notes that young people are not only participants in the sharing economy but also key promoters and developers of these services.

In addition to being referred to as a digital or internet generation, Generation Z has also been described using

terms that reflect their values. Csobanka (2016) coined the term “Generation R” (responsible generation), a term also used by other scholars (Dolot, 2018; Entina et al., 2021). This label is particularly relevant in the context of the present study, as it emphasises the generation’s sense of responsibility, awareness, commitment, communication skills and loyalty (Diaconu & Dutu, 2020).

The concept of sustainability is deeply embedded in the lifestyle of Generation Z (Savić et al., 2024). These individuals are often described as catalysts for change, especially when it comes to changes that promote a more sustainable future in tourism (Sormin & Sihombing, 2023). Compared to older generations, younger people are more aware of environmental degradation (Pinho & Gomes, 2023) and are highly environmentally conscious (Hernandez-Arriaza et al., 2023; Monaco, 2018). Unlike previous generations, Generation Z demonstrates strong support for environmentally and culturally sustainable tourism practices (Sormin & Sihombing, 2023), however, it should be noted that not all scholars agree on the importance of age as a determinant of pro-environmental behaviour (Sargisson et al., 2020). Furthermore, many studies focus on stated values or intentions, rather than actual behaviour, which leaves room for social desirability bias and calls for models, such as the TPB, that can better explain the intention–behaviour gap. Based on this, it is assumed that young tourists already tend to behave sustainably when travelling, leading to the formulation of the following hypothesis:

H₁: Young tourists behave sustainably when travelling.

In the study of tourism demand, it is crucial to include the everyday practices of tourists visiting various destinations. Sustainable behaviour should not be limited to specific products or services, but should also encompass general patterns of responsible consumption (Kiatkawsin & Han, 2017). As future tourists, but also tourists who already represent a significant segment of current demand, Generation Z should be better understood in terms of how they engage with sustainable tourism. For this purpose, Ajzen’s *Theory of Planned Behaviour* (1991) offers a valuable framework for exploring how attitudes, subjective norms and perceived behavioural control influence intentions and actual behaviour.

2.2. THE THEORY OF PLANNED BEHAVIOUR (TPB)

The application of socio-psychological theories is justified by their effectiveness in explaining human behaviour across various contexts (Han & Yoon, 2015). The theory of planned behaviour (TPB) (Ajzen, 1985) was developed as an extension of the theory of reasoned action (TRA) (Ajzen & Fishbein, 1980;

Fishbein & Ajzen, 1975) and is one of the most widely applied theories in social and behavioural sciences (Bosnjak et al., 2020). According to TPB, attitudes, subjective norms and perceived behavioural control influence an individual’s behavioural intentions, which in turn predict actual behaviour (Ajzen, 1985; Bosnjak et al., 2020; Juvan & Dolnicar, 2014).

A fundamental component of TPB is the construct of attitudes, capturing value-based judgements about behaviour (Ivanov et al., 2024). Attitudes reflect the degree to which a person evaluates a particular behaviour, positively or negatively (Ajzen, 1991) and are considered central components of the theory. Consequently, it can be expected that individuals with more favourable attitudes toward sustainability will be more likely to engage in sustainable travel behaviour, therefore, H₂ is presented.

H₂: Attitudes influence young people’s travel behaviour.

Subjective norms refer to perceived social pressure from friends, family and peers (Fenitra et al., 2021), more precisely, they will target behaviour accepted by important people in individuals’ lives (Chen & Slade, 2025). Socialisation is seen as one of the important aspects of youth travel, therefore, the next hypothesis is developed:

H₃: Subjective norms affect the behaviour of young people when travelling.

Perceived behavioural control denotes the individual’s perceived capacity to perform a behaviour, accounting for factors such as time, skills and external support (Ajzen, 2011). Accordingly, H₄ is proposed:

H₄: Perceived behavioural control affects the behaviour of young people when travelling.

Behavioural intention, shaped by the three components, represents the most robust predictor of actual behaviour (Ajzen, 1991, 2011), leading to the hypothesis that:

H₅: Behavioural intention affects young people’s travel behaviour.

The behavioural outcome itself is a consequence of this intention, consistent with findings from prior studies (de Araújo et al., 2022).

Ajzen (1991) himself suggested that the model can be expanded by incorporating additional variables (Amoako et al., 2020). In this research, knowledge is included as an extended construct and is understood as a cognitive element that encompasses perception, memory, learning and prediction in the process of information processing (Salas-Zapata et al., 2018). Individuals’ attitudes towards sustainability and environmental issues are influenced by their level of knowledge (Aziz et al., 2012). Moreover, knowledge has been shown to affect behaviour patterns, such as the purchase of green products among younger populations (Amoako et al., 2020), justifying its integration into the TPB model.

As young people who possess greater knowledge about sustainability are more likely to act accordingly, the following hypothesis is proposed:

H₆: Knowledge about sustainable tourism positively affects self-reported sustainable travel behaviour during trips.

The inclusion of knowledge within the TPB framework has also been observed in previous studies (e.g., Mullan & Wong, 2010; Nimri et al., 2020). By incorporating additional dimensions, TPB enables the analysis of behaviours that are not entirely under volitional control (Hsu & Huang, 2012). The core assumption of TPB posits that individuals with more positive attitudes are more likely to form stronger intentions to act accordingly (Fenitra et al., 2021).

Chen and Slade (2025) state that TPB is effective in the field of tourism and hospitality, particularly in understanding individuals' willingness to visit specific destinations. Within the realm of sustainable tourism, TPB has been employed to explore the factors that drive environmentally responsible tourist behaviour, emphasising the role of personal beliefs and social influences in decisions such as choosing eco-friendly accommodation or reducing waste while travelling (Menegaki, 2025). TPB has been applied in tourism and hospitality research on both the supply (e.g., Erul et al., 2020) and demand side (e.g., Chen & Peng, 2012; Genç & Zengin, 2025; Kuo & Dai, 2012; Vukadin et al., 2025). Since 2019, a notable increase in studies has emerged that link TPB with tourism, hospitality, management and environmental sustainability (Ulker-Demirel & Ciftci, 2020).

3. METHODOLOGY

A significant number of previous studies on the sustainable behaviour of young people have taken place in university environments (e.g., Avelar & Farina, 2022; Aziz et al., 2012; Fang et al., 2018; Kiatkawsin

& Han, 2017; Sahin et al., 2012), where the main source of information was students. Universities represent the primary gathering places for young people and the setting of this research is the University of Novi Sad, with the target group consisting of students from all faculties of this University. The University of Novi Sad comprises 14 faculties (nine of which are located in the city of Novi Sad) with approximately 50,000 students (University of Novi Sad, n.d.). Universities play a significant role in promoting sustainable development among young people, which is another reason for choosing this institution as the research setting.

The primary method of data collection chosen was a survey-based approach. The survey questionnaire was inspired by different researchers (e.g., Dutta et al., 2022; Puiu et al., 2022). The structure of the questionnaire included four sections: (a) socio-demographic characteristics (4 items); (b) previous travel experience (5 items); (c) knowledge about sustainable tourism (4 dichotomous items; 0 – *false*, 1 – *true*); and (d) constructs of the TPB with the following elements: attitudes (3 items), subjective norms (3 items), perceived behavioural control (3 items), behavioural intention (3 items) and behaviour (8 items). It is important to emphasise that the questionnaire was developed to reflect all three pillars of sustainability: economic, ecological and social. The full questionnaire is available from the authors upon request.

Composite variables were calculated for analysis of knowledge and TPB constructs (Table 1). Knowledge (KNSUM) was computed as the mean of the four dichotomous items, resulting in values ranging from 0 (*false*) to 1 (*true*), representing the proportion of correct answers. TPB constructs (attitudes, subjective norms, perceived behavioural control, intention and behaviour) were computed as the mean of their respective Likert-scale items, each measured on a five-point scale (1 – *strongly disagree*, 5 – *strongly agree*).

While individual Likert items are ordinal, composite scores derived from multiple items are widely treated

Table 1. Variables

Construct	Description	Items	Composite variables
Knowledge (KN)	Proportion of correct answers on sustainable tourism knowledge	KN1–KN4	KNSUM
Attitudes (ATT)	Attitudes toward sustainable travel	ATT1–ATT3	ATTSUM
Subjective norms (SN)	Perceived social pressure to behave sustainably	SN1–SN3	SNSUM
Perceived behavioural control (PBC)	Perception of control over sustainable travel	PBC1–PBC3	PBCSUM
Behavioural intention (BI)	Intention to engage in sustainable travel	BI1–BI3	BISUM
Sustainable travel behaviour (B)	Self-reported sustainable travel behaviour	B1–B8	BSUM

Source: authors.

as approximately interval-level data in social science research, allowing the use of parametric statistical methods, including calculation of means and linear regression (Norman, 2010; Tanujaya et al., 2022).

The survey was conducted between March and June 2024. Part of the survey data was collected electronically and the second part was collected through fieldwork. The electronic surveys (administered via Google Forms) were collected by sending the questionnaire via email to various student organisations within the University of Novi Sad, as well as by sharing the survey link in student groups on the social media platform Facebook. Survey questionnaires were collected in the field at high-volume student gathering areas, including student hostels, the university campus and selected faculties. The Statistical Package for the Social Sciences (SPSS) version 23 was used for data analysis. A total of 238 questionnaires were collected, of which 217 were deemed valid and included in the final analysis. Questionnaires excluded from the analysis did not contain answers to all questions and were therefore not suitable for further analysis. Additionally, three questionnaires were removed from the sample as the respondents fell outside the Generation Z cohort defined previously in this study.

