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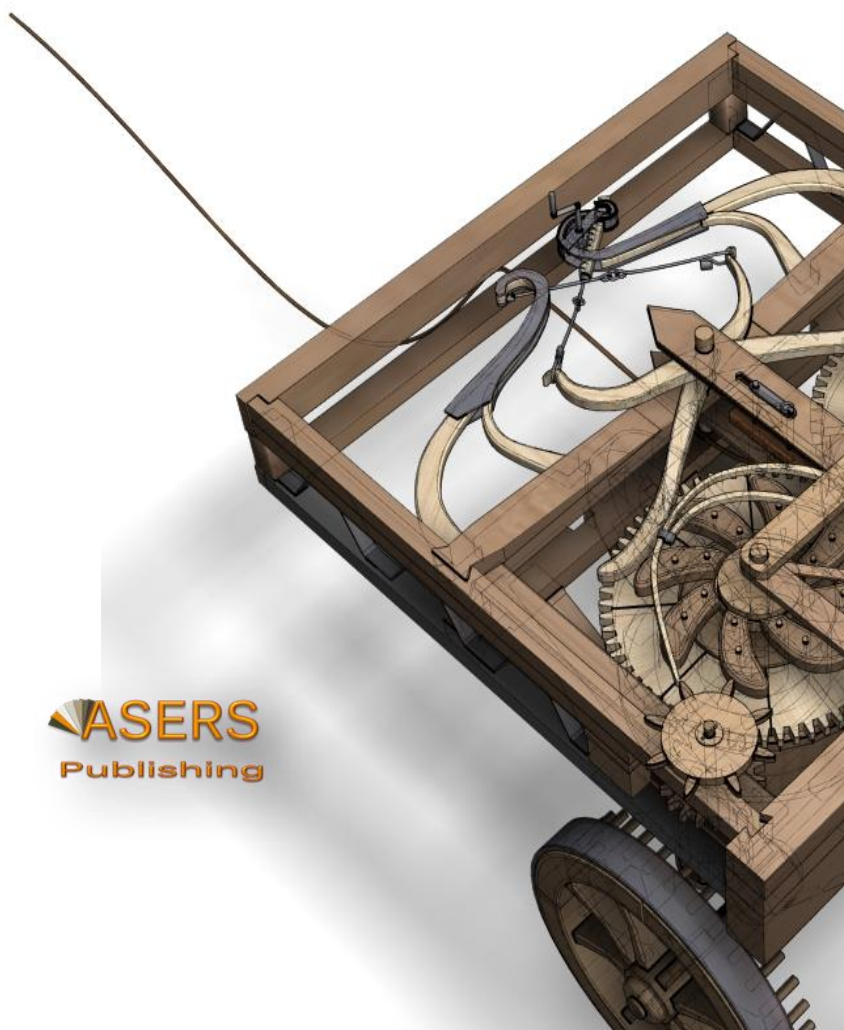


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Journal of Environmental Management and Tourism

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The journal takes an interdisciplinary approach and includes planning and policy aspects of international, national and regional tourism as well as specific management studies. Case studies are welcomed when the authors indicate the wider applications of their insights or techniques, emphasizing the global perspective of the problem they address.

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The Impact of Travellers' Motivation on Visit Intention: Applied on Ecolodges



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Abstract: Ecolodges represent a growing segment of sustainable hospitality, yet the motivational drivers that shape travellers' intention to visit them remain insufficiently understood. This study examines how push (internal) and pull (external) dimensions of travellers' motivation independently influence visit intention toward ecolodges, drawing on the push-pull motivation theory and the theory of planned behavior.

A mixed-methods design was employed. Qualitative data were gathered through semi-structured in-depth interviews with four experts from Environmental Quality International (EQI), a group of eco-friendly hotels in Egypt, as well as 38 potential travellers. Quantitative data were collected via online and offline self-administered questionnaires distributed through QR codes, yielding a sample of 228 respondents. Data were analysed using SPSS for descriptive statistics and SmartPLS 3 for structural equation modelling.

Travellers' motivation significantly influences ecolodge visit intention. Importantly, push and pull motivation emerged as distinct constructs with independent effects on visit intention, rather than operating as a unified motivational force. Both dimensions were found to be significant predictors of the intention to visit ecolodges, advancing prior literature that has treated push and pull factors as a consolidated motivational construct.

This study provides empirical evidence that push and pull motivations represent separate pathways influencing ecolodge visitation decisions. The findings deepen scholarly understanding of ecotourism consumer behaviour and offer actionable insights for sustainable hospitality practitioners seeking to develop targeted marketing strategies aligned with travellers' distinct internal and external motivational drivers.

Keywords: travellers' motivation; visit intention; ecolodges; push motivation; pull motivation.

JEL Classification: L83; M31; Q56.

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Introduction

Tourism is one of the most important businesses that the whole world is taking it seriously since 1973 in developing and planning sustainable tourism by putting into consideration the overall safeguarding the welfare of local communities (Mathieson & Wall, 1982, Su *et al.*, 2020; Nguyen *et al.*, 2021; Streimikiene *et al.*, 2021; Ramaano, 2026). As a result, it has grown significantly in the tourism sector over time, with its main goals to raise travellers' awareness about protecting natural elements as well as being environmentally consciousness (Grosbois & Fennell, 2020; Shasha *et al.* 2020).

Ecolodges are considered part of sustainable tourism that are quite different than regular accommodations as ecolodges allow guests to connect with the natural world. Ecolodge is a natural based room designed with fully environmentally manner that is relying on natural energy flows, eliminating wastes and balancing the human needs and natural capacity (Mehta, 2007; Whitburn *et al.* 2020; Ahmed & Hassan, 2020; Taher *et al.*, 2026).

These types of accommodations are being promoted in different countries so that to be a unique experience for tourists to go through, yet it needs more awareness, thus, there are theories used to predict travellers' visiting behavior such as the theory of planned behavior and theory of motivation to track travellers' motives and visiting intention (Yarimoglu & Gunay, 2020; Wang *et al.* 2022).

The importance of this paper is to understand the motivation factors which are internal and external factors (push and pull motivation) that have significant impact on travellers' behavior (Yarimoglu & Gunay, 2020; Jameel *et al.*, 2025), so that to be able to increase the intention to experiment the ecolodges and be aware to the importance of the ecotourism since environment sustainability is related to: goal 6 which is related to clean water and sanitation, goal 7 that is related to affordability and cleanliness of the energy, goal 12 that is discussing the sustainability of consumption and production, goal 13 which is taking urgent actions reduce climate changes, goal 14 that is sustainably using the marine resources for sustainable development, and finally goal 15 that is stating the importance of the life of the land which is using, protecting and promoting for sustainable ecosystem, all the above goals are included in the United Nations Sustainable development goals (SDG's) 2030 that are seeking green and blue economy (Arora & Mishra, 2019; Velepini, 2025).

The research aim is to discuss the dimensions that measure the travellers' motivation which are push and pull motivation and how they are affecting the visiting intention supported by the theory of motivation and the theory of planned behavior.

This study seeks to answer the following research question:

Q1. Does travellers' motivation affect visit intention?

Q1 (a) Does push motivation affect visit intention?

Q1 (b) Does pull motivation affect visit intention?

By exploring these questions, the research aims to contribute to a deeper understanding of contemporary travellers' motivation and their visiting intentions, offering insights for both eco-friendly hotels which called ecolodges and traditional hotels in the accommodation industry.

1. Literature Review

1.1 Travellers' Motivation

Motivation is usually explained as force originating from a need not yet satisfied, this motivation is a major factor of traveller's behaviour and the motivation will be satisfied by visiting and experiencing an attractive destination (Dean & Suhartanto, 2019; Junaedi & Harjanto, 2020).

It is essential in businesses to identify these factors and understand them well in order to design a good marketing strategy that is suitable for the needs and wants of the traveler, also studying these factors help in identifying the traveler decision making process as this will provide a tailor-made service for the tourist (Biswas & Gofur, 2025; Osei, 2022).

Several authors agreed that travellers' motivation is a crucial factor in the decision-making process, and it is answering the question "why do people travel" (Santoso, 2019; Pektas, 2022; Mihai *et al.*, 2023). By answering and understanding why do people travel and visit certain place, it will be beneficial to better understand their choices and behavior hence it will result is increasing the travellers' enjoyment and improving destination attractiveness, therefore, a lot of theories had been emerged to study the tourist behavior and understand their travel motivation in order to give them what they really desire, these factors are categorized by internal (push) and external (pull) forces that influence the traveler behavior and decision (Dann, 1977; Crompton, 1979; Baniya & Paudel, 2016; Junaedi & Harjanto, 2020; He & Luo, 2020; Jalali *et al.*, 2026).

Dean & Suhartanto (2019); Luvsandavaajav & Narantuya (2021) stated that the motivation is explained by Maslow's theory of need which is consist of five basic needs; Physiological, safety, love and belonging, self-esteem and self-actualization which is also the difference between the psychological and biological desire, need and want of human being and existing situations.

There are wide range of theories that discussed the tourism motivation such as Maslow's hierarchy of needs, Adam's equity theory of motivation, McClelland's achievement motivation theory and more theories but the push-pull motivation theory is the widely used theory to study the travellers' motivation towards destination (Wong *et al.*, 2018; Dean & Suhartanto, 2019; He & Luo, 2020; Rosli *et al.*, 2022).

1.2 Push Motivation

Push motivation factors are related to cognitive process and socio-psychological motivations that drive people to travel (Dann, 1977; Wen & Huang, 2019; Jalali *et al.*, 2026). This internal motivation is viewed as being influenced by intrinsic needs will be satisfied there so the travellers' act on their psychological and physiological stimuli to reach a specified goal such as relaxation and refreshment from the stress of the work and life, escape from the daily basis routine that leads to boredom, knowledge of new places and culture, self-prestige, excitement to a new experience as well as discovery and adventure (Dean & Suhartanto, 2019; Arissaputra & Sentika, 2022).

Novelty is considered one of the most paramount dimensions of motivation that is defined as intrinsic feeling of a new experience in new place with different culture and lifestyles (Lue *et al.*, 2018). Refreshment and relaxation are another dimension that are basic factors of travelling as they are essential to refresh and have break from everyday routine, work and stress as people travel and move away from any boredom and people could reevaluate their life again (Lue *et al.*, 2018).

Moreover, people would have the motive to travel to escape from the feeling of depressed and need to depart from their environment. It is also defined as getting away and leaving unpleasant, frustration situation or even just escape and having quality time with yourself away from people, hence, researchers agreed that escape is a dimension to measure the travellers' motivation (Lue *et al.*, 2018). Finally, the anomie which each means when travellers travel for having freedom from social norms and find a meaning to their life away from the social pressure (Aytaç *et al.*, 2024; Crompton, 2025).

Enjoyment: Enjoyment is a word defined as experience that is perceiving enjoyment from the beneficial aspect, as it is not just an experience it is how the person enjoys the experience and do something pleasurable. Thus, researchers agreed that enjoyment is considered one of the dimensions of the travellers' internal motivation measurement (Luo *et al.*, 2020).