In order to provide a comprehensive overview of the relationship between the construct elements of the TPB, two complementary statistical techniques were applied: Spearman's rank correlation coefficient and regression analysis. Spearman's correlation enabled the identification of statistically significant relationships between the variables of the TPB. On the other hand, regression analysis was conducted to examine the predictive power of individual components of the model in explaining the target behaviour. Each regression included a single predictor to assess its individual effect, consistent with the study's exploratory objectives. By combining correlation and regression analyses, a more comprehensive understanding of the relationships between constructs and their role in shaping young people's travel behaviour is achieved.

4. RESULTS

The majority of respondents were female students from the University of Novi Sad, accounting for 73.7% (160 participants), while male students made up 26.3% (57 participants). The average age was 21.8 years and female respondents were slightly older on average (22.0) than their male counterparts (21.1). Based on age, all participants fell within the Generation Z cohort. Most respondents were undergraduate students (83.9%), followed by master's (12.0%) and PhD students (4.1%). Regarding financial status, 52.1%

reported having personal income (e.g., scholarships, employment, loans), while 47.9% had no regular income (Table 2).

Table 2. Socio-demographic characteristics of sample ($n = 217$)

Variable	Category	Frequency (%)
Gender (%)	Male	26.3
	Female	73.7
Level of study (%)	Undergraduate	83.9
	Graduate	12.0
	PhD	4.1
Financial status (%)	Regular income	52.1
	Without regular income	47.9
Variable	Category	Mean age
Average age: 21.8	Male	21.1
	Female	22.0

Source: authors.

Regarding previous travel experiences, the majority of respondents indicated that they travelled equally within Serbia and abroad (46.5%). A smaller proportion expressed a preference for either international (28.1%) or domestic travel (25.4%). Most participants spent between €200 and €500 on their most recent trip (43.8%), while only a small number reported spending more than €1,000 (4.2%). On an annual basis, the majority of students undertook between two and five trips (61.3%), while 33.6% reported travelling only once a year. A minority (5.1%) travelled more than six times per year. Travel was most commonly organised with friends (60.8%) or family (22.1%), whereas trips taken alone or organised by the university were rare (under 5%).

Table 3 presents the mean values (M) and standard deviations (SD) for five psychological constructs included in the TPB model. The highest mean score is observed for the construct behavioural intention (BISUM: $M = 4.11$; $SD = 0.805$), indicating a relatively strong intention among participants to engage in the target behaviour. Similarly, subjective norms (SNSUM: $M = 4.09$; $SD = 0.863$) and perceived behavioural control (PBCSUM: $M = 3.95$; $SD = 0.867$) also exhibit elevated average scores, suggesting that respondents perceive both considerable social pressure and a personal capacity to perform the behaviour. Attitudes toward the behaviour show a slightly lower mean value (ATTSUM: $M = 3.83$; $SD = 0.772$). The lowest mean is reported for actual behaviour ($M = 3.21$; $SD = 0.573$), potentially indicating a gap between intention and enacted behaviour. Standard deviations across constructs range from 0.573 to 0.867, indicating a relatively low to moderate level of variability across the measured constructs.

Table 3. Means and standard deviations ($n = 217$) of cumulative variables of theory of planned behaviour (TPB)

Cumulative variables	Mean	Standard deviation (SD)	Cronbach's alpha
Attitudes (ATTSUM)	3.83	0.772	0.501
Subjective norms (SNSUM)	4.09	0.863	0.750
Perceived behavioural control (PBCSUM)	3.95	0.867	0.575
Behavioural intention (BISUM)	4.11	0.805	0.678
Behaviour (BSUM)	3.21	0.573	0.760

Source: authors.

The reliability of the TPB constructs was assessed using Cronbach's alpha: the full TPB model (20 items) yielded $\alpha = 0.868$, while individual constructs ranged from 0.501 (attitudes) to 0.760 (behaviour), which is considered acceptable for exploratory research (Tavakol & Dennick, 2011).

4.1. CORRELATION

The Spearman correlation analysis (Table 4) indicated statistically significant correlations between multiple variables within the TPB model. The remaining dimensions of the TPB model also demonstrate statistically significant interrelationships at the 95% and 99% confidence levels.

Table 4. Spearman's correlation coefficients

Variable	ATTSUM	SNSUM	PBCSUM	BISUM	BSUM
Attitudes (ATTSUM)	1.000	0.451***	0.319***	0.287***	0.187**
Subjective norms (SNSUM)	0.451***	1.000	0.207**	0.360***	0.249***
Perceived behavioural control (PBCSUM)	0.319***	0.207**	1.000	0.359***	0.262***
Behavioural intention (BISUM)	0.287***	0.360***	0.359***	1.000	0.516***
Behaviour (BSUM)	0.187**	0.249***	0.262***	0.516***	1.000

Note: Values represent Spearman's rho; ** $p < 0.01$, *** $p < 0.001$ (2-tailed).

Source: authors.

Table 5. Results of simple linear regression analyses predicting behaviour (BSUM)

Predictor	R^2	F	β	p -value	Dependent variable
Knowledge (KNSUM)	0.015	3.257	0.122	0.073	BSUM
Attitudes (ATTSUM)	0.102	24.459	0.320	<0.001	BSUM
Subjective norms (SNSUM)	0.171	44.477	0.414	<0.001	BSUM
Perceived behavioural control (PBCSUM)	0.192	52.230	0.442	<0.001	BSUM
Behavioural intention (BISUM)	0.413	153.244	0.645	<0.001	BSUM

Source: authors.

The correlation matrix indicates statistically significant relationships between individual constructs of the TPB model. Spearman's rank correlation coefficient reveals a statistically significant and strong association between behavioural intention and actual behaviour ($r_s = 0.516$; $n = 217$; $p < 0.001$), at the 99% confidence level.

4.2. REGRESSION ANALYSIS

To examine the effect of each component of the TPB and knowledge on sustainable travel behaviour (BSUM), separate linear regressions were conducted for each predictor. The dependent variable (behaviour, BSUM) is a composite score of eight items measured by Likert-scale. Independent variables include TPB constructs (Likert-scale composites) and knowledge (KNSUM), calculated as the mean of four dichotomous items (0 – incorrect, 1 – correct). This approach allowed a direct assessment of each hypothesis individually. Each regression included only one independent variable (predictor) at a time. Beta values represent standardised coefficients for comparison of effect sizes, while R^2 indicates the proportion of variance in sustainable behaviour explained by each predictor (Table 5).

Among the predictors, behavioural intention (BISUM) had the strongest effect on sustainable travel behaviour ($\beta = 0.645$; $F = 153.244$; $p < 0.001$), explaining 41.3% of the variance. Subjective norms (SNSUM) and perceived behavioural control (PBCSUM) also had substantial effects ($\beta = 0.414$ and 0.442 , respectively; $p < 0.001$). Attitudes (ATTSUM) while significant, demonstrated

only a small effect ($\beta = 0.102$; $p < 0.001$). Knowledge (KNSUM) showed a weak and non-significant effect on sustainable travel behaviour ($\beta = 0.122$; $F = 3.257$; $p = 0.073$), accounting for only 1.5% of the variance. This indicates that knowledge does not play a substantial role in predicting behaviour within the present model.

Although individual Likert items are ordinal, the use of composite scores allows for linear regression, which is widely accepted in behavioural research (Norman, 2010; Tanujaya et al., 2022). Behavioural intention (BISUM) was the strongest predictor of behaviour, followed by subjective norms, perceived behavioural control and attitudes. These results support hypotheses H_2 – H_5 . However, the effect of knowledge was not statistically significant and therefore hypothesis H_6 is rejected.

These findings support the central premise of the TPB, which posits that intention is the most immediate antecedent of behaviour, reflecting both motivational readiness and the likelihood of the action being performed. These results not only underscore the predictive strength of behavioural intention but also reinforce the theoretical framework suggesting that individuals are more likely to engage in a particular behaviour when they possess a clearly formed and positively valenced intention to do so.

Based on the preceding model, hypotheses H_2 , H_3 , H_4 and H_5 are supported, while H_6 is rejected. These findings will be further discussed in the context of previous research and existing theoretical assumptions in the following section.

5. DISCUSSION

The theory of planned behaviour (TPB) has found broad application, including in explaining human behaviour that incorporates elements of sustainability and environmental consciousness. The results of the present study suggest that the application of the TPB model to sustainable travel behaviour among young people represents a relevant theoretical framework. Similar findings have emerged in previous research addressing pro-environmental and green behaviours (Amoako et al., 2020; Dutta et al., 2022; Han et al., 2009; Kiatkawsin & Han, 2017; Qiu et al., 2022; Yadav & Pathak, 2016) and more directly in the context of sustainable behaviour among youth (Luong & Nguyen, 2024).

The most significant influence on behaviour was observed for the variable behavioural intention ($\beta = 0.645$; $p < 0.001$), which confirms the central assumption of the TPB, that intentions are the most direct predictors of actual behaviour. Behavioural intentions are considered a crucial factor within the TPB framework (Erul et al., 2020; Fenitra et al., 2021 and in the manifestation of specific sustainable behaviours

(Han et al., 2009). This finding suggests that students, although they may not always practice sustainable behaviour, show a strong motivation and readiness to do so. However, the observed difference between the high mean value for intention ($M = 4.11$) and the somewhat lower mean for actual behaviour ($M = 3.21$) may indicate the presence of an intention–behaviour gap, which is commonly reported in the context of sustainable tourism (Khan et al., 2024).

Young people's travel experiences are shaped by a complex interaction of direct influences (family, friends, immediate environment), global factors (geopolitical, technological and social), as well as destination-specific influences (culture, infrastructure, socio-political factors) (Robinson & Schänzel, 2019). Travelling with parents or relatives often means that young people follow itineraries planned by older family members (Haddouche & Salomone, 2018), which may limit their autonomy in decision-making. Additionally, financial independence represents a common barrier for young travellers (Hysa et al., 2021; Kalabova & Petru, 2021; Nagaj & Žuromskaitė, 2023). A group of authors (Nguyen et al., 2018) explain the intention–behaviour gap by arguing that when “green” products are readily available and consumers believe that their use has a positive environmental impact, individuals with intentions are more likely to act upon them. This gap represents a fertile ground for future research.

Furthermore, subjective norms ($\beta = 0.414$) and perceived behavioural control ($\beta = 0.442$) also demonstrated substantial effects on behaviour. This suggests that students place significant importance on social context and support from their environment, which is consistent with the claim that young people are more willing to act when supported and validated by their social network (Entina et al., 2021; Robinson & Schänzel, 2019). The responsibility for sustainable travel ultimately rests with the individual, as each person's perceptions and actions in the tourism context influence the implementation of sustainable tourism practices (Narkūnienė, 2024). Moreover, the perception of personal control over behaviour, such as the availability of sustainable transport or accommodation options, emerges as a key factor in overcoming behavioural barriers.

Young people exhibit positive attitudes toward specific elements of sustainable travel, such as green hotels (Verma & Chandra, 2018) and generally maintain favourable attitudes toward the three core pillars of sustainable development while travelling (Vukadin et al., 2022), all of which were considered in this study. Interestingly, while these attitudes are generally positive ($M = 3.83$), their influence on behaviour ($\beta = 0.320$) is somewhat lower in comparison to subjective norms and perceived behavioural control. This result suggests that a positive perception of sustainability

alone may not be sufficient to drive responsible behaviour unless other conditions are also met. This contrasts with certain studies that report a stronger role of attitudes in prompting sustainable behaviour (Yarimoglu & Gunay, 2019; Verma & Chandra, 2018).

Finally, the results indicate that knowledge about sustainable tourism does not have a statistically significant influence on behaviour ($\beta = 0.122$; $p = 0.073$), suggesting that its impact is limited within the present model. While there are numerous criticisms and concerns regarding the sustainable behaviour of young travellers, there is also a consensus that their perception of sustainability will improve if efforts to inform and educate them are sustained (Balakrishnan et al., 2020; Šaparnienė et al., 2022). The responsibility for promoting sustainable tourism among younger generations also lies with government authorities (Bernardi, 2018). This suggests that although knowledge did not necessarily affect behaviour, it should not be disregarded, but rather complemented with alternative approaches that can more effectively encourage sustainable behaviour. Universities also play a significant role in advancing sustainability among young people. More effective approaches are needed to achieve sustainable development within universities, beyond merely relying on strategies and policies (Filho, 2011). Therefore, as educational institutions, universities have a crucial role not only in disseminating information but also in shaping the conditions necessary for sustainable behaviour among students.

The insights presented above support the acceptance of the main research hypothesis, suggesting that young people demonstrate a sustainable behaviour while travelling. Nevertheless, they require ongoing support in their transition towards more sustainable practices, given that they are among the key actors in understanding and implementing sustainable tourism development (Schönherr & Pikkemaat, 2023).

6. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

Sustainable behaviour is the responsibility of every individual and identity. Tourism related bodies and organisations should inspire consumers to adopt more sustainable and responsible practices (Puiu et al., 2022).

The findings confirm that the TPB can be successfully applied to explain the sustainable travel behaviours of young people. The most significant influence was observed in behavioural intention, indicating a strong motivation among students to make sustainable choices. However, the gap between intention and actual behaviour implies the need to strengthen the conditions and infrastructure that support sustainable

practices. In this context, particular attention should be given to enhancing social support and perceived behavioural control, alongside active involvement from educational institutions and the wider community. Knowledge, however, did not show a significant effect on behaviour in this study.

The responsibility for sustainable travel lies with each individual. Younger generations are increasingly incorporating sustainable practices into various aspects of their lives (Dabija et al., 2020; Lazányi & Bilan, 2017; Pinho & Gomes, 2023). Although young people express positive attitudes and intentions, the existence of an intention–behaviour gap highlights a key area for further research.

Younger generations constitute the foundation of future tourism demand and will play a critical role in shaping travel trends (Kalabova & Petru, 2021). Their travel frequency is expected to increase over time. It is important that young people are made aware of the positive impacts of their actions, particularly as they report being motivated by such messages to act responsibly and sustainably (Heidari et al., 2018). Systemic support and coherent youth policies are required, alongside the utilisation of appropriate communication channels to effectively convey these messages.

6.1. CONTRIBUTION OF THE STUDY

This study makes several notable contributions to the fields of sustainable tourism and behavioural research. First, it extends the TPB by incorporating knowledge as an additional cognitive variable and by explicitly addressing the intention–behaviour gap. The findings indicate that knowledge does not have a significant direct influence on sustainable travel behaviour. However, rather than diminishing its importance, this result points to the need for complementary approaches that can more effectively translate knowledge into sustainable actions, thereby offering a theoretically grounded and empirically informed extension of the TPB, particularly relevant for pro-environmental behaviour research.

A notable limitation of many studies on sustainable travel is their narrow focus on the environmental dimension, often neglecting the social and economic pillars of sustainability. Similarly, in research concerning sustainable tourist behaviour, sustainability is frequently reduced to “green” practices, such as reducing energy or paper consumption and recycling. This study, while acknowledging environmental sustainability, also examined the economic and social dimensions embedded within the data set.

Further, the study provides empirical insight into Generation Z, a key demographic in global tourism, within the under-researched context of South-East

Europe. While much of the existing presented literature focuses on Western or Asian markets, this research adds contextual diversity by analysing data from Serbian university students, highlighting how cultural, economic and social conditions influence sustainability-related choices. Topics such as sustainable development and practices are rarely explored among samples of young people from Serbia, making this study one of the few contributions in this area. The same applies to research specifically addressing the travel behaviours of Serbian young people, which is also rarely discussed. While such studies exist, there is a clear need for regular updates and broader thematic scope.

Ultimately, this research contributes to a more holistic understanding of the psychological, social and informational drivers of sustainable tourism behaviour.

6.2. STUDY LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

It is important to recognise that different researchers often arrive at different conclusions. When young people are treated as a distinct age category, it becomes possible to identify internal variations in attitudes and behaviours (Haddouche & Salomone, 2018). Most studies in this domain have been focused on environmental sustainability and ecotourism, and the observed differences often depend on socio-demographic variables such as country of origin (Fang et al., 2018; Kabir & Hassan, 2024) or type of academic programme (Arrobas et al., 2020). The intention–behaviour gap identified in this study is another promising avenue for further exploration.

Kafková (2019) notes that values are shaped by national context, historical period and social change. It can therefore be expected that changes in young people's living environments will influence their attitudes and behaviours. Future research should be conducted continuously and expanded to include other topics beyond sustainable travel alone.

Several limitations of this study should be acknowledged. These include the composition and size of the sample, the geographic scope and the methodology employed. The lifestyle of students may differ significantly from that of non-students, largely due to differences in family obligations and available free time (Mbwile & Rwekaza, 2024). To achieve a more comprehensive picture of youth travel sustainability, future research should include non-student populations.

Although the University of Novi Sad had approximately 50,000 students in the previous academic year (University of Novi Sad, n.d.), the sample of 217 respondents represents only about 0.44% of the total student population, so including students from other universities and enabling comparative analysis could enrich the findings. Additionally, the conditions under

which the survey was conducted, with some questionnaires completed in a relatively short time, may have affected the quality of responses. As the questionnaire attempted to address all three dimensions of sustainability, future surveys should consider expanding the instrument to ensure equal representation of each dimension. It is also recommended to apply other statistical methods that would examine the dimensions of TPB and knowledge as a whole, rather than individually, as is the case in this study.

Finally, alternative research methods such as interviews or focus groups may yield deeper insights, allowing respondents to articulate their views and opinions more fully.

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COMPREHENDING THE CONCEPT OF 'TOURISM ENVIRONMENT' WITHIN THE GEOGRAPHICAL CONTINUUM

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ABSTRACT

The article introduces the concepts of geographical, natural, living, and tourism environments, examined from a geographical perspective and based on a holistic approach considering their terminological and structural factors, which, in their causal spatial relationships, contribute to a cohesive geographical 'integrity' of identifiable tourism landscapes. Qualitative research in philosophical geography is based on an extensive compilation of contemporary literature from multiple fields, such as geography, (geo)ecology, tourism, and physics, along with the author's personal insights. The article highlights the cohesion of geography, tourism and environmental protection, indicating the role of geographical resources in tourism planning and environmental protection, including heritage preservation. The findings underscore their geographical nature, highlighting that they are essential elements of geographical space and, consequently, geographical subjects. This research advocates the involvement of geographers in their exploration of tourism and environmental conservation. Geography holds a fundamental role in both (geo)ecological and tourism research, as tourism and environmental conservation are inherently spatial, rendering them indispensable within the field of geography.

KEYWORDS

geographical space, tourism, environment, system, components, continuum

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1. INTRODUCTION

The research presents a comprehensive geographical examination of the 'tourism environment' within the geographical continuum. Tourism is an important modifier of the original environment since it contributes to the physiognomic and functional modification of

the Earth's landscapes by utilizing natural resources. Tourism landscapes, like others, whether natural or human in origin, are an intrinsic aspect of the Earth's topography and can be considered an integral part of the geographical continuum.