Escape: Escape is another important dimension for the travellers' motivation measurement that is defined as when people feel depressed from their daily life that is surrounded by different problems, it is when people feel they need to get away from their job, appointments, social meeting, the daily problem since travelling is always a perfect choice for freedom and enjoying (Luo *et al.*, 2020).

Anomie: Anomie is associated with Emile Durkheim's work in sociology; anomie is referred to lack of commitment to shared values, standards and rules needed to control behaviour. As it has connection between the customer motivation and visit intention; it involves breakdown of social order. Anomie is connected to push motivation because they lead to lack of clear social norms which have a huge impact on individual motivation to travel as travellers experiencing anomie may seek travel as a way to escape or find a meaning to their life which is typically considered a strong push motivation (Aytaç *et al.*, 2024; Karwacki *et al.*, 2025).

Relaxation: Relaxation is another paramount need and motivation for travelling as it is considered basic dimension to measure the travellers' motivation. Researchers agreed that relaxation is temporary break from daily activities, it is simply doing interesting activities and finding calmness and tranquillity during the trip as it involves seeking activities that promote resting, stress reduction and a sense of calmness as it is always focus attention on slowing down and disconnecting from daily routine (Said & Maryono, 2018).

Novelty: Novelty is discussed over the researchers as a significant dimension and measurement of internal motivation. This word is describing a psychological feeling and wanting to try a new thing. Researchers confirmed that travellers usually choose destinations with different cultures to explore new things (Luo *et al.*, 2020).

Adventure: It is a socio-cultural motive to looking for new things and curiosity including seeing different cultures as it gives attraction to discover new culture views. As adventure is the act of embarking a journey that involves exploring novelty and excitement and it involves getting out of our comfort zone and engaging with risky physical activities and physical challenges as travelling lies in seeking unique and memorable experiences and create lasting memories (Said & Maryono, 2018; Arcila Perdomo *et al.*, 2026).

1.3 Pull Motivation

On the other hand, pull motivation is the opposite of push motivation since pull motivation factors are extrinsic and situational motivations. Tourism practitioners pay attention to pull factors as a crucial aspect for visitors such as destination attractiveness whether the landscape appeal and the nature or the hospitality of the place and feeling welcomed, historical places, beaches, different cultures, safety, ease of travel, service performance and it also could be the budget of the place (Luvsandavaajav & Naranutaya, 2021).

It is challenging to allocate incentive power to "pull" variables because these characteristics are frequently converted into push-based, sociopsychological motives. As a result, various people may associate a particular

quality or behaviours with a variety of motivations; for some, these elements may operate as push factors and for others, as pull factors.

According to Baniya & Paudel (2016) stated that pull motivation actually shape the traveller experience and boost their desire to experience a particular destination as it reinforces push factors, hence, it is figured that both push and pull motivation are relating to each other and both create the experience (Dean & Suhartanto, 2019).

1.4 Visit Intention

In a competitive tourism industry, meeting visitor satisfaction can be sufficient for a company's short-term survival, but it won't be good enough for sustained growth and success (Dean & Suhartanto, 2019). For this reason, businesses need to transfer visitors' satisfaction into intention to visit or revisit and loyalty. Luo & Ye (2020); Chi & Phuong (2021) described the visit intention as a combination of tourists' interest and the possibility of visiting a destination in the near future which reflect the expectation of tourists' behaviour and their willingness to visit a certain place and their ability to have an action. According to previous research, they used the "planned behaviour theory" (Chi & Phuong, 2021).

This theory discussed two aspects: first, the attitude of the tourists which is considered the most important key element of behaviour as it is the degree of a person to have a favourable or unfavourable evaluation of the behaviour; as it is a considerable or a large review of a human behaviour, therefore when a person has a positive attitude towards something their behaviour enhances which will affect their intention towards it and second, the perceived behavioural control of tourists, or how they make rational decisions by weighing the benefits and costs of a particular destination and determining that what they receive should outweigh what they sacrifice; as a result, both the attitude and the perceived value of tourists will boost the likelihood that they will intent to visit (Abdullah & Lui, 2018; Sujood *et al.*, 2021; Say *et al.*, 2025).

1.5 Theory Development

1.5.1 Theory of Motivation

The word "motive" is defined by both Oxford and Cambridge dictionaries as the reason for doing something, while the two dictionaries defined the word "motivation" differently as Cambridge defines motivation as the enthusiasm for doing an action, on the other hand, Oxford defines motivation as the reason why people do something or the reason of their behaviours (Acquah *et al.*, 2021).

From the two meanings, researchers defined motivation in two different concepts, firstly, the simple definition which is any internal feeling, energy that direct a behaviour and force an action, secondly, the other definition is not including the behaviour only, yet psychology included many dimensions including cognition, self-concept, emotions, surrounding environment, learning, and social interactions, hence, the second concept or definition is more complex as it is including both internal and external factors (Reeve, 2016; Baumeister, 2016).

There are more theories that are discussed by Alderfer, McClelland and Herzberg, and most of these theories discuss the internal factors that motivate a person and these theories have clear relationship between them (Acquah *et al.*, 2021). However, researchers continue to explore all the theories in order to gain deeper understanding of what drives a person's behaviour (Acquah *et al.*, 2021).

According to tourism, push and pull theory is always used as this theory discusses both possible internal and external factors that motivate the travellers to travel. Push factors are the intrinsic factors that push people to travel while the pull factors are extrinsic and situational factors that motivate a person to travel. Thus, in this research, Push-pull theory is used to measure how both internal and external factors affect travellers' intention to visit a specific destination (Wen & Huang, 2019; Katsikari *et al.*, 2020).

1.5.2 Theory of Planned Behavior

According to the theory of planned behaviour (TPB), travellers' behavioural intention is determined by attitude, subjective norms, and perceived behaviour control. The degree to which a consumer feels positively or negatively about green products is referred to as their attitude. When anticipating the behavioural intentions of consumers, attitude is a critical factor. Research indicates that patrons' attitudes towards green hotels have a beneficial impact on their inclination to visit them (Eid & Shehawy, 2022).

Theory of planned behaviour is basically for understanding the complex human behaviour as it explains the human behaviour and perceive control as they are variables added to the TPB as a new variable that affect the intention and behaviour of consumer, Beliefs about behaviours are what give rise to one's attitudes towards such behaviours, which in turn reveal one's positive or negative judgements of those behaviours (Ajzen, 1991; Yarimoglu & Gunay, 2020; Trivedi *et al.*, 2026).

Similarly, intention was defined as the propensity of customers to select eco- friendly hotels. The theory of planned behaviour is utilized to examine the link between mindset and behaviour in the context of tourist activities. This theory posits that behavioural intention is a reliable predictor of actual behaviour (Santoso, 2019).

It is important to note that while TPB incorporates three core constructs - attitude, subjective norms, and perceived behavioural control - as predictors of behavioural intention, the present study does not empirically test all three. Rather, TPB is employed as a theoretical foundation to frame visit intention as a proximal behavioural outcome, consistent with partial applications of TPB in ecotourism and green hotel research (Yarimoglu & Gunay, 2020; Sujood *et al.*, 2021). The study's empirical focus is on motivational antecedents (push and pull factors) as predictors of that intention, rather than on the full TPB structural model. Future research is encouraged to incorporate the complete set of TPB constructs within the ecolodge context to offer a more comprehensive explanatory framework.

1.6 Relationship between Travellers' Motivation and Visit Intention

Travellers' motivation and visit intention is a complex and interconnected relationship and impact as Junaedi & Harjanto (2020) stated that travellers' motivation plays a paramount role in creating the intention to visit a certain destination. Travellers' motivation has the ability to shape their visit intention as it determines the purpose and the expectations they have for the place they are visiting.

The impact of travellers' motivation on visit intention is essential to be studied as it allows them to work on the motives and target those motives to increase the visitation. For the importance of motivation on increasing the intention, several research confirm the impact of motivation on visit intention (Hosany *et al.*, 2020; Chi & Phuong, 2021). However, some studies failed to support the impact of travellers' motivation on visit intention (Hosany *et al.*, 2020). Due to the conflict between the findings, researchers measure travel motivation using post visit surveys (Hosany *et al.*, 2020; Li *et al.*, 2026).

1.7 Relationship between Push Motivation and Visit Intention

There are several research and studies that confirm the impact of the push motivation on visit intention as they mainly analysed that people travel because they are pushed by their intrinsic motives and want to fulfil it (Joseph & Khanin, 2019; Katsikari *et al.*, 2020).

Using the internal stimuli to affect traveller choices is a crucial in marketing strategies as it is proven that travellers have a huge need for vacation due to the fast life pace as they need to engage with hospitality in order to relieve the stress, boredom and loneliness occur due to life responsibilities (Pesonen *et al.* 2011; Kim & Jang, 2017; Zhao & Kucukusta, 2026).

Various research has discussed different dimensions for motivation hence; each researcher have developed their own list. However, they all concurred that the internal motives are crucial aspects in increasing the intention for travellers to visit a certain destination (Joseph & Khanin, 2019).

1.8 Relationship between Pull Motivation and Visit Intention

Visit intention had been affected widely by the external factors, therefore, the pull marketing factors should be considered wisely when motivating travellers to behave in a specific manner and control their decision by enhancing the result of destination quality and attributes like accessibility, affordability, and attractiveness (Ho *et al.*, 2022).

These days, because by the rise of the internet, people are more likely to visit places, and their intention increases due to the fact that they can read reviews, see how attractive these places are, and follow influencers. In conclusion, when these goals are attained, visitors' intentions grow and their motivation to return to the location becomes stronger, hence, in tourism industry, they always try to improve their attractiveness of the place whether improving the service quality, redesign the place, make their prices competitive and other external factors that may affect travellers' intention (Abdullah & Lui, 2018; Wen & Huang, 2019; Katsikari *et al.*, 2020; Pesonen *et al.* 2011).

From the previous part we can hypothesize the following hypotheses:

H1: There is an impact of travellers' motivation on visit intention.

H1 (a): There is an impact of push motivation on visit intention.

H1 (b): There is an impact of pull motivation on visit intention.

All in all, tourism is one of the major businesses around the world, hence, it becomes a crucial issue to raise awareness all over the countries about being green and eco-friendly and this will be achieved by putting sustainable goals to be followed. One of the most changes that has been recognised recently is building ecolodges that is totally eco-friendly.

Due to the presence of the social media platforms and the bloggers, these types of hotels became trendy and there is a high intention from people to visit these hotels specially that these hotels are built in very attractive places, according to Egypt, there are ecolodges in Siwa which is one of the most fascinating places in Egypt as well as in Fayoum and many other places.

Due to the importance of these hotels in achieving the 2030 sustainable vision, it is important to study the motivation that affect the intention to visit these places and to measure the effectiveness of the travellers' motivation on their visit intention by using the theory of motivation and the theory of planned behaviour that is predicting the behaviour of consumers as it is used to link between the mindset and behaviour of tourist.

The motivation is separated into two dimensions which is also known as push-pull motivation. Push motivation is considered internal motivation such as doing something new, being excited, relaxing from the everyday routine, and any internal motive and it is how the travellers search for hotels that meet their particular criteria as a result of these considerations. On the other hand, the pull motivation is external motivation such as the attractiveness of the place, accessibility, affordability, and the inexpensiveness.