In the literature (Merriam-Webster, n.d.; Oxford University Press, n.d.a; Reinhardt, n.d.; Ritter, 2026;

Science Learning Hub, n.d.; United States Department of Agriculture, 2025), the term 'continuum' denotes a cohesive whole or entity composed of slightly varied elements that are causally related and interconnected through networked processes. For example, regarding a geographical continuum, it refers to geographical areas that differ in spatial, natural, and human attributes, with transitions that are gradual and form part of an interconnected geographical space. A relevant illustration is the rural-urban continuum, which distinguishes metropolitan areas from non-metropolitan ones, where no clear boundaries are present, as transitional zones such as suburbs and peri-urban regions exist in between.

A continuum is characterized as a continuous and interrelated system encompassing the entirety of the Earth's environment; thus, a geographical continuum embodies the integrity of both natural and human components, incorporating the environmental aspect related to the interactions between human activities and nature. This concept is close to a geographical envelope, representing a complex geographical system or continuum.

Generally, the term "continuum" implies continuity, indicating that space, time, and the movements of the Earth collectively represent natural processes that occur in an ongoing manner. In the context of the geographical continuum discussed in this paper, all natural and human processes, including the evolution of tourism on Earth, unfold continuously while simultaneously being interconnected and reflecting geographical integrity; hence, the tourism landscape constitutes a vital component of the geographical continuum, serving as an interrelated element within a complex geographical system.

The research issue for this article is to determine the environment in terms of geographical and tourism space. The term 'environment' is used in various contexts throughout academic disciplines, and it primarily relates to the natural environment in interaction with humans. However, depending on how it is applied, the term 'environment' can have a multitude of interpretations and may not even refer to geographical areas. From a geographical standpoint, the term refers to a specific place on Earth having identifiable geographical features, particularly those modified by human activity, such as tourism.

The research problematizes the concepts of geographical, natural, living, and tourism environments. The environment within the framework of geography is found at the deepest level because it synthetically and causally connects all components of space: natural and human (while, for example, in biology and ecology, it mainly focuses on the impact of humans on flora and fauna). In order to understand the role of tourism in the transformation of geographical space, it is necessary to

analyze its structure, as well as its shifting borders due to technological progress, but also due to modern forms of tourism that can be found beyond the Earth's sphere.

The purpose of the article is to explore the concepts of geographical, living, and tourism environments while considering the altered dimensions of the geographical 'envelope' (taking into account connections with satellites and spacecraft), as well as the impact of modern tourism that penetrates into extraterrestrial space itself (e.g., space tourism). Tourism contributes to the differentiation of landscapes on the Earth's surface (tourism regions), and thus it is an indispensable part of its image and a vital component of the global geographical framework. This article aims to address the key questions:

Q₁: How does the geographical environment relate to geographical space and time, and what significance does the term 'geographical' hold in its interpretation?

Q₂: Are the terms geographical and living environments interchangeable, or do they reflect a relationship defined by their interactions within specific boundaries?

Q₃: How do the dimensions of the tourism environment relate to both the geographical and living environments, or do all three elements form a cohesive spatial entity?

2. LITERATURE REVIEW

Numerous authors have explored the concepts of geographical space and environment. Their understanding of the environment primarily revolves around a complex system that includes interconnected living and non-living elements, as well as human activities related to production, urbanization, and technological development (Archer, 1995; NASA Scientific Visualization Studio, 2018; Oxford University Press, n.d.b, n.d.c, n.d.d; Rawding, 2013; Roy, 2014). The focus of study varies somewhat due to the diverse professions involved, as the environment is examined across various scientific fields and disciplines such as geography, biology, philosophy, and physics. In this regard, biologists and ecologists tend to observe the environment through the lens of a global ecosystem, emphasizing plant and animal life (Glavač, 2001), whereas geographers analyze it spatially as a highly intricate geosystem or geographical 'envelope', considering both natural and societal elements (Getis et al., 2000; Smirnov, 2016; Spahić, 1999; Włodarczyk, 2009, 2014; Žunić, 2022, 2023). Physicists, on the other hand, concentrate more on the abstract spatial and temporal factors that define the environment (Einstein, 1955; Mittelstrass, 2015), while philosophers discuss environment as a physical, chemical and biotic living set (Defrančeski, 2021). Despite these differences, all

authors agree that the Earth's environment is shaped by the natural conditions that support life, with each author also exploring how human influence modifies the natural environment, thereby introducing the concept of the human environment.

The interpretation of the tourism environment and tourism system has also been examined by various authors. Hunziker and Krapf (1942, as cited in Vanhove, 2004) point to the tourism environment as a complex set derived particularly from leisure travel, while international organizations promote the tourism environment as the global space occupied through travel, driven by various motives including economic (Eurostat, n.d.; United Nations World Tourism Organization [UNWTO], 2025). Mathieson and Wall (1982) focus on the tourism environment as the space facilitated for visitors, while McIntosh et al. (1995) and Tribe (1997) see tourism space as a set of interrelated stakeholders. The tourism system/ environment is complex composed of natural, sociological-economic and technological components (Anuar et al., 2012; Attia et al., 2020;

Leiper, 1983; Petrič, 2003; Žunić, 2018). Jensen et al. (1993, as cited in Sharma, 2013) additionally highlight the importance of the geographical landscape and cultural authenticity for the tourism environment, while Anuar et al. (2012) emphasize tourism space or a destination as a complex of geographical attributes and tourism products.

Various authors have investigated the relationship between geographical and tourism environments, providing works with significant insights. Hall and Page (2006) emphasize the complexity of the built tourism space in the context of the impacts of tourism on the resources and environment of urban, coastal, rural, and natural/wild geographical spaces, taking into account the experiences and continuum of opportunities for leisure, recreation and tourism, while Žunić (2022, 2023) focuses on tourism space as an integral part of geographical space, including its modern expansion into the cosmos.

In regard to this, Polish geographers (Butowski, 2014; Durydiwka & Duda-Gromada, 2014; Kowalczyk,

Table 1. Literature review of research into environmental and spatial understanding in the journal *Turyzm/Tourism* (2012, vol. 24, no. 1)

Author	Environment	Aspect	Findings
Butowski (2014)	Maritime tourism space	Geographical, tourism	Maritime tourism space encompasses distinct zones, depending on the geographical factors, impacting tourism valorization criteria of coastal regions for nautical tourism
Durydiwka and Duda-Gromada (2014)	Tourism coastal space	Geographical, tourism	Tourism coastal space is determined by its location factor and the spatial-functional configuration
Kowalczyk (2014)	Tourism space	Geographical, tourism	Tourism space emerges from the "overlap" of geographical and anthropological dimensions, serving as a multidimensional aspect of geographical space; this encompasses both individual and collective tourism spaces, along with the attributive and developmental spaces utilized by tourists
Liszewski (2014)	Urban tourism space	Geographical, tourismologic	Urban tourism space is related to geographical elements and the intended use of space for tourism
Rydz (2014)	Tourism space	Geographical, tourism	Tourism space is categorized by various forms of tourism related to its natural environment, which serves as a catalyst for tourism development
Sokołowski (2014)	Tourism space and environment	Geographical, tourism	Tourism space as transformed rural and coastal regions with tourism functions, including congestion and environmental degradation
Świeca et al. (2014)	Tourism space	Geographical, tourism	Tourism spaces are geographical areas based on tourist potential and the views of local community
Włodarczyk (2014)	Geographical and tourism space	Geographical, tourism	Geographical space is the entirety of geospheres and the anthroposphere, including the tourism space, as the geographical area where tourism is found
Więckowski (2014)	Tourism space	Geographical, tourism	Tourism space is a novel entity within the framework of a polyfunctional, multidimensional, and multi-layered flow space; it is defined by its multi-motivational and multi-relational characteristics, which vary according to the diverse conditions that influence and shape it
Zajadacz (2014)	Accessible tourism space/area	Geographical, tourism	Geographically accessible tourism area (accessible tourism) incorporating its physical and functional characteristics alongside accessible infrastructure

Source: author.

2014; Liszewski, 2014; Rydz, 2014; Sokołowski, 2014; Świeca et al., 2014; Więckowski, 2014; Włodarczyk, 2014; Zajadacz, 2014) have placed significant emphasis on the concept of tourism space from a geographical standpoint, exploring the development, theoretical underpinnings, and empirical research related to it. These are more comprehensive works examining the geographical, living and tourism environments through qualitative research within the frameworks of philosophical geography and holism, mostly integrating key elements of the tourism system and environment within the geographic spatial continuum.

A special issue of the journal *Turyzm/Tourism* was devoted entirely to these issues and includes ten articles that explore the development, theoretical underpinnings and empirical research related to tourism space (Table 1, see p. 201).

The analyses presented by the author are intricately linked to previous assertions, further clarifying and enhancing them with unique interpretations, illustrative arguments and demonstrative examples, while the author's original ideas, holistic approach, contemplation and perspective on the research subject all contribute to this work's originality. Furthermore, this study offers novel insights into the fields of geographical, (geo)ecological, and tourism interpretations of the geographical tourism environment, thereby contributing to the advancement of geography in the exploration of tourism as a spatial geographical phenomenon.

3. METHODOLOGY

The article examines the system of geographical space, tourism and the environment, highlighting geographical natural space as a foundation for various human activities, including tourism-related movements and operations, resulting in landscape modifications. Geographical space is inherently complex, as it encompasses both natural and human elements (including tourism infrastructure), considering their intricate interactions and interrelations. The understanding of the environment within geography is rooted in a comprehensive approach, as it incorporates all spatial elements and global phenomena (such as tourism), collectively creating a unique representation of the Earth that distinguishes it from the environments of other celestial bodies or planets.

Since the article represents qualitative research, the examples are from geographical, natural, living and tourism environments. Terms that also include the constituent elements that refer to them in structural and interpretative senses.

The leading instrument in qualitative research of this type is a complex tourism-geographical analysis

based on deduction, which implies considering entire geographical space through its constituent components, including tourism and its impacts on changes in nature and the creation of a different living environment.

The article presents a systematic literature review based on the philosophical explanatory method of interpreting the concepts of geographical, natural, living and tourism environments. In this, it is dominated by the analytical method that is applied to interpret the concepts, structures and systems of the geographical living environment along with the tourism environment.

The forms of analysis applied in the subject elaborations are: descriptive, structural, causal, functional and comparative, as well as theoretical and content analyses, since these items have been analyzed through numerous literature examples, the content of which was viewed in parallel in order to determine the connections and differences, while deriving new, more comprehensive insights into the research issue.

4. RESULTS AND DISCUSSION

4.1. GEOGRAPHICAL ENVIRONMENT: GEOGRAPHICAL SPACE AND TIME

The interpretation of geographical space is narrower than the physical interpretation of space primarily because of the prefix 'geo' (Earth), which binds it exclusively to Earth's space. Human cognition for the highest spatial rank takes the universe as a vast natural expanse in which there are numerous galaxies (two trillion) including ours (the Milky Way – the 2nd largest galaxy in the "Local Group" cluster) in which the planet Earth is located. Nature is the physical universe as an infinite expanse that surrounds us, and space is determined by three dimensions: width, length and height, i.e. we delimit, locate and physically understand it through measurements. Einstein (1955) points out that space and time are an indistinguishable mixture, because it is impossible to imagine 'somewhere' without the indispensable 'when', which means that space and time are parallel phenomena, so every activity takes place 'in a certain space' and 'at a certain time'. It is precisely such attitudes that lead to the subject of study in geography: 'geographical space', which represents the most complex category that can be 'naturally', 'socially' and 'regionally' determined.

Smirnov (2016) defines geographical space as a set of ordered locations with key dimensions: *topos* – location of a place and its geographical characteristics, *choros* – spatial connections, and *geos* – topology or mapping a place. Location is the foundation of the geographical

determination of space, so all geographical research starts from the 'geographical position' of the observed area, so that its position in relation to other things and places is identified using three main parameters: location, direction and distance. Getis et al. (2000) listed two types of location: absolute and relative. 'Absolute location' is an astronomical or mathematical-geographical identification of a place using a reference (UTM) coordinate system (geo-latitude, geo-longitude, altitude, and zone), so e.g. Sarajevo belongs to UTM zone 34N: 43°51'N, 18°25'E, 541 m above sea level. 'Relative location' is the identification of the position of a place in relation to other places or objects, so for example Sarajevo is located on the Balkan Peninsula (SE Europe), in the central part of Bosnia and Herzegovina, in the Sarajevo-Zenica Basin, and mainly in the Bosna river basin.

The traditional interpretation of geographical space is identified with the geographical 'envelope' (subject of study in geography), which represents all the space on Earth in which life exists, from the Mohorovičić discontinuity to the ozonosphere.

Geographical space is also an evolutionary category, which means that it changes over time, and these changes or evolution can be tracked on two time scales: the 'geological past', which is measured in billions of years – from the initial phase of the formation of planet Earth from gas and dust (more than 4.6 billion years ago), through numerous tectonic and climatic changes, the emergence of life from water (about 4 billion years ago), the emergence of the human species (about 5–7 million years ago) and *Homo sapiens* (550 thousand years ago), but also the disappearance of certain species from Earth (e.g. dinosaurs became extinct 65 million years ago), and 'historical-geographical development', a cultural past that is measured in only thousands of years – all changes in the geographical environment that occurred with human influence and the activities of various cultures on Earth since ancient civilizations as early as 5000 years BC (Egypt, Mesopotamia, Persia, Greece, etc.). The geological time scale delineates eons, eras, periods, epochs, and associated dates spanning millions of years, including the Holocene, which marks the age of humans, and the Anthropocene, characterized by significant human impact on the environment. The concept of the Anthropocene (from the Greek *anthropo*: meaning 'man') was introduced by Crutzen (2006, p. 13), highlighting it as a distinct epoch in the evolution of the Earth's geographical landscape over the last two centuries, due to human activities having had an increasing impact on the environment at all scales, in many ways surpassing natural processes, including their involvement in land use, deforestation, the burning of fossil fuels, and the creation of the ozone hole.

While the Anthropocene is not universally recognized as a distinct geological epoch in Earth's evolution, the ongoing human influence cannot be overlooked.

This influence manifests through significant modern assaults on the environment, such as spacecraft that extend the reach of luxury tourism into the upper layers of the atmosphere (the upper thermosphere and lower exosphere) and sonar technology widely utilized in marine and scientific tourism. Therefore, it may be reasonable to propose the term "tourismocene" to describe the epoch characterized by the predominant effects of mass contemporary tourism on the environment, particularly since 1970s, as tourism increasingly transforms the face the Earth and the global environment.

The term 'natural environment' is broader than the geographical environment, except where it refers to nature exclusively on the Earth's surface. The natural environment or living environment can refer to any natural area in space: on the Moon, Jupiter, Mars, etc., or on Earth (natural geographical environment). "Nature is something that exists and arises by itself" (Glavač, 2001, p. 14, own transl. – L.Ž.), and thus complex natural processes on Earth shape its natural environment. In contrast, human influences (urbanization, industrialization, and touristification) have significantly changed the Earth's natural environment, forming a recognizable human environment. Natural and human environments together constitute the geographical environment or geographical space. "Nature is the organization of the environment without significant human influence, or rather, in terms of cultural heritage and the level of urbanization, everything that has not been significantly changed by humans" (Glavač, 2001, p. 14, own transl. – L.Ž.). The natural-geographical environment consists of all natural landscapes and non-ecumene as primeval nature or uninhabited areas with an unchanged topographic physiognomy, e.g. Antarctica, the African Sahara, or the strict nature reserve – the European rain-forest "Perućica" within the Sutjeska National Park (Bosnia and Herzegovina). Spahić (1999) defines the natural environment on Earth as the totality of natural-geographical processes and phenomena, which are characterized by self-regulation without human intervention, and the natural environment often refers to uninhabited parts of the Earth. Accordingly, the natural-geographical environment represents the foundation of the geographical environment and the supporting system of natural features, processes and phenomena on Earth.

The geographical environment is the entire geographical space on Earth in which life primarily takes place, i.e. all natural, cultural and industrial landscapes, or a mixed combination of elements of natural and human geographical environments. It is important to understand that now there is practically no fully preserved original natural environment on Earth, because through atmospheric and hydro-spheric

global circulations, human influences are transferred to remote areas of non-ecumenical or 'untouched' nature (e.g. to the geographical Poles). Mittelstrass (2015) reminds us that initially nature was only the part of the world not shaped by humans, while now, on a large scale, it has become part of the human world thanks to science and technology. The human influence on Earth has global proportions both because of natural circulations and because of the possibility of visiting the most remote locations, e.g. even harsh Antarctica has not remained completely untouched nature (e.g. resource exploitation and scientific tourism), while certain tourism activities take place beyond the borders of our planet (e.g. space tourism as "traveling outside the Earth's atmosphere and staying in space, i.e. in spacecraft" (Žunić et al., 2023, p. 111, own transl. – L.Ž.). Environmental impacts are recognized and differentiated on a spatial scale:

- planetary effects – global warming, ozone depletion, and global contamination caused by the application of technology throughout the world (regulated by the Montreal Protocol to protect the Ozone Layer and the Kyoto Protocol to mitigate climate change);
- regional effects – the impact of fishing and hunting, and previously mining (prohibited by the *Protocol on Environmental Protection to the Antarctic Treaty* [1991] and *Convention on International Trade in Endangered Species of Wild Fauna and Flora* [1973] to regulate international trade in endangered species, and also the *Birds and Habitats Directives* [2015]) to protect all naturally occurring wild bird species in the EU and their critical habitats) (CITES Secretariat, n.d.; European Commission, Directorate-General for Environment and Ecosystems, 2015; Secretariat of the Antarctic Treaty, n.d.); and
- local effects – visits by scientists and tourists (hunting, killing or human disturbing animal species, soil contamination, waste and faeces reaching the sea).

The geographical environment can be understood as the most complex system on Earth, consisting of interrelated geo-components (the lowest units in the geographical 'envelope'):

- natural: air, water, rocks and natural terrain configuration – relief, soil, flora and fauna; humans (as a natural given); and
- human: *Homo sapiens* – humans as rational, social and hardworking beings, economic facilities (e.g. industrial-technological complexes, business or tourism zones, etc.), residential (settlements) and communal facilities (e.g. traffic, water supply, sewage and energy networks, etc.), war zones, protected areas (accounting for possible negative impacts of hazardous human activities such as war, e.g., two of Ukraine's UNESCO biosphere reserves – Askania-Nova and the Chornomorsk (Black Sea) dealing with wartime challenges as they are currently

under occupation and their fauna is under threat of destruction), and anthropogenic topography (the result of different human activities, e.g., mining or even hazardous war activities).