These aspects combine to produce a compelling value offer for the hotel, which in turn attracts travellers and sets it apart from competitors. According to previous articles, both motivations are paramount in increasing the visit intention and there is a strong impact of the motivation on the visit intention thus, hotels exploit both motivations while putting their marketing strategies to fit the preferences which eventually results in increasing travellers' satisfaction that leads to enhancing their intention to visit them or revisit and become a loyal.

2. Exploratory Research

It is a type of research methodology that is conducted when a problem is relatively unexplored, its purpose is to gain insights, generate ideas and gather preliminary information to understand the topic to formulate more specific research (Dash, 2019).

Exploratory research allows researchers to generate insights and ideas by exploring a topic or problem that has limited knowledge about a topic in addition to helping with identifying research questions, depth of understanding because it can provide deeper understanding of the research subject and can be cost and time efficient compared to other large scale intensive studies (Dimagli, 2020).

2.1 Data Collection Methods Used

Qualitative research methods like in-depth interviews provide in-depth knowledge about a topic. Open-ended questions are asked in one-on-one interviews to examine the participants' thoughts, experiences, viewpoints, and opinions (Gupta, 2024; Oranga & Matere, 2023).

In-depth interviews are a method which allow researchers to engage in a structures conversation with one or more participant to gather information, feedback and insights on a specific research question (Jain, 2021). Researchers conducted an in-depth interview with the customers and experts working in environmental quality international (EQI) which is a group of eco-friendly hotels in order to gain more insights into the phenomena studied and to better understand the research problem and to highlight whether negative or positive opinions.

2.2 Sample Characteristics

Researchers made a depth interview with 4 experts; Myriam Neamat-Allah who is working as projects' operations' coordinator in which ensuring that all the departments are running smoothly to ensure the project's success, Giulia Quaroni who is the hospitality coordinator in which plan the programs, approve restaurant menu, rooms presentation and managing visitors' travel and lodging, Zahraa Safwat who is the marketing manager in which manage the marketing campaign of their hotels and Rita Abdel-Messih who is a junior architect in which help in designing the lodges write the building plans and presentation of the materials, all are working in environmental quality international (EQI) which is a group of eco-friendly hotels with different price range; Adrere Amellal, Kenooz Shali Village Lodge and Albabenshal.

Researchers conducted a depth interview with people who are already interested in traveling and exploring new culture and places in their vacations as people who were asked are workaholics or studying still undergraduates, thus, they exploit their vacation traveling to have relaxing time away from the daily routine or daily problems. Researchers asked 18 males and 20 females to be a total of 38 people who are upper than 20 years old, they were within the range of 20 years to 60 years, some of them were undergraduates in level 4 in university and the others hold bachelor's degree or a master's degree.

2.3 Main Findings

2.3.1 Findings of Interview with Consumers

Some people did not know the terminology of Eco-lodge, yet they were aware of what ecofriendly hotels and the concept itself, others did not know the concept itself but after explaining to them the idea of ecolodges they respond according to their imagination to the place. People mentioned that they are willing to try such a new experience, would like to visit a place that is totally different to the traditional hotels they used to visit.

They also claimed that it is not easily to reach as this kind of lodges are not popular in Egypt and there are limited destinations that maintain ecolodges, however, they agreed that visiting such a place is worth it. Most people agreed that the novelty of the place is what could motivate them to visit ecolodge as well as the destination of the ecolodge as they perceive the destination of the ecolodge is a part of the experience and could not be separated from it.

Moreover, they agreed that they would choose ecolodge over basic hotels because of the uniqueness of the experience that is fully living in a healthy environment exploring the beauty of nature that could not be found in basic hotels. Additionally, they agreed that the landscape and the atmosphere of the place would affect the intention to visit ecolodge as they are seeking places that is known by its beauty and different nature that gives them the feeling of relaxation and calm mood.

Also, they found ecolodges is a perfect place to relax and escape from the daily tasks and daily pressure and problems. They also added that they would like to have kind of activities that is related to the culture of the place itself so for example, fishing in Fayoum and hiking in Siwa with other relaxing activities rather than adventurous activities because these types of lodges are made for relaxation.

All people agreed that they are open to interact with different cultures and learn their way of living as they perceive it as a part of the learning process, they also agreed that they would like to eat and wear similar as the place and from this, they agreed that this experience would give them the freedom from their traditions in the way they eat and wear. Overall, they agreed that these lodges should be more promoted and it is kind of experience that adds to their enjoyment and mental health, however, they are expecting the prices to be not that high, or they would not go to it.

2.3.2 Findings of Interview with Experts

Experts emphasised that ecolodges offer a distinctly differentiated experience compared to conventional hotels, grounded in environmental sustainability, cultural authenticity, and personalised hospitality.

Experts mentioned that Eco lodges are highly sustainable and what they offer to consumers is a totally different experience than any other touristic experience as their competitive edge is offering an unforgettable experience to their customers as their focus is being highly healthy to the environment and that helps in offering peace to visitors and helps them get in touch with nature more; from the foods offered there to experiencing a different culture to getting in touch with nature and being present in the moment with no distractions. as they focus that everything is local starting of the food they offer in the hotel as it is important to honor the culture, workers that actually work in the Eco lodge are definitely Siwi as a visitor would feel the authenticity of the place and nature, in addition the hotel guarantee sustainability as the lodge is 100% built from materials healthy to the environment.

They mentioned that external factors known as pull factors motivate visitors to visit as Siwa Eco lodges offer a new whole experience and a niche one that no way would be found anywhere in any other hotel. The fact that what they offer to visitors makes the destination so attractive, the experience they offer to visitors starting of their entrance to the hotel and welcoming guests visitors observe that Eco lodges hospitality is different than other hotels as it is a service you don't get to see anywhere as from the moment they enter the lodge they feel safe as there are workers everywhere to support and help them if they need anything and Siwi people are so welcoming so visitors feel safe in addition to the hotel is widely aware of their guests and what they need for example if there is a family with children, the children are placed beside their parents and for elder people their rooms is in the first floors so guests are treated differently.

These findings align with the push-pull framework, whereby the remote tranquillity and simplicity of ecolodges address travellers' intrinsic needs for escape and relaxation (Said & Maryono, 2018), while the destination's natural beauty, cultural distinctiveness, and service quality serve as powerful pull motivators (Dean & Suhartanto, 2019).

While for the internal factors also known as push motivation highly have a huge impact on customers intention to visit the lodge as the vibe of the Eco lodge helps them to relax as there is not much to do in the lodge as the quietness of the lodge helps visitors enjoy themselves in the place and enjoy the nature, the slow pace and the simplicity as the idea of the lodge that it is remote so at night it is peaceful so the ambiance itself helps people to

relax and enjoy the minimal offerings; the service offered by the lodge is totally different than the basic hotels is that they support the relaxation and making visitors stress free as they tackled a huge aspect in travelling that bring a huge hassle to visitors which is being anxious all the time from finances in the vacation as everything in the lodge is already paid in advance so no need for this kind of stress and they are only concentrated on relaxing; lodges are a perfect getaway for visitors who like to escape the daily routine as from the reasons we get anxious by routine is we get over stimulated from the city as in lodges at night you only have candles and the idea of it is that you get attached to nature.

Visitors would enjoy the refreshment and relaxation in the lodge in addition to the adventurous activities they would enjoy as most of the activities there is related to nature from horseback riding, safari, visiting temples, mountain climbing, visiting the Salt Lake so visitors would enjoy both activities. Visitors would definitely have a whole new experience as the uniqueness of the experience is that you get out of your comfort zone and break down the norm from the usual culture. Inside the lodge you feel free to do whatever you want and visitors would feel so welcomed not only in the lodge but also in the city downtown as people there are so welcoming and friendly.

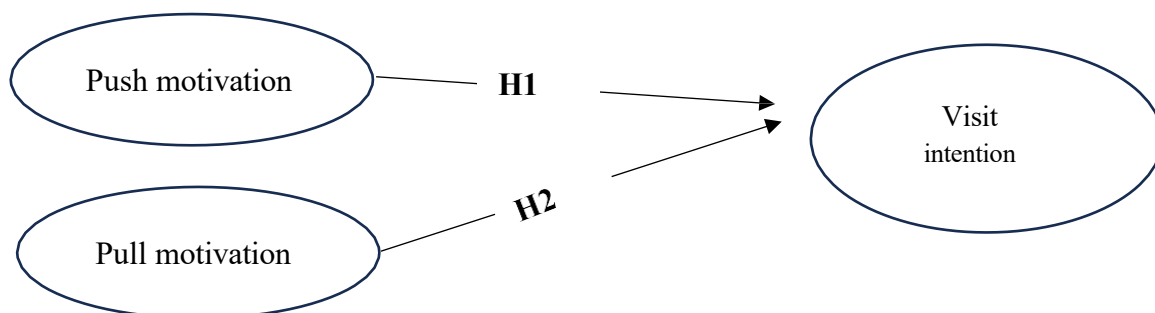
Therefore, customers and experts both agreed that the novelty of the experience and the place is most factor that motivate them to try such a place also, they agreed that this kind of destination create a relaxation mood for the guests that make them break their daily routine and get away from their problems. They also claimed that guests are more likely to try a new culture of the place such as Siwa and they like to try activities related to the place such as fishing in Fayoum and hiking in Siwa.

According to the external factors, they agreed that the place of the lodges is part of the experience and could not be separated as they visit these lodges to have a relaxing ambiance through the lodges and the beauty of the place. Experts are trying to offer variety of prices and special prices for Egyptians to encourage them to change their perception toward these lodges.

3. Proposed Conceptual Model

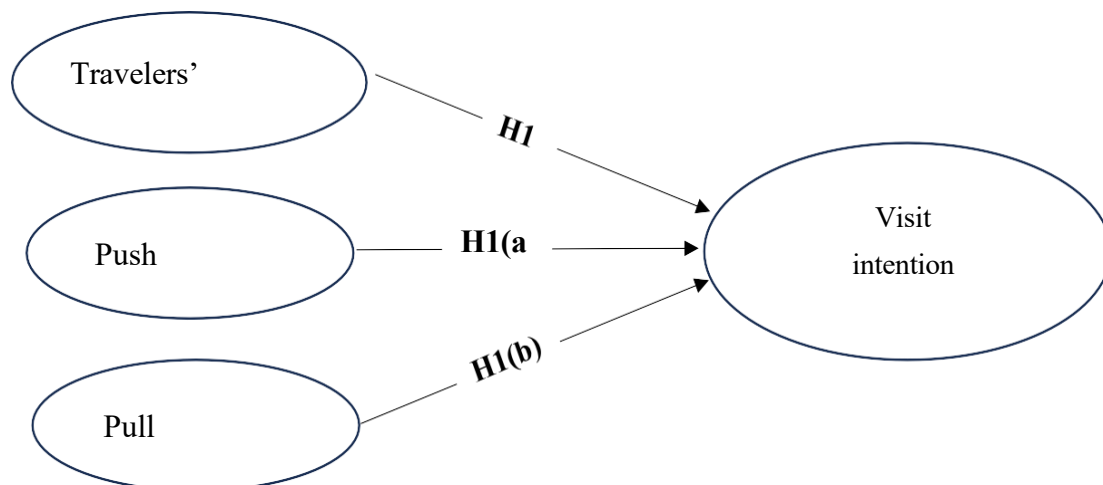
The following figures (1) & (2) demonstrate the first and second levels of the conceptual model as follows:

Figure 1. First level Conceptual Model



Source: Authors' own research.