Geo-components by their composition can be:

- non-living (air, water, rocks; material architectural heritage);
 - living (plants, animals; people); and
 - living-non-living (soil; loose, seemingly 'dead' matter in which life actively takes place, because numerous organisms live in the soil, and from which life arises: various plants, etc.).
- At a higher hierarchical level, geo-components are components of geospheres, because they participate in their formation and construction:
- atmosphere (air);
 - hydrosphere (water) and cryosphere (ice);
 - lithosphere (rocks) and pedosphere (soil);
 - biosphere (plant and animal world, humans);
 - anthroposphere and techno-sphere (humans and their material productive-constructive, constructional and technological activities).

All these spheres together and in their interactive causality constitute geosystems (natural systems on Earth; natural geographical environment) and geo-complexes (geographical environment together with production-territorial complexes and human modifying influence on both the physiognomy of space and the altered functioning regime of certain natural components). "At the highest scale, this complex integrative system of geospheres is designated as the geographical 'envelope', extending from the Mohorovičić discontinuity to the ozonosphere" (Žunić, 2022, p. 15, own transl. – L.Ž.). Nevertheless, Žunić (2022) also indicated that contemporary human endeavors, including the launching of satellites into the thermosphere and exosphere, have shifted the conventional boundary of the geographical 'envelope'.

Therefore, the 'geographical environment' is all inhabited space on Earth (humans and/or other living beings including the lowest forms of life such as bacterial spores), with different characteristics from place to place, which differ in their etymology, physiognomy and functionality. Geographical space is fundamentally natural (natural geographical environment), while the human environment is more narrowly defined because it represents a certain part of geographical space that more specifically refers to an environment significantly modified by human activities. In this regard, Mittelstrass (2015) reminded us of the traditional distinction between the concepts of creative nature (*Natura naturans*) and created nature (*Natura naturata*), including the existence of an organic, physical, and social cosmos. From the aspect of tourism geography, it is particularly interesting that, according to the 95% of the world's population is concentrated on

only 10% of the Earth's territory, while depending on the time needed for travel, people occupy 90% of the world, leaving only 10% for wilderness (Nelson, 2008).

Urbanized areas are typical examples of human environments, which represent natural environments significantly modified by human impact in physiognomic and functional terms. Such environments usually dominantly contain human and technogenical features, which have significantly changed its appearance, as well as the mode of operation of natural components, e.g. land use zones: residential, industrial, commercial, communal. Installed elements can mainly be seen as 'heavy' content, which burdens the natural foundation and interferes with normal processes of work and self-regulation, that can be limited or undergone complete change, for example, some urban watercourses are 'dead rivers' because they are so highly contaminated that they no longer have their own capacity for self-regulation due to enormous amounts of hazardous waste (sewage, industrial, etc.), and lack the vital functions of a healthy and clean river.

4.2. EQUIVALENCE OR CORRELATION OF THE CONCEPTS OF 'GEOGRAPHICAL ENVIRONMENT' AND 'ENVIRONMENT'

The term environment in the literature mainly refers to the natural world on Earth, which is threatened by expansive and intensive human processes (urbanization, industrialization, and tourism). Accordingly, the environment is traditionally studied from a biological aspect (impacts of human activities on the living world of flora and fauna) or from a more comprehensive geographical aspect (impacts of human activities on nature and society), while the environment is also a mandatory subject of study in spatial planning, including tourism planning and tourism operations in space (required environmental impact assessment studies).

"Environment is the physical surroundings or conditions in which a person or other organism lives, develops, and exists" (Oxford University Press, n.d.c), or "the natural world or physical surroundings in general, either as a whole or within a particular geographical area, esp. as affected by human activity" (Oxford University Press, n.d.d). "The environment is a set of physical, chemical and biotic factors in which an organism or ecosystem lives" (Defrančeski, 2021, p. 14). Glavač (2001) elaborated environment as the global ecosystem or the Earth's ecosphere interwoven with living beings, in which the atmosphere, lithosphere, hydrosphere, pedosphere and biosphere are its constituent parts interconnected and acting together.

Therefore, the equation of the terms 'geographical' and 'environment' is generally sustainable in the context of the previous statements, especially if the environment

refers to a geographical area. However, the term 'environment' can also refer to a non-geographical environment in the context of describing the entire universe or some extraterrestrial bodies, for example, Hiesinger and Jaumann (2014) stated that important components of the lunar environment are neutral gases, plasma and ejected dust particles formed by the interaction of the Moon's surface with the space environment. Thus, in this case the environment is not synonymous with the geographical environment, since the Moon is not the subject of study in geography, but in astronomy (which goes beyond the traditional boundary of the geographical 'envelope').

The term 'environment' in the literature has resulted in several forms: environment, environs, surroundings, living environment, geographical environment, natural environment and ambience, based primarily on the environment as nature with all the changes and features that are the result of human life and activities, equates with the terms 'human environment', 'geographical environment' and 'living environment'. However, depending on the spatial hierarchy and the subject of study, the environment can also be understood very narrowly: e.g. the environment of houseplants, taking into account the pot with soil, access to light and the domestic air; the school environment as the school building with its green areas, or the class environment as the non/ pleasant atmosphere in the class; the personal medical environment as the human internal organism; residential environment as buildings with their residents and their quality of life (accounting security and good neighbor relationships); the urban environment as a modern city with a higher life standard, etc. Therefore, the term 'environment' is not exclusively geographical and is applied in different contexts across numerous academic disciplines and in different spheres of life and activity.

Since the environment on Earth is determined by the boundaries of the geographical 'envelope' within which life actively develops, with the note that its modern boundaries have been significantly shifted due to the penetration of human influence into the upper layers of the atmosphere and the exosphere, Earth is designated as a 'global ecosystem' or 'ecosphere' (the subject of research in the 'global' or 'planetary ecology'). Glavač (2001) described the Earth as an ideal planet for life and a common and fatefully connected abode of humans, animals, plants, fungi and protists. The 'ecosphere' is the surface of the Earth, interwoven with living beings, in which the atmosphere, lithosphere, hydrosphere, pedosphere and biosphere are its constituent parts interconnected and acting together in the sense of a global (planetary) ecosystem. According to NASA Scientific Visualization Studio (2018), Earth represents a complex interrelated system (atmospheric composition, solar radiation, water and carbon cycles,

ecosystems, human contribution and resources, land-use and land-cover change, climate variability and change) as geographical integrity that comprises diverse processes and systems that interact with one another in complex ways.

An ecosystem is the basic organizational unit of nature, in which living beings and their non-living environment are spatially and temporally integrated by the flow of energy and the circulation of matter, and which possesses its own information content, the ability to self-organize, self-renew and self-preserve. It is the unity of a living community (biocenosis) and its non-living environment (ecotope) with distinctive and thereby recognizable structural and functional characteristics (Glavač, 2001, p. 15, own transl. – L.Ž.).

An ecosystem is a biological community of interacting organisms and their physical (natural) environment (Oxford University Pres, n.d.b). All ecosystems and all biomes on Earth form the biosphere or global ecosystem consisting of biotic (living) and abiotic (non-living) factors.

As the structure of the geographical 'envelope' is made up of geo-components, geospheres, geosystems and geo-complexes, the following participate in the structure of the global ecosystem, from the lowest to the highest:

- biotope/ ecotope/ habitat or the environment of living beings (e.g., forest is the habitat of bear);
- biocenosis or community of life (e.g. in the forest, besides bears, wolves, deer, various species of birds and other living creatures live there too);
- bio-geocenosis or ecosystem as the interrelation of plants and animals and non-living components simultaneously, where each organism has its own specific role (e.g. a spruce ecosystem with related living (other beings) and non-living components (climate, water, soil, etc.);
- biomes or grouped ecosystems with similar climate and communities (e.g. the biome of dark coniferous forests in Bosnia and Herzegovina within which two ecosystems are differentiated: 'East Bosnian spruce' and 'mountain pine', or the taiga biome all evergreen coniferous forests on Earth);
- biosphere or global ecosystem (e.g. all ecosystems or all terrestrial biomes together: aquatic; rainforests, savannas, deserts, steppes, Mediterranean scrub, forests, tundra; ice sheet).

The global ecosystem comprises the interactions of living (plants, animals, humans) and non-living (climatic, edaphic, etc.) components of the environment, which again leads us to understand the concept of the geographical or living environment as a complex system composed of living, non-living and living-non-living geo-components, which are interrelated with their surroundings.

Therefore, from a geographical standpoint, the 'environment' refers to the integrity of both natural and human elements of geographical space that are causally and interactively connected and form a complex system on Earth that operates in accordance with natural laws that are influenced and modified to some degree by human activity. The geographical environment is a complex system on Earth (geographical 'envelope') consisting of interconnected natural and anthropogenic geo-components (living, non-living, living-non-living), which represent components of the geospheres (atmosphere; hydrosphere and cryosphere; lithosphere and pedosphere; biosphere; anthroposphere with techno-sphere), and together they form geo-complexes on Earth. The geographical environment includes the natural geographical environment (nature) and social geographical (human) environment (society). The natural and human environments are a continuum of the (geographical) environment, with features that vary from one point to another (places) on Earth, and because man is constantly in interaction with his environment and various human activities (work, production, travel, etc.) significantly modify the initial landscape, we can conclude that 'geographical environment' and 'environment' are synonyms. According to Spahić (1999), the geographical environment is the mutual effect of human and natural processes, in the environment of which life takes place, so the term 'geographical environment' is more appropriate than 'living environment', because the geographical environment complexly reflects the state of interaction between humans and their natural environment.