Figure 2. Second Level Conceptual Model



Source: Authors' own research.

4. Methodology

Research methodology is a study that discusses how the research is conducted and carried out (Garba, 2023). This chapter will discuss the methodology used in the research in detail. However, both qualitative and quantitative approaches are used in order to collect accurate data. The qualitative approach is usually used to understand the concept better by gathering in-depth information through conducting in-depth interviews and focus group, on the other hand, the quantitative approach is expressed in numbers in order to support the theory and it is conducted in surveys, experiments and observations (Creswell *et al.*, 2014; Garba, 2023; Littlewood & Gardner, 2026).

4.1 Research Context

The research is measuring the travellers' motivation on visit intention and the research is applied on the ecolodges as these types of hotels are recently widely spread and it is paramount to raise awareness of ecolodges since they are ecofriendly and sustainable, which is the state's goals to go green and protect the environment. The ecolodges shouldn't be only trendy hotels, it should be part of how the states and people care about the environment and the planet.

The researchers chose the ecolodges as there is lack of awareness, the well-known ecolodges are those expensive ones which made people perceive that all ecolodges are expensive, however, ecolodges are similar to regular hotels, there are variety of prices, hence, awareness is important to make people prefer going to ecolodges rather than regular hotels through raising awareness about what are ecolodges and how these lodges can bring the same values and benefits of regular hotels even more.

4.2 Research Design

The researchers used conclusive descriptive research as it is type in which provide description of the who, what, where, and how not why, hence, the conclusive descriptive research is used for statistical calculations, however, it can't determine the cause of the relationship and affection between the variables (Garba, 2023). The variables used in this research are the push motivation (internal factors) and Pull motivation (external factors) and how they affect the visit intention. The design will describe how the travellers' motivation has an impact on the visit's intention.

4.3 Research Approaches

In the research, qualitative is used through literature review in the previous research that support the theory and it was through exploratory study which was an in-depth interview with open ended and semi-structured questions with the experts working in environmental quality international (EQI) which is a group of ecofriendly hotels, the interview supports the studied phenomena.

Researchers used quantitative approach in order to gain accurate data and how the motivation factors affect the visit intention, hence, researchers used the online and offline questionnaires, and the QR code in order to collect the largest responds possible as more responds will give more accurate information.

4.4 Population and Sampling Techniques

The population of the research are those who are aware of the ecolodges in Egypt whether they visited or just aware of it, the population was easy to find as people recently are aware with the idea of the eco-friendly hotels and it is popular recently in Egypt and even in worldwide, people get to know the ecolodges from the social media influencers and bloggers that visit those places which make people have the intention to visit those type of hotels. The techniques used in the research is non probability convenient sampling which is the most common type as it doesn't need to select participants based on specific criteria, instead, researchers select randomly participants who are aware of the ecolodges. The samples are selected from anywhere and anytime and they are all possibilities to be part of the research, thus, it is also called the availability sampling (Garba, 2023).

4.5 Sample Size

Sample size is a part of the chosen population for the research; there is a sample size formula which is formulated by Cochran (1963). The sample size for the research is 228. Of the 228 questionnaires collected, 7 were excluded due to incomplete responses or straight-lining patterns, yielding 221 valid responses used in the SPSS-based descriptive and frequency analyses (Tables 1- 4). For the PLS-SEM analysis conducted in SmartPLS 3, a further 14 cases were removed through listwise deletion due to missing values on indicator variables, resulting in a final analytical sample of 207 respondents (Table 12). This sequential data screening procedure is consistent with recommended practices in PLS-SEM research (Hair *et al.*, 2019).

4.6 Pilot Testing

Pilot testing is conducted to test the questionnaire with small number of the participants before it is distributed in order to check any defaults, in this research, researcher conducted a pilot testing among 20 participants and there was only one change in the statements. The statement “I would like to go to ecolodges to relax physically” was cancelled as this question is quite similar to the statement “I would like to go to the ecolodges to reduce the tension”.

4.7 Data Collection Process

The questionnaire was distributed offline and online. Researchers distributed the questionnaire offline in MSA university through QR code and online through links in social media platforms; Facebook, Instagram and WhatsApp to friends and family. see Supplementary File 1 for the full questionnaire.

4.8 Data Analysis Techniques

The data analysis techniques used in the research were; SPSS 2 for descriptive statistics and SMRT pls 3 for inferential statistics.

5. Results

5.1 Hypotheses Testing and Analysis

Frequency Table for Demographics

Table 1. Frequency table for demographics in the sample

Variable	Categories	Frequency	Percentage
Gender	Female	143	64.7%
	Male	78	35.3%
Age	18-25	143	64.7%
	25-35	48	21.7%
	35-45	14	6.3%
	45 +	16	7.2%
Education	Bachelor or equivalent	160	72.4%
	High school or equivalent	38	17.2%
	Postgraduate or equivalent	23	10.4%
Occupation	Business owner	26	11.8%
	Private sector	26	11.8%
	Public sector	32	14.5%
	Retired	5	2.3%
	Unemployed	132	59.7%

Source: SPSS Output.

As shown in Table 1 the majority of the sample are females (143). It is noticeable that 64.7% of the sample were aged between 18 and 25 (106). Regarding the educational background, the majority had a bachelor's degree (160) representing around 72.4% of the sample, followed by those who finished their high school (38) then those who had postgraduate studies (23). Around 59.7% of the sample are unemployed (132), followed by 14.5% of the sample are in the public sector (32), followed by 11.8% each of business owners and private sector, each are (26), then 2.3% of the sample are retired (5).

Frequency Table for Internal Factors in the Sample

Table 2. Frequency table for Internal Factors in the sample

Variables	Measure	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
I would like to go to ecolodges to get away from everyday routine and crowd	Count	8	12	26	63	112	4.17	1.069
	Percent	3.6%	5.4%	11.8%	28.5%	50.7%		
I would like to go to ecolodges to reduce the tension.	Count	8	15	20	72	106	4.14	1.073
	Percent	3.6%	6.8%	9%	32.6%	48%		

Ec lodges bring unique experience.	Count	8	14	24	63	112	4.16	1.083
	Percent	3.6%	6.3%	10.9%	28.5%	50.7%		
I would enjoy the entertainment activities in the ecolodges as I try new things such as Bedouin nights.	Count	9	16	39	71	86	3.95	1.106
	Percent	4.1%	7.2%	17.6%	32.1%	38.9%		
Ec lodges atmosphere gives a calm vibe due to using candles and fire torch instead of electricity.	Count	10	18	28	74	91	3.99	1.130
	Percent	4.5%	8.1%	12.7%	33.5%	41.2%		

Source: SPSS Output.

According to Table 2, that is representative of push motivation, as the majority of the respondents strongly agree with the statements. However, the highest means was 4.17 which is the mean for statement number 1 and this indicates that the travellers would like to go to ecolodges to get away from everyday routine. Moreover, the standard deviation is low which indicates that the sample is representative and homogenous.

Frequency Table for External Factors in the Sample

Table 3. Frequency table for External Factors in the sample

Variables	Measure	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
I think that the staff in the ecolodges are Friendly	Count	13	14	64	81	49	3.63	1.078
	Percent	5.9%	6.3%	29%	36.7%	22.2%		
Ec lodges have beautiful landscapes like lakes/ rivers/ seas/mountains	Count	13	9	6	66	127	4.29	1.103
	Percent	5.9%	4.1%	2.7%	29.9%	57.5%		
I believe ecolodges are safe to stay at.	Count	14	28	73	64	42	3.42	1.124
	Percent	6.3%	12.7%	33%	29%	19%		
I think I can experience different culture in the ecolodges.	Count	13	12	21	98	77	3.97	1.093
	Percent	5.9%	5.4%	9.5%	44.3%	34.8%		
I think that there are available transportations that can help me reach the ecolodges easily	Count	21	31	65	62	42	3.91	1.075
	Percent	9.5%	14%	29.4%	28.1%	19%		

Source: SPSS Output.

According to Table 3 that is representative of pull motivation, as the majority of the respondents agree with the statements. However, the highest mean was 4.29 which is the mean for statement number 2 which indicates that the ecolodges have beautiful landscapes. Moreover, the standard deviation is low which indicates that the sample is representative and homogenous.

Frequency table for Visit Intention in the Sample

Table 4. Frequency table for Visit Intention in the sample

Variables	Measure	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
The affordability of the ecolodges' price would increase my intention to visit them	Count	9	11	43	81	77	3.33	1.208
	Percent	4.1%	5%	19.5%	36.7%	34.8%		

I would suggest the ecolodges to my friends and family.	Count	8	8	29	94	82	3.93	1.053
	Percent	3.6%	3.6%	13.1%	42.5%	37.1%		
I am willing to visit ecolodges in the future.	Count	9	5	24	80	103	4.06	0.987
	Percent	4.1%	2.3%	10.9%	36.2%	46.6%		
My intention of visiting ecolodges is high.	Count	8	11	35	77	90	4.19	1.000
	Percent	3.6%	5%	15.8%	34.8%	40.7%		
When I am thinking about vacation, Ecolodges would come to mind immediately	Count	13	25	70	54	59	4.04	1.046
	Percent	5.9%	11.3%	31.7%	24.4%	26.7%		

Source: SPSS Output.

According to Table 4, that is representative of visit intention, as the majority of the respondents agree with the statements. However, the highest mean was 4.19 which is the mean for statement number 4 which indicates that travellers' have high intention to visit ecolodges. The second highest mean was 4.06 which is the mean for statement 3 which indicates that travellers are willing to visit ecolodges in the future, then the mean that comes after is 4.04 which is the mean for statement 5 which indicates that travellers would think about ecolodges when they think about vacation. Targeting females who value modesty and elegance Moreover, the standard deviation is low which indicates that the sample is representative and homogenous.

First Level Analysis

Reliability and Validity Analysis for the Statements

Table 5. Reliability and Validity analysis for the statements

	Items	Loadings	Outer VIF	CA	CR	AVE
Travel motivation	EF1	0.868	4.360	0.946	0.954	0.652
	EF2	0.754	2.708			
	EF3	0.855	3.902			
	EF4	0.851	3.721			
	EF5	0.660	2.407			
	EF6	0.803	2.849			
	IF1	0.801	3.142			
	IF2	0.819	3.840			
	IF3	0.838	3.618			
	IF4	0.803	5.541			
Visit Intention	IF5	0.812	5.154	0.904	0.929	0.725
	VI1	0.882	3.786			
	VI2	0.894	3.024			
	VI3	0.911	4.630			
	VI4	0.792	1.982			
	VI5	0.771	1.975			

Source: SPSS Output.

Upon evaluating the dependability of the dimensions, it was discovered that all measures of Cronbach's alpha exceeded 0.7 as indicated in Table 5 (Taber, 2018), indicating a high level of internal consistency. In contrast, all dimensions demonstrated a composite reliability above 0.7 and an average variance extracted above 0.5 (Sahoo, 2019), confirming their validity.

Fornell Larker Criterion for Discriminant Validity Analysis

Table 6. Fornell Larker Criterion for discriminant validity analysis

	Travel motivation	Visit Intention
Travel motivation	0.808	
Visit Intention	0.802	0.852

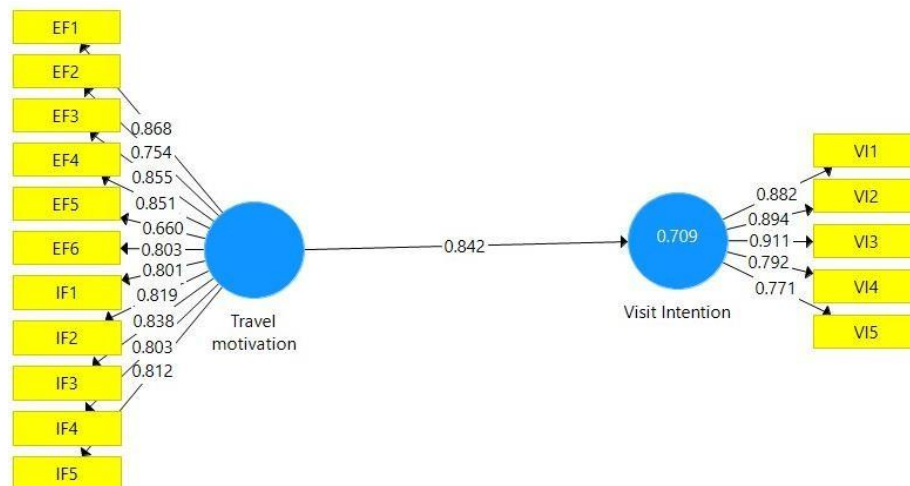
Source: SPSS Output.

Given that the Variance Inflation Factors (VIFs) are below ten, it can be inferred that multicollinearity does not pose a problem in the model (Shrestha, 2020). Furthermore, all item loadings surpassed 0.6, underscoring the significance of the statements (Hoque *et al.*, 2016).

For travel motivation, the square root of the AVE is 0.808, which is greater than its correlations with visit intention (0.802). For visit intention, the square root of the AVE is 0.852 which is greater than the correlation measure, therefore, based on table (6) the Fornell-Larcker criterion, your model demonstrates good discriminant validity.

Structural Equation Model of the Phenomenon

Figure 3. Structural Equation Model of the phenomenon SmartPLS 3 Output.



The model in Figure 3 shows the relationships between two latent variables: Travel motivation and visit intention. Each of these latent variables is measured by several observed variables (indicators), represented as sub-elements in the graph each had loading higher than 0.6.

Path Coefficients for the Phenomenon

Table 7. Path coefficients for the phenomenon

	Original Sample	Standard Deviation	T Statistics	P Values
Travel motivation -> Visit Intention	0.842	0.029	29.001	0.000

Source: SPSS Output.

Table 7 indicates that at 99% confidence level, travel motivation had positive significant impact on visit intention.

Model Evaluation Metrics

Table 8. Model evaluation metrics

	SSO	SSE	Q2	R Square	R Square Adjusted
Visit Intention	1105	545.568	0.506	0.709	0.708

SRMR: 0.080, d_ULS: 0.881, d_G: 0.571, Chi-Square: 725.260, NFI: 0.787

Source: SPSS Output.

Table 8 shows that the R Square for visit intention is 0.709, indicating that 70% of the variability in visit intention can be explained by the model. Q² is a measure of the model's predictive relevance. A Q² value greater than zero indicates the model has predictive relevance, while a value less than zero indicates it does not. The Q² value for visit intention is 0.506, indicating the model has predictive relevance for this construct (Pangesti *et al.*, 2016). SRMR is a goodness of fit measure. Values close to zero are generally considered good. The model has an SRMR of 0.080, which is considered good for the model (Taasobshirazi & Wang, 2016).

5.2 Second Level Analysis

To conduct second level analysis, first the travel motivation should be further investigating. It was believed to be divided into factors; therefore, exploratory factor analysis was applied on travel motivation.

Exploratory Factor Analysis

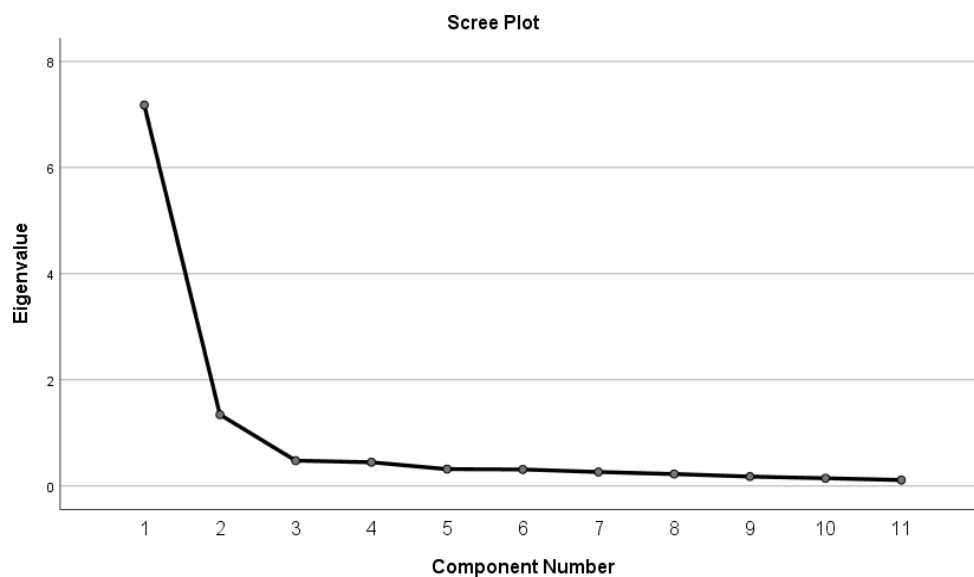
Table 9. Eigen Values cumulative percentages

Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings	
		% of Variance	Cumulative %	Total	% of Variance
1	7.178	65.257	65.257	7.178	65.257
2	1.344	12.221	77.478	1.344	12.221

Source: SPSS Output.

The screen plot Figure 4 accompanied with Table 9 shows that two factors is the optimal number of factors describing around 77.48% of variance. Regarding scree plot, the elbow is shown at three, which shows how two factors is optimal number.

Figure 4. Scree Plot for the Travel motivation SmartPLS 3 Output.



Observing the rotated component matrix using Varimax, it is noticed that statements were divided into two factors; namely the internal factors and external factors. The factors can be further explained using Table 10.

Table 10. Rotated Component Matrix using Varimax

Rotated Component Matrix		
	Component	
	1	2
I would like to go to ecolodges to get away from everyday routine and crowd.	0.883	0.247
I would like to go to ecolodges to reduce the tension.	0.902	0.214
Ecolodges bring unique experience.	0.840	0.303
I would enjoy the entertainment activities in the ecolodges as I try new things such as Bedouin nights.	0.731	0.442
Ecolodges atmosphere gives a calm vibe due to using candles and fire torch instead of electricity.	0.812	0.305
I think that the staff in the ecolodges are friendly.	0.369	0.778
Ecolodges have beautiful landscapes like lakes /rivers /seas /mountains.	0.644	0.686
I believe ecolodges are safe to stay at.	0.294	0.787
I think I can experience different cultures in the ecolodges.	0.466	0.753
I think I have the opportunity to try traditional local food in ecolodges.	0.475	0.739
I think that there is available transportation that can help me reach the ecolodges easily.	0.076	0.882

Source: SPSS Output.

Confirmatory Factor Analysis

Table 11. Reliability and Validity analysis for the statements

	Items	Loadings	Outer VIF	CA	CR	AVE
PULL Factors	EF1	0.848	3.133	0.923	0.940	0.724
	EF2	0.824	2.415			
	EF3	0.893	3.611			
	EF4	0.889	3.608			
	EF5	0.784	2.173			
	EF6	0.862	2.760			
PUSH Factors	IF1	0.882	3.016	0.936	0.951	0.797
	IF2	0.892	3.222			
	IF3	0.875	2.869			
	IF4	0.909	5.245			
	IF5	0.904	4.948			
Visit Intention	VI1	0.881	3.786	0.904	0.929	0.725
	VI2	0.893	3.024			
	VI3	0.911	4.630			
	VI4	0.791	1.982			
	VI5	0.773	1.975			

Source: SPSS Output.

Upon evaluating the dependability of the dimensions, it was discovered that all measures of Cronbach's alpha exceeded 0.7 as shown in Table 11 (Taber, 2018), indicating a high level of internal consistency. In contrast, all dimensions demonstrated a composite reliability above 0.7 and an average variance extracted above 0.5 (Sahoo, 2019), confirming their validity. Given that the Variance Inflation Factors (VIFs) are below ten, it can be inferred that multicollinearity does not pose a problem in the model (Shrestha, 2020). Furthermore, all item loadings surpassed 0.6, underscoring the significance of the statements (Hoque *et al.*, 2016).

Table 12. Fornell Larcker Criterion for discriminant validity analysis

	PULL Factors	PUSH Factors	Visit Intention
PULL Factors	0.851		
PUSH Factors	0.723	0.893	
Visit Intention	0.816	0.741	0.852

Source: Calculations based on sample of 207 respondents using SmartPLS

Table 12 shows that for pull factors, the square root of the AVE is 0.851, which is greater than its correlations with push factors (0.723) and visit intention (0.816). This indicates good discriminant validity for this construct. For the push factors, the square root of the AVE is 0.893, which is greater than the visit intention. This indicates good discriminant validity for this construct. Therefore, based on the Fornell-Larcker criterion, your model demonstrates good discriminant validity.

Structural Equation Modelling

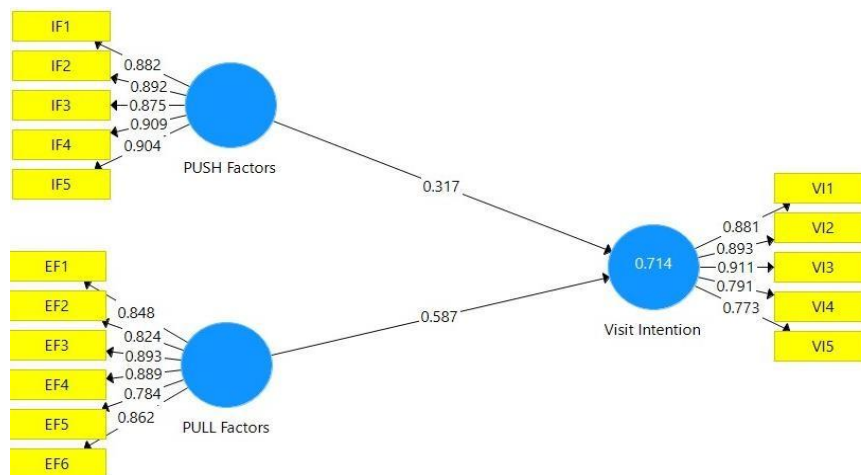
The model in Figure 5 shows the relationships between three latent variables: travel motivation. Each of these latent variables is measured by several observed variables (indicators), represented as sub-elements in the graph each had loading higher than 0.6.