4.3. DIMENSIONS OF THE TOURISM ENVIRONMENT IN CORRELATION WITH THE GEOGRAPHICAL AND LIVING ENVIRONMENTS: SPATIAL INTEGRITY

Numerous authors have dealt with the definition of tourism, but one of the often cited definitions is from Hunziker and Krapf: "Tourism is a sum of relationships and phenomena derived from the trip and stay of non-residents, insofar as a stay does not lead to permanent residence and is not connected to any permanent or temporary gains activity" (1942, as cited in De Andreis & Carioni, 2019, p. 336). However, with the advent of mass tourism in the 1970s, the definition of tourism took on a much broader meaning, because the motives of travel are diverse and tourist trips (travel) are no longer exclusively for leisure (they can also be for work, etc.). According to the Eurostat (n.d.), tourism is a compression of activities related to travel and stay in a place outside the permanent residence for not more than one year for vacation, work or some other purpose. "In addition to a temporary stay outside the permanent

residence, tourism also includes all facilities created to serve the needs of tourists" (Mathieson & Wall, 1982), thus further emphasizing the mutual aspect of supply and demand. "Tourism is a set of phenomena and relationships that arise from the interaction of tourists, business providers, host authorities and local communities in the process of attracting and serving tourists and visitors" (McIntosh et al., 1995), while Tribe (1997) emphasizes that interactions take place in emissive and receptive areas. Cunha (2012) stated that Tribe's definition highlights the key dimensions or components of tourism: tourists, business, host community, host environment, host governments, and generating countries.

For tourists, tourism represents travel, recreation and vacation, while for people working in the tourism sector, tourism is a profession, intensive work and earnings (Petrič, 2003), and is an extremely complex, massive and heterogeneous phenomenon. The impacts of tourism are complex consequences on nature and society, which can be positive and negative, and they are mainly divided into three categories: socio-cultural, economic, environmental or (geo) ecological. Some of the good consequences (benefits) of tourism, or participation in tourism, are its contributions to the economy, employment, modernization, health, cultural and educational advancement, bringing people closer together and peacefully, which is why the WTO declares tourism as a 'passport of peace'. According to the Eurostat (n.d.), tourism is divided into: domestic – national (visits by residents within the country) and foreign – international (visits by non-residents), with foreign tourism being: incoming or receptive ('inbound') (visits to the country by non-residents) and outgoing or emissive ('outbound') (visits by residents of a country outside their own country). "Tourism refers to all activities of visitors of both categories: overnight tourists and day visitors" (United Nations, Department for Economic and Social Information and Policy Analysis, Statistical Division and World Tourism Organization, 1994, p. 5).

The first written trace of the word "tourist" ("tourifts") in English (a traveler for leisure) comes from the 18th century (William Cockin's *Ode to the Genius of the Lakes in the North of England*, 1780) or the 19th century (Victor Jacquemont's *Letters from India*, 1834), depending on the source, while the word "tourism" is first documented at the beginning of the 19th century (1811) and derives from the Greek *tórnos*: 'circle', 'circular itinerary' (as cited in Leiper, 1983), and is connected with the grand tours of English noblemen in France, Switzerland, Italy and Germany, as well as with the holding of knights' tournaments (likewise from the Greek *tórnos*: 'tournament'), and even religious pilgrimages (due to trips that involve returning to one's permanent residence).

Conversely, modern definitions characterize a tourist as an individual who travels to a particular location away from their regular residence for a duration of up to one year, motivated by diverse reasons such as business, leisure, health, education, or other personal objectives (Pagliara, 2019; UNWTO, n.d.; Žunić, 2022). This scope is much broader than the traditional perception of a tourist, who is seen as a traveler and visitor solely for the purpose of rest and entertainment, because it is clear today that the motives for visiting can be numerous and varied, even of economic interest. Pagliara et al. (2019) divides visitors into three categories:

1. 'Tourists' are visitors who stay away from home for one or more nights for any purpose (domestic or foreign tourists).
2. 'Day visitors', 'same-day visitors' or 'excursionists' are one-day tourists who spend min. three hours outside their permanent residences for general rest, recreation and social purposes. Many are local to the area.
3. 'Free day visitors' spend less than three hours away from their permanent residence for general rest, recreation or social benefit. Without counting (in public transport and tourism statistics values in UK), these short-term day visitors contribute directly to the local tourism economy and should also be formally recognized in destination management provisions. Most are also residents of the destination and local surrounding areas.

According to the defined dimensions of tourism, key components in the tourism system can be identified: tourists/ visitors, authorities, local community, entrepreneurs, geographical areas and their environment, as well as the channels of their connection and cooperation, tourism offer and tourism policies, considering that foreign overnight visits are the most important for sustainable tourism. The tourism system is the most complex category in which all cohesive elements have a purposeful interaction (Figure 1). In the literature (Attia et al., 2020; Leiper, 1983; Petrič, 2003) Leiper's tourism system is cited, which unites individual components into a common tourism environment: natural, sociological, technological, cultural, economic and political, providing the interrelated circulation between tourism generation and destination regions.

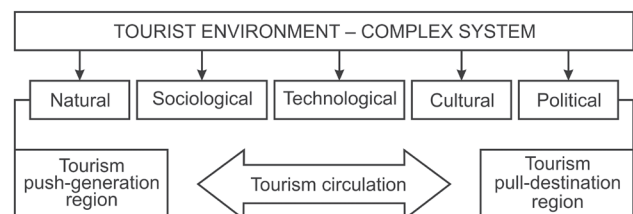


Figure 1. The tourism environment as complex interrelated tourism system

Source: author, based on Leiper's tourism system

The concept of the tourism system and the key dimensions – components of tourism, highlight tourism as a spatial phenomenon, because geographical space (generative, receptive or travel) represents the main foundation on which all tourism activities are realized (geography is considered a spatial or horological science, Greek *choros*: ‘space’). Generated regions represent emitting areas in which a greater intensity and tendency of the population to travel to other countries is observed, while destination regions are receptive areas that accept tourists to a greater extent. “A tourism destination is the final destination of a tourist trip, which, with its equipment, enables the reception and stay of tourists, and its borders are functionally determined by the influence of the tourism product” (Petrič, 2003, pp. 49–50, own transl. – L.Ž.).

According to Jensen et al.,

a tourism destination is a geographical area which contains landscape and cultural characteristics and which as in the position to offer a tourism product, which means a broad wave of facilities in transport – accommodation – food and at least one outstanding activity or experience (1993, as cited in Sharma, 2013, p. 21).

Leiper (1983) stated that a destination is a collection of interests, activities, equipment, infrastructure and attractions that create the identity of a tourism place, and the formational concept of a destination is similar in Anuar et al. (2012), which consists of elements of space (location and infrastructure), activities (cultural, entertainment and thematic) and products (services and catering).

Various interpretations of the term ‘tourism destination’ (Anuar et al., 2012; Leiper, 1983; Petrič, 2003; Sharma, 2013; UNWTO, 2025; Žunić, 2018, 2022) refer to the primary geographical area that provides a complex tourism product tailored to meet the diverse needs of travelers. This encompasses both natural and cultural attractions, along with the receptional tourism infrastructure. Furthermore, it has a spatial dimension, the significance and boundaries of which are greatly influenced by the volume of visitors and the demand and supply dynamics of tourism services.

Thus, the key elements of tourism as a complex integrative system: the area of a visit as a geographical area with recognized natural and social attributes – tourism attractions, a safe natural and social environment, tourism infrastructure and superstructure, tourism services, physical space as a reception area, tourism supply and demand, tourists as key tourism subjects, tour operators and other destination management actors, place identity or destination image, static and dynamic dimensions of the geographical area – developing tourism destinations, agglomeration of tourist agents and products, system of spatial elements, activities

and products, public or private character, destination promotion and overall destination and visit management. A tourism destination is a geographical area adapted to the needs of tourists with recognizable elements of a tourism arranged environment. A tourism destination is a specific geographical and living environment on Earth (with the recent emergence of space as an extraterrestrial tourism destination), which consists of natural and social geographical components that possess attributive properties attractive from the perspective of tourism – geographical tourism resources, potentials and attractions (e.g., mountain topography, alpine climate, clean sea, cultural diversity, urban prestige, etc.).

The geographical environment has different characteristics from place to place, depending on a multitude of geographical factors (natural and human), etymology, genesis, physiognomy, function and purpose, or depending on the degree of human utilization and ecotourism of a certain area. If the degree of tourist development of a geographical area has surpassed others and tourist visits dominate a large part of the territory, then we can differentiate tourism regions (e.g. Mediterranean tourism region). Tourism regions are differentiated landscapes, which have recognizable tourism-geographical characteristics (for example, the Mediterranean, the coastal strip is made up of a series of hotels and managed beaches, as well as other catering and tourism facilities, including numerous airports less than 100 km from the coast).

Tourism, as a complex economic activity, physiognomically and functionally significantly changes the environment of a certain geographical area due to the implementation of tourism infrastructure, tourism facilities and activities, which have certain effects on the quality of air, water, living beings, transport network, etc., i.e. on the quality of stay in a potential tourism destination, and ultimately on the standard of living of the local population. According to Włodarczyk (2014), the cognitive sphere of geographical and tourism space includes the geospheres and the anthroposphere, where the components of the geosphere represent tourism resources and attractions, while the components of the anthroposphere represent infrastructural and technological elements of tourism space, as well as a specific psychological and sociological environment of the tourism environment (Figure 2).