Table 13. Path coefficients for the phenomenon

	Original Sample	Standard Deviation	T Statistics	P Values
PULL Factors -> Visit Intention	0.587	0.094	6.224	0.000
PUSH Factors -> Visit Intention	0.317	0.093	3.416	0.001

Source: SPSS Output.

Figure 5. Structural Equation Model of the phenomenon SmartPLS 3 Output.



At 99% confidence level, push and pull factors had positive significant impact on visit intention as shown in Table 13.

Model Evaluation

Table 14. Model evaluation metrics

	SSO	SSE	Q2	R Square	R Square Adjusted
Visit Intention	1105	542.842	0.509	0.714	0.711

SRMR: 0.069, d_ULS: 0.646, d_G: 0.372, Chi-Square: 493.190, NFI: 0.855

Source: SPSS Output.

Table 14 shows the R Square for visit intention is 0.714, indicating that 71.4% of the variability in visit intention can be explained by the model. Q^2 is a measure of the model's predictive relevance. A Q^2 value greater than zero indicates the model has predictive relevance, while a value less than zero indicates it does not. The Q^2 value for visit intention is 0.509, indicating the model has predictive relevance for this construct (Pangesti *et al.*, 2016). SRMR is a goodness of fit measure. Values close to zero are generally considered good. The model has an SRMR of 0.069, which is considered good for the model (Taasobshirazi & Wang, 2016).

6. Discussion

The table of discussions presented here provides a comprehensive overview of the findings and key insights derived from a study centred around ecolodges and how the traveller's motivation has an impact on the traveller's intention.

In this study, the theory of planned behaviours and the theory of motivation were employed in order to measure the effectiveness of motivation like push and pull motivation on travellers' intention to visit. By examining the impact of both push motivation (internal factors) and pull motivation (external factors) on travellers' intentions, the study aimed to shed light on the crucial role that these motivations play in shaping the decision-making process of prospective visitors.

Table 15 shows the discussion of the results as follows:

Table 15. Table of Discussion

Hypotheses	Definitions	Research Findings	Discussion of Findings
H1 (a) The impact of push motivation (internal) and visit intention.	Push motivation: Push motivation factors are related to cognitive process and socio-psychological motivations that drive people to travel (Wen & Huang, 2019).	Upon reviewing the statistics, it appeared to the researchers that the push motivations which are the internal factors have an impact on the visit intention of the travellers.	Ecolodges, which are environmentally friendly accommodations located in attractive places like Siwa and Fayoum, have been studied to understand how a traveler's motivation influences their intention to visit these places. The theory of planned behaviour and the theory of motivation were used to measure the effectiveness of motivation on intention. Travel motivation is force originating from a need not yet satisfied, this motivation is a major factor of

	Visit intention: the willingness or inclination of an individual to travel to a particular destination or visit a specific place (Verma & Chandra, 2018).		traveler's behaviour and the motivation will be satisfied by visiting and experiencing an attractive destination while the visit intention is the willingness or inclination of an individual to travel to a particular destination or visit a specific place as the travel motivation has a huge impact on visit intention and they have an interconnected impact as the traveler motivation create a paramount role in creating an intention to visit and motivation has the ability to shape the visit intention of the traveler as both of them are proven to have parallel change and they affect each other's. travel motivation is divided into Push motivation, which is internal, and pull motivation, which is external, were found to have a strong impact on traveler intention to visit. Push and pull motivation are treated as separate variables, as the results demonstrate that each exerts a distinct and statistically significant effect on visit intention, with pull motivation ($\beta = 0.587$, $p < 0.001$) emerging as the stronger predictor compared to push motivation ($\beta = 0.317$, $p = 0.001$), consistent with the prominence of destination attributes in ecolodge selection (Dean & Suhartanto, 2019). Therefore, hotels need to consider both types of motivation in their marketing strategies to increase intention and traveler satisfaction.
H1 (b) The impact of pull motivation (external) and visit intention.	Pull motivation: pull factors as a crucial aspect for visitors such as destination attractiveness whether the landscape appeal and the nature or the hospitality of the place and feeling welcomed (Luvsandavaajav & Narantuya, 2021).	Upon reviewing the statistics, it appeared to the researchers that the pull motivations which are the external factors have an impact on the visit intention of the travellers.	In the exploratory research it is found that some customer might not be aware of the term ecolodges or the idea of eco-friendly hotels but customers are interested in trying this as a new experience to connect with nature, travellers are drawn to novelty of the experience, unique location and the change to escape daily routine and connect with nature in addition to trying activities related to local culture is appealing to travellers as it found some challenged that people have limited awareness of ecolodges and their location in Egypt also process may be considered a barrier to Egyptian travellers but expert are trying to make variety of prices to fir the Egyptian tourists. Experts at EQI emphasize the unique immersion and environmentally friendly practices to create a peaceful and relaxing atmosphere as they believe their focus on sustainability and cultural authenticity differentiates them from traditional hotels. Finally, both travellers and experts see a potential of ecolodges in Egypt to succeed but raising awareness on ecolodges is a must and potentially offer more affordable options to attract wider customer base. Although previous research treated push and pull motivations as a single factor, further analysis that we applied revealed that they are distinct variables with different effects on travellers' intention. Pushing motivation alone has an effect on intention, while pull motivation alone has a separate effect on intention.

			In conclusion, the study found that push and pull motivations are separate variables that have different impacts on the intention to visit. Both types of motivation influence the traveler's intention.
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Source: Authors' own research.

Conclusions and Further Research

In conclusion, the study on ecolodges and traveler motivation revealed that both push and pull motivations play a crucial role in influencing the intention of travellers to visit these environmentally friendly accommodations in attractive locations such as Siwa and Fayoum. Push motivation, which represents internal factors, and pull motivation, which represents external factors, were found to strongly impact traveler intention.

The findings highlight the importance for hotels to consider both types of motivation in their marketing strategies to enhance intention and increase traveler satisfaction, in order to address perceptions and encourage a broader audience, experts are actively exploring diverse pricing options, including special rates for Egyptians.

Additionally, the study demonstrated that push and pull motivations should be treated as separate variables, as they exert distinct effects on visit intention. Empirically, pull motivation ($\beta = 0.587$) demonstrated a stronger influence than push motivation ($\beta = 0.317$), suggesting that external destination attributes play a more decisive role in ecolodge visit decisions in the Egyptian context. Push and pull motivations differ in origin: push motivation arises from internal psychological needs, while pull motivation stems from the perceived attractiveness of the destination and its attributes. Accordingly, marketing strategies should priorities the enhancement of destination characteristics - such as landscape, cultural authenticity, sustainability practices, and hospitality - while also addressing travellers' intrinsic needs for escape, novelty, and relaxation.

The findings proven that what motivated people to visit ecolodges is that it is an eco-friendly tourist destination and researchers divided the motivations into push and pull categories and it is found that both influence a person's decision to visit ecolodges. Travellers actively search for hotels that meet their specific criteria based on the push and pull motivation factors as these factors combine to create a compelling value proposition for ecolodges, attracting travellers and differentiating from competitors.

Previous studies show that push and pull motivation plays a crucial role in increasing the intention to visit to the traveler and there is a strong interrelation between the traveler motivation and visit intention as hotels have to leverage both motivations when deigning their marketing strategies to align to traveler preferences as this ultimately enhances traveler satisfaction leading to increase intention to visit or revisit ecolodges and foster loyalty among travellers.

Overall, the research emphasizes that push and pull motivations are distinct factors that have varying influences on the intention to visit ecolodges. It underscores the significance of considering both types of motivation to effectively attract and satisfy travellers.

Recommendation and Managerial Implications

- WTO and ministry of tourism all over the world could enhance the knowledge and create awareness of potential customers about the benefits of staying in ecolodges and raise awareness on the positive environmental impact on choosing eco-friendly accommodations and importance of supporting sustainable tourism.
- Ecolodges in all countries should have huge advertising campaigns and highlight USPs in order to raise awareness and increase visibility about ecolodges.
- Ecolodges could partnership with local communities to offer authentic cultural experiences for guests. This could be by offering cooking classes, traditional craft workshops or guided tours led by local experts.
- According to the findings, the aspect of transportation has the highest concern to travellers, hence, ecolodges should provide buses and transportation.
- According the two external factors, travellers agreed that ecolodges reduce the tension, hence, ecolodges could offer yoga and meditation sessions by professional instructors.
- Ecolodges could offer interactive workshops for visitors in order to participate in sustainable activities to connect with nature and give them lectures on local wildlife.

Suggestions for Further Research

- It is recommended for further research to measure the travellers' motivation as two separate variables; push and pull factors; each factor has an independent impact on the visit intention.

▪ It is recommended for further research to study the phenomena of the impact of travellers' motivation on visit intention applied on ecolodges in Egypt; MENA region and European countries as most of the previous research applied on African countries.

Research Limitations

▪ The research on ecolodges is limited, as ecolodges are included as part of studies discussing sustainability in general.

Declarations

Authors would also wish to draw attention to the fact that our research is minimal-risk, non-interventional, and absolutely compliant with international and national ethical standards. To make it explicit:

1. Nature of Study

▪ The study never dealt with patient records, clinical data, sensitive or personal information, or biological samples.

▪ It dealt only with Travelers and their motivation on visit intentions to ecolodges.

▪ Only studies that include patient data, images, or identifiable information should obtain the IRB approval according to the Declaration of Helsinki (2013). Our study does not fall in any of these categories.

2. Ethical Standards and Legal Frameworks

▪ Authors have adhered to the Declaration of Helsinki (World Medical Association, 1975; revised in 2013), Articles 22 and 26 on informed consent.

▪ Electronically informed consent was secured before filling out questionnaires and spoken consent before interviews.

3. Risk–Benefit Principle and Voluntary Participation

▪ The study posed no risk to the participants; it was anonymous, perception-based, and non-clinical.

▪ All volunteers were free to withdraw at any time without any penalty.

4. Consent and Confidentiality

▪ Informed consent was explained clearly and was acquired electronically (for questionnaires) and verbally (for interviews).

▪ No identifying data were gathered; all data were anonymized and stored securely.

5. Ethical Transparency in the Manuscript

▪ The manuscript clearly states that the study was conducted according to the Declaration of Helsinki (2013), which guaranteed voluntary participation, confidentiality, and ethical transparency.

For this reason, we do not need any ethics committee/IRB to approve the study.

Ethics Approval Declaration

▪ This research complies with the Declaration of Helsinki (2013) and Egyptian Research Ethics Committees and national ethical practices (e.g., Egyptian Network of Research Ethics Committees; Sleem *et al.*, 2010).

▪ The study involves no patient data or clinical interventions.

▪ Participation is voluntary and you may withdraw at any time without penalty.

▪ No personal identifiers will be collected. All responses will be anonymized and used solely for academic purposes.

Ethics approval and consent to participate: Informed consent was obtained from all participants prior to their participation in the study. Participants were informed of the voluntary nature of the study and that their responses would remain anonymous and confidential.

This study was conducted in accordance with the Declaration of Helsinki (2013). As the study involved an anonymous, voluntary, minimal-risk online survey of adult participants with no collection of sensitive personal data, clinical information, or biological samples, Formal ethics committee review was deemed unnecessary under Egyptian national research regulations, in accordance with the guidelines of the Research Ethics Committee at October University for Modern Sciences and Arts (MSA University), Giza, Egypt. Informed consent was obtained electronically from all questionnaire respondents via a consent statement at the beginning of the survey, and verbally from all interview participants prior to the interview.

Declaration of Competing Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-Assisted Technologies: The authors declare that they have not used

generative AI and AI-assisted technologies during the preparation of this work.

Authors' contributions: Y.T., S.M. and N.M. have scrutinized the literature and formulated the research gap. In addition, they wrote down the literature review. Y.T. and F.A. formulated the methodical framework of this study to achieve the desired objectives. They selected the sample size from the available population, and designed, together the data collection instrument and suggested the method of data analysis. F.A., Y.T., S.M. and N.M., have presented the discussion of results. The discussion of different data collected is presented in the results.

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Appendix**Questions for Experts and Customer****Experts' Questions**

- 1) What do you provide to make your guests enjoying their accommodation?
- 2) What are the services you provide to make people spend time away from the daily routine and problems?
- 3) How can you provide relaxation ambiance for your guests?
- 4) How can the hotel deliver the novelty of the ecolodges for the guests?
- 5) What kind of activities the hotel provides aside of their services to create adventurous experience?
- 6) How can the hotel provide a freedom experience and help them find a meaning to their life by breaking down traditional thoughts?
- 7) Does the attractiveness of the destination affect the travellers' motivation to visit the ecolodges? How?
- 8) How can the hospitality of the hotel create unique experience for the guests?
- 9) How can the guests interact with different culture of the place?
- 10) How can you put your prices to be competing with the other ecolodges?

Customers' Questions

- 1) Are you interested to discover new things? What do you know about ecolodges or your perception towards it?
- 2) Do you find it easy to reach ecolodges places in Egypt? How do you find them at which platforms?
- 3) What do you depend on or motivate you the most while deciding to visit ecolodge?
- 4) Why do you decide to visit ecolodges instead of basic hotels?
- 5) What triggers you the most when choosing ecolodges hotels? (nature, atmosphere, landscape)
- 6) Do you prefer to visit ecolodges when feeling stressed or pressured? Why?
- 7) What activities that encourage you to visit ecolodges? Or what activities you want to do in the ecolodges hotels?
- 8) At what point you would reach the highest levels of stress/daily routine to get pushed to try new activities and discover new destination?
- 9) How much important is it for you to discover new cultures? And how do you interact with it?
- 10) Do you have a specific budget in mind when it comes to eco-friendly hotels?
- 11) Do you specifically seek out or come upon eco-friendly hotels that provide a restful and peaceful environment for relaxation?
- 12) Do you find that visiting ecolodges enhance the travel experience and add to your enjoyment?
- 13) Does visiting ecolodges give you freedom from your traditions?

Institutional Transformation and Sustainable Tourism Governance in Mongolia. A Comparative Assessment of the Tourism Law of 2000 and Revised Tourism Law of 2023



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Abstract: This study conducts a systematic comparative analysis of Mongolia's Tourism Law of 2000 and Revised Tourism Law of 2023, examining the nature and extent of institutional transformation in the country's tourism governance framework over a critical two-decade period of post-socialist economic transition and sustainable development policy evolution.

A qualitative legal document analysis was conducted on the full texts of both Tourism Laws. An analytical framework comprising six governance dimensions - governance structure (GOV), sustainability integration (SUS), stakeholder participation (STK), competitiveness and development (COM), tourist protection and service quality (QUA), and institutional modernization (INS) - was applied systematically to identify, code, and interpret shifts in institutional design, regulatory provisions, and governance philosophy across the two legislative instruments.

The analysis reveals a substantial transition from a centralized, administratively oriented regulatory model toward a multi-level, sustainability-integrated, and stakeholder-inclusive governance framework. The Revised Tourism Law of 2023 introduces sustainable tourism development as its foundational principle, establishes a co-regulatory role for the national tourism association, recognizes community-based tourism as a distinct policy category, mandates liability and accident insurance, and expands tourist safety and digital governance provisions. Across fourteen governance indicators, the Revised Tourism Law of 2023 demonstrates consistent improvement in governance depth and international alignment.

This study provides the first systematic longitudinal comparison of Mongolia's tourism governance framework using an institutional theory lens. It demonstrates governance paradigm transformation in a transition economy context and offers a transferable analytical methodology applicable to comparable national cases.

The study is based on formal legal documents and does not assess implementation effectiveness or informal governance practices. Future research should examine institutional capacity, enforcement dynamics, and stakeholder perspectives on the revised framework.

Keywords: tourism governance; legal reform; sustainable tourism; Mongolia; institutional transformation; comparative policy analysis; transition economy.

JEL Classification: L83; Q01; Q56; K23; O18.

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Introduction

Tourism governance has become a critical dimension of national development policy, particularly in transition economies seeking to leverage natural and cultural endowments for sustainable economic growth (Hall, 2011; Sharpley, 2020). Legal and institutional frameworks play a central role in shaping tourism development by establishing the rules, responsibilities, and coordination mechanisms through which diverse public and private actors engage with the sector (UNWTO, 2019). Mongolia presents a compelling case: the country possesses exceptional natural landscapes, nomadic cultural heritage, and biodiversity resources that position it as a distinctive destination within the global tourism market.

Mongolia's first Tourism Law was enacted in 2000, providing the foundational legal framework for sector development during rapid economic and political transition. More than two decades later, a substantially revised Tourism Law was adopted in 2023. Together, these legislative instruments offer a unique window into the trajectory of tourism governance transformation in a post-socialist transition economy. Despite growing scholarly interest in Asian and Central Asian tourism policy (Sofield and Li, 2011; Chaisawat, 2006), Mongolia's governance evolution has received limited systematic academic attention, leaving a notable gap in the comparative tourism policy literature (Zagarkhorloo *et al.*, 2021).

This study addresses this gap through systematic comparative legal document analysis guided by the following research questions: (1) How has the governance structure and institutional design of Mongolia's tourism policy framework evolved between the Tourism Law of 2000 and Revised Tourism Law of 2023? (2) To what extent has sustainability been integrated into the tourism governance framework? (3) What changes in stakeholder participation, institutional coordination, and competitiveness orientation are evident in the revised legal framework?

1. Literature Review

Governance has emerged as a central concept in tourism studies over the past two decades, moving beyond earlier framings of tourism administration toward a more complex understanding of institutional arrangements and coordination mechanisms (Beaumont and Dredge, 2010; Bramwell and Lane, 2011). Hall (2011) defines tourism governance as the patterns of rule, authority, and coordination that shape tourism development, encompassing formal legal structures, policy instruments, and informal norms. A key distinction is between government - formal state institutions - and governance, which encompasses the broader set of actors, relationships, and processes through which collective decisions are made (Rhodes, 1996; Dredge and Jenkins 2007).

Institutional theory provides a complementary analytical lens. From a neo-institutional perspective, legal frameworks are key institutional pillars that structure the rules of the game for tourism actors, establishing incentives, constraints, and legitimate forms of organization (North, 1990; Scott, 2014). Legislative reform represents not merely a technical adjustment but a potential shift in the underlying institutional logics governing the sector.

The mainstreaming of sustainability into tourism governance has been one of the most significant international trends since the Rio Earth Summit of 1992 (Butler, 1999; Sharpley, 2020). Sustainable tourism governance involves integrating environmental, social, cultural, and economic objectives within policy and management frameworks, requiring institutional mechanisms capable of balancing development interests with conservation priorities (Bramwell and Lane 2011; Weaver 2011). In transition economy contexts, such governance has been particularly challenging to implement due to weak institutional capacity and the prioritization of short-term growth (Scott 2011; Spenceley 2008).

Comparative analysis of tourism laws has been employed to assess institutional change, identify policy diffusion patterns, and evaluate national alignment with international standards (Sofield and Li, 2011). Common evolutionary patterns in transition contexts include progressive decentralization, strengthening sustainability provisions, increasing stakeholder inclusion, and growing alignment with international norms (Hall 2011; Chaisawat 2006). Mongolia's two-decade legal evolution provides a valuable case through which to examine whether and how these global trends manifest in a Central Asian transition economy.

Mongolia's tourism sector has grown substantially since the democratic transition of the early 1990s, establishing itself particularly in adventure tourism, nomadic cultural experiences, and ecotourism (Erdenebat and Yang, 2022). However, significant governance challenges persist, including infrastructure deficits, environmental pressures, limited value chain integration, and administrative capacity constraints (Zagarkhorloo *et al.*, 2021). These challenges provided the reform context for the Revised Tourism Law of 2023.

2. Research Methodology

This study employs a qualitative, document-based comparative research design. The primary data sources are the Tourism Law of 2000, and the revised Revised Tourism Law of 2023. Both instruments were subjected to systematic qualitative content analysis and institutional mapping to identify, code, and interpret governance-relevant provisions across six analytical dimensions.

Document analysis was selected because legal texts provide the most authoritative and systematic expression of institutional arrangements in a given policy domain (Scott 2014). As primary legal instruments, the two Tourism Laws provide direct evidence of the institutional design, governance philosophy, and regulatory priorities of Mongolia's tourism policy framework at two distinct historical moments.

The analytical framework was constructed deductively from the tourism governance and institutional theory literature, supplemented by inductive refinement through preliminary reading of the source documents. Six analytical dimensions were identified, each operationalized through specific governance transformation indicators drawn from Hall (2011) and adapted for the transition economy context.

Table 1. Analytical Framework for Comparative Assessment

Code	Dimension	Description
GOV	Governance Structure	Institutional arrangements, authority distribution, coordination mechanisms, decentralization
SUS	Sustainability Integration	Environmental protection, responsible tourism, heritage preservation, ecological management
STK	Stakeholder Participation	Participation of local communities, private sector, NGOs, tourism associations
COM	Competitiveness and Development	Investment support, tourism branding, digitalization, destination development
QUA	Tourist Protection and Service Quality	Tourist rights, standards, safety, quality assurance
INS	Institutional Modernization	Policy transition, strategic governance, administrative reform

Source: Authors' compilation based on Mongolia Tourism Law 2000 and Tourism Law 2023.

The analysis proceeded in four stages. First, the full texts of both laws were read in the original Mongolian and cross-referenced with translated versions to ensure interpretive accuracy. Second, governance-relevant provisions were systematically identified and coded against the six dimensions and associated indicators. Third, coded provisions were comparatively analyzed to document the nature and direction of change. Fourth, findings were interpreted through institutional transformation theory and sustainable tourism governance frameworks. To ensure rigor, coding was conducted by research team members independently before reconciliation through structured discussion.