Tourism manifests itself and is realized in geographical space, uses geographical resources as tourism potential and attractions, and from the mutual interaction of tourism activities and operations and specific geographical features of the environment, complex processes develop that can have positive and negative impacts on individual components of the environment. The impacts of tourism on geographical space, which we often refer to as nature and society,

are divided into three categories: socio-cultural, economic, and environmental. Tourism transforms the world by encouraging globalization, urbanization and modernization geographical space, but it also preserves culture and history, and penetrates wilderness areas through visits to protected natural areas, etc. In this way, tourism can be understood as a complex geographical-spatial, tourismic, and environmental phenomenon.

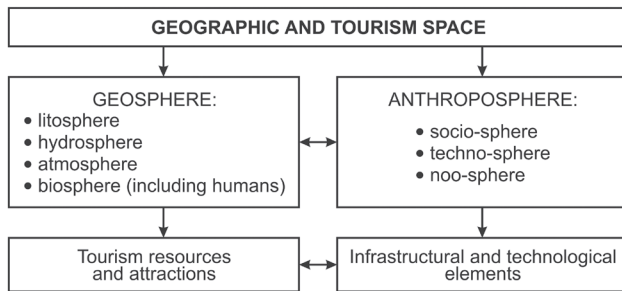


Figure 2. The cognitive sphere of geographical and tourism space
Source: author, based on Włodarczyk (2009)

Furthermore, Table 2 and Figure 3 demonstrates the integrity of the geographical, natural, living and tourism environment through the geographical concept through its constituent components: natural, human, conserved and chorological-taxonomic, which interact in the system of establishing geographical space.

The diagram (Figure 3) illustrates a complex system of geographical space that integrates geographical (both natural and human), tourism, and sustainable environments. Within this geographical continuum, destinations that are natural, cultural, or a combination of both emerge based on potential attributive components (natural and/or human). Protected natural and cultural heritage also serve as elements within the natural and anthropogenic environment, forming the foundation

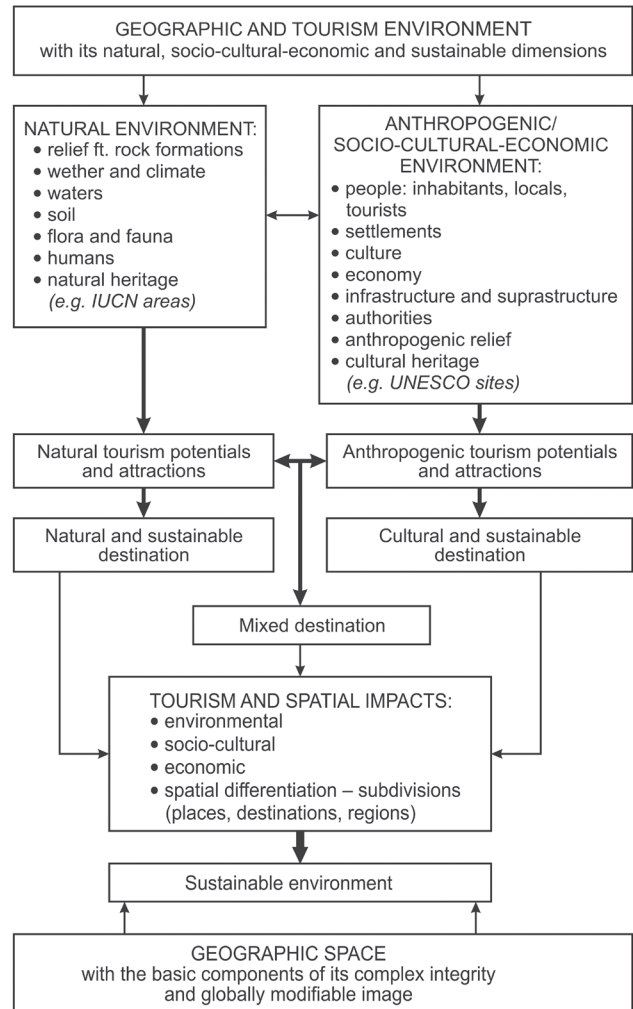


Figure 3. The concept of geographical and tourism integrity inside the geographical continuum
Source: author

for the development of sustainable destinations in accordance with the national framework of managed tourism. Nevertheless, not every natural destination

Table 2. Integrity of the geographical, natural, living and tourism environments

Components	Geographical space/ geographical environment	
	Geo(ecological) environment	Tourism environment
Natural	Relief features, geologic formations, climate, water, soil, flora and fauna, humans	Foundation, tourism potentials and attractions, humans as tourism initiators, representators and consumers <i>Natural environment</i>
Human	Inhabitants, locals, tourists, culture, settlement, economy, transportation and utilities, technology and administration, human relief	Tourism resources, tourism contributors, tourism consumers, tourism distributors, tourism and space modifiers, tourism as an economic and social driver of development and globalization <i>Socio-cultural and economic environment</i>
Preserved/ conserved	Natural and cultural heritage	Protected areas of WHS (IUCN or UNESCO) tourism sites <i>Sustainable environment</i>
Chorology-taxonomic	Geographical place, destination, region	Tourism site, tourism destination, tourism region

Source: author.

is required to be sustainable; for instance, isolated nature that does not belong to the IUCN network of protected areas may suffer from unmanaged tourism in the absence of observational monitoring and stringent legislative protection measures; this situation is similarly applicable to cultural destinations that experience mass visitation without adequate supervision. Given that the contemporary tourism framework necessitates oversight and management, the diagram underscores the significance of a sustainable environment, which consolidates the fundamental types of tourism destinations while incorporating elements that monitor the spatial impacts. As tourism development is characterized by global disparities, tourism locations, destinations, and regions emerge within the geographical space as the most intricate, spatially extensive and visually prominent areas of tourism.

The geo(ecological) environment represents a geographical holistic concept of the environment that connects elements of nature and society into a common system. Researchers (Archer, 1995; Rawding, 2013; Roy, 2014) highlight that geographical holism is evident in the spatial analysis and examination of the environment's interaction with humans, thus necessitating an integrated perspective on both natural-geographical and socio-geographical processes and phenomena in their interrelationship, and geography serves as the unique discipline that unifies physical and human geographical disciplines, facilitating a thorough comprehension of geographical space, including its global dimension. Taxonomy in space distinguishes place, destination and region, depending on the homogeneity and prevalence of geographical or tourism features. Geo(ecological) and tourism environment together form a continuum of geographical space.

5. CONCLUSIONS

The study's findings show that the geographical environment is a component of total space and time, and that is critical in the geographical interpretation of space to retain the prefix 'geographical' in order to indicate its spatial determinant on Earth, as it is a narrower term than total space, which includes the entire universe.

However, the fact that modern humanity has pushed the boundary of the geographical environment beyond the traditional understanding of the geographical 'envelope' due to connections formed outside the Earth's sphere via satellites and space travel, is also highlighted.

Furthermore, it was emphasized that the terms 'geographical environment' and 'environment' can be used interchangeably when discussing studies relating

to Earth's space, whether inhabited or uninhabited by humans, because all landscapes, natural (with flora and fauna) and human (with people and their creations), form a continuum of the geographical environment.

Similarly, the tourism environment is a component of the complex geographical environment, consisting of three layers: socio-cultural, economic and ecological (environment).

However, the scope of the term 'environment' (beyond the geographical subject of study) was also highlighted, as it may characterize the environments of celestial bodies other than the Earth (e.g. the Moon or Mars), as well as the inner state of the human organism.

The dimensions of tourism, geographical and the natural (living) environment are interrelated due to their structural organization and human exploitation, resulting in various components (natural and/or human) performing vulnerable, conservational or tourism-utilized elements of the geographical space. They have complicated cause-and-effect connections with one another, forming a complex geographical integrity and spatial continuum.

The results of the research imply new insights into the scope of contemporary geography and the subject of geographical study, thus paving the way for new interpretations of the geographical 'envelope', geographical space, and geographical environment, including its three-layer tourism environmental system.

Moreover, it is emphasized that the terms 'tourism environment' and 'environment' cannot be deemed sustainable without a necessary connection to spatial analysis, as these are fundamental aspects and essential components of the geographical environment, given that both natural and human-induced geographical attributes constitute the potential for tourism.

The findings pertaining to the three research questions are as follows:

1. The geographical notion of the environment signifies its inclusion within the entirety of geographical space and time, attributed to factors such as the evolving morphology of geographical landscapes, the human 'colonization' of the Earth through mass tourism, and the advent of innovative technologies that extend into all realms of the world (including space tourism). The term 'geographical' underscores the specific location of the environment, which pertains solely to Earth's domain rather than the extraterrestrial realm, thereby highlighting the essential role of geographers in the study of environmental issues.
2. The geographical and environmental contexts are largely interchangeable due to the anthropocentric perspective and the reality that humans coexist within Earth's space alongside other living entities (flora and fauna). This holds true even for uninhabited terrains, as primordial nature also plays a role in tourism activities (for instance, scientific explorations).

3. The tourism, living and geographical environments constitute a unified spatial entity representing a cohesive spatial system, as they are all integral parts of Earth's space, which comprises a variety of natural and human elements that are interrelated, both in terms of natural processes and various human endeavors, including tourism-related activities (such as movements, visits, and tourism infrastructure), which collectively contribute to the development of distinct tourism landscapes within the broader global context.

In summary of the earlier statements, it can be concluded that tourism, tourism spaces, or the tourism environment represent some of the most intricate global phenomena. These encompass all geographical areas utilized for tourism, which includes travel for any purpose to any location worldwide, even extravagant journeys to the farthest reaches of the Earth beyond conventional geographical boundaries. This consideration also takes into account the complex environmental processes that yield various outcomes, both positive and negative, stemming from tourist activities and their duration. The tourism environment is an ongoing component of a broad geographical integrity that is increasingly accessible.

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