Quantitative Dimension: Legal Provision Count Analysis

To complement the qualitative institutional analysis, a quantitative dimension was incorporated through systematic counting of governance-relevant legal provisions across both laws. The total number of articles, sub-articles, and operative clauses addressing each analytical dimension were counted independently in both legal instruments. This provision counts analysis enables a transparent, replicable assessment of the relative regulatory depth of the two frameworks and provides an objective basis for scoring within the Governance Transformation Index.

The Tourism Law of 2000 comprises 24 articles organized across six chapters. The Revised Tourism Law of 2023 comprises 32 articles organized across six chapters, representing a 33% increase in legislative scope. More significantly, the Revised Tourism Law of 2023 introduces 11 new substantive concepts defined in Article 4 that have no equivalent in the Tourism Law of 2000 - including tourism resources, zone management plans, tourism infrastructure, community-based tourism, campsites (*otoglokh tseg*), and special interest tourism - reflecting a substantial expansion of the law's conceptual and regulatory architecture.

Governance Transformation Index

To systematically evaluate the evolution of tourism governance, this study developed a Governance Transformation Index (GTI). The GTI was designed to produce a structured, comparable score for each Tourism Law reflecting the depth of institutional governance across six key dimensions. The framework was constructed following a three-stage deductive-inductive procedure. First, a candidate pool of governance dimensions was assembled from a systematic review of the tourism governance typology literature, principally Hall (2011), Bramwell and Lane (2011), Farmaki *et al.* (2022), and the UNWTO (2019) sustainable destination management framework. Second, dimensions were selected based on two criteria: (i) theoretical salience - each dimension had to correspond to a recognized governance function in the academic literature; and (ii) empirical tractability - each dimension had to be directly operationalizable through identifiable legal provisions in the two Tourism Laws under analysis. Third, the six selected dimensions were subjected to equal weighting in the GTI aggregate score. Equal weighting was adopted deliberately: given the absence of established empirical evidence on the relative governance priority of these dimensions in the Mongolian context, differential weighting would have introduced subjective bias inconsistent with the study's comparative descriptive objectives. The framework was adapted from the governance typology of Hall (2011) and the sustainable destination management framework of Bramwell and Lane (2011).

Each dimension was scored on a four-point scale following standardized scoring criteria:

Table 2. GTI Scoring Criteria

Score	Interpretation
0	No legal provision identified
1	Limited recognition — indirect or partial reference without operational mechanism
2	Moderate institutional development — explicit provision with partial operationalization
3	Comprehensive institutional integration — explicit, operationalized, and enforceable provision

Source: Authors' compilation based on Hall (2011) and Scott (2014).

Six governance dimensions were operationalized as the basis for GTI scoring:

The selection of these six dimensions reflects the following theoretical rationale. Sustainability Integration was included as a primary dimension given UNWTO's (2019) positioning of sustainability as the central organizing principle of contemporary tourism governance frameworks. Stakeholder Participation reflects the multi-actor governance turn identified by Beaumont and Dredge (2010) and Levi-Faur (2012) as a defining characteristic of post-hierarchical governance systems. Destination Governance operationalizes the spatial and planning dimensions of tourism management frameworks emphasized by Viken and Granas (2014) and Dredge and Jenkins (2007). Tourist Protection captures the service quality and consumer rights dimensions of tourism governance increasingly recognized in post-2020 governance literature (Farmaki *et al.* 2022). Institutional Coordination reflects the inter-organizational coordination mechanisms central to network governance theory (Rhodes 1996; Levi-Faur 2012).

Table 3. GTI Governance Dimensions

Dimension	Description
Sustainability Integration	Degree to which sustainability principles are embedded as foundational governance objectives
Stakeholder Participation	Recognition and institutionalization of community, private sector, and professional participation
Destination Governance	Existence of destination planning, zoning, carrying capacity, and management mechanisms
Tourist Protection	Legal mechanisms ensuring tourist safety, insurance, data protection, and emergency response
Institutional Coordination	Coordination mechanisms among governmental, non-governmental, and private actors
Digitalization & Information Governance	Use of digital systems, electronic registration, tourism databases, and information management

Source: Authors' compilation.

Finally, Digitalization and Information Governance was included to capture the emerging smart tourism and digital governance dimensions increasingly recognized in post-pandemic tourism governance reform (UNWTO 2022). No differential weighting was applied across dimensions, consistent with the study's objective of producing a transparent, replicable governance assessment instrument.

Scoring was conducted independently by two members of the research team based on full-text analysis of the legal provisions. Inter-coder agreement was assessed and discrepancies resolved through discussion and reference back to the primary text. The resulting GTI scores are presented below:

Table 4. Governance Transformation Index Results

Dimension	Tourism Law of 2000	Revised Tourism Law of 2023	Change	Direction
Sustainability Integration	1	3	+2	Significant improvement
Stakeholder Participation	1	3	+2	Significant improvement
Destination Governance	1	3	+2	Significant improvement
Tourist Protection	1	3	+2	Significant improvement
Institutional Coordination	2	3	+1	Moderate improvement
Digitalization & Information Gov.	1	3	+2	Significant improvement
Total GTI Score	7	18	+11	157% increase

Source: Authors' compilation based on Mongolia Tourism Law 2000 and Tourism Law 2023.

The GTI increased from 7 points under the Tourism Law of 2000 to 18 points under the Revised Tourism Law of 2023, representing a 157% increase in overall governance maturity. All five dimensions receiving a score of 1 in 2000 improved to a score of 3 in 2023, indicating the comprehensive institutionalization of previously weak or absent governance mechanisms. Institutional Coordination, which scored 2 in 2000 reflecting the advisory tourism council provision, advanced to 3 in 2023 with the establishment of the National Tourism Development Committee as a multi-sector strategic coordination body.

Comparative Legal Provision Analysis

To provide direct textual evidence for the governance transformations identified in the GTI and institutional mapping, key provisions from the two laws were systematically compared. The following table presents selected representative provisions illustrating the most significant governance shifts across eight thematic areas:

Table 5. Key Legal Provisions: Comparative Textual Evidence

Dimension	Tourism Law of 2000 - Key Provision	Revised Tourism Law of 2023 - Key Provision
Sustainability	Art. 8.2: Tourism shall be developed in forms that have no negative impact on the environment and do not contradict public health and traditional customs	Art. 1.1: The purpose of this law is to develop sustainable tourism grounded in nature and the unique historical and cultural heritage
Tourism Resources	Not defined	Art. 4.1.5: Tourism resources means natural formations, animals, plants, historical, paleontological, archaeological, religious, material and intangible cultural heritage
Zone Management	Art. 14.1.1: Government shall determine tourism development zones aligned with socio-economic development policy	Art. 4.1.2: Tourism zone management plan means a short- and medium-term plan aimed at protecting natural resources, reducing adverse impacts, and developing sustainable tourism
Stakeholder Governance	Art. 15.3: Tourism Council composed of representatives from central government bodies and three members from tourism NGOs	Art. 20.2: National Committee led by the Prime Minister; includes nine ministerial representatives and five members nominated by the professional tourism association

Dimension	Tourism Law of 2000 - Key Provision	Revised Tourism Law of 2023 - Key Provision
Community Tourism	Not recognized	Art. 4.1.10: Community-based tourism means provision of tourism products and services to tourists by local residents and cooperatives
Insurance	Not required	Art. 14.1: Tour operators and travel agents shall be mandatorily insured against liability for damages caused to clients through errors in their activities
Tourist Safety	Art. 13.1.1: Guide shall ensure the safety of tourists in advance	Art. 15.2: Tourist safety includes personal safety, property protection, and protection of personal data as defined in Arts. 4.1.11–4.1.12 of the Personal Data Protection Law
Digital Governance	Art. 16.1.12: Tourism information network and database shall be established	Art. 6.8: Tourism organizations shall be connected to the electronic payment system and unified tax and information database, and shall issue electronic payment receipts for every transaction

Source: Direct provisions from Mongolia Tourism Law 2000 and Tourism Law 2023 (authors' translation).

Several provisions merit particular analytical attention. The definitional expansion of tourism resources in Article 4.1.5 of the Revised Tourism Law of 2023 is foundational to the sustainability governance framework, establishing that natural formations, wildlife, paleontological, archaeological, religious, and both material and intangible cultural heritage constitute legally recognized assets of the tourism system requiring governance and protection. This definitional innovation has no equivalent in the Tourism Law of 2000 and establishes the conceptual basis for subsequent resource management and conservation provisions.

The introduction of community-based tourism as a legally defined concept in Article 4.1.10 similarly reflects a governance paradigm shift. The Tourism Law of 2000 contained no recognition of community participation as a tourism governance dimension; the Revised Tourism Law of 2023 not only defines the concept but establishes it as a distinct operational category exempt from certain registration requirements, reflecting a deliberate policy choice to lower barriers for community-level tourism participation.

The mandatory insurance provisions of Article 14 represent a particularly significant regulatory innovation. The requirement for tour operators and travel agents to carry compulsory liability insurance, combined with mandatory accident insurance for participants in high-risk activities, introduces a consumer protection and risk governance framework consistent with international tourism industry standards and absent from the Tourism Law of 2000. This provision reflects both a maturing understanding of tourism risk governance and alignment with UNWTO guidelines on tourist protection.

3. Research Results

The comparative analysis of Mongolia's Tourism Law of 2000 and Revised Tourism Law of 2023 reveals substantial institutional transformation across all six analytical dimensions. The Revised Tourism Law of 2023 demonstrates a consistent shift from a centralized, administratively oriented governance model toward a multi-level, sustainability-integrated, and stakeholder-inclusive governance framework aligned with international sustainable destination management principles.

Governance structure underwent the most consequential transformation. The Tourism Law of 2000 established a hierarchical, centrally administered system with authority concentrated at the national ministerial level and limited provision for decentralized or multi-stakeholder governance. The Revised Tourism Law of 2023 introduces substantially more complex arrangements: the National Tourism Development Committee (*Undesnii Khoroo*), chaired by the Prime Minister and comprising nine ministerial representatives and five industry association nominees, establishes a strategic cross-sectoral governance body with no equivalent in the 2000 framework. Local government responsibilities were also substantially expanded, with *aimag* (province) and capital Governors assigned planning, investment facilitation, infrastructure development, and information management functions, reflecting a deliberate decentralization consistent with international destination management principles.

Sustainability integration represents the most significant qualitative shift between the instruments. The Tourism Law of 2000 contained only indirect environmental references; no dedicated sustainability framework, carrying capacity provision, or zone management mechanism was included. The Revised Tourism Law of 2023 incorporates sustainability as a foundational governance principle in its purpose clause and introduces Tourism

Zone Management Plans as mandatory instruments for designated tourism zones - a structured mechanism for balancing development with resource conservation and ecological protection.

Table 6. Comparative Evidence Matrix of Mongolia's Tourism Law of 2000 and Revised Tourism Law of 2023

Dimension	Tourism Law of 2000	Revised Tourism Law of 2023	Transformation Direction	Analytical Interpretation
Governance Structure	Centralized state administrative regulation	Collaborative, multi-level governance with local bodies	Centralized → Collaborative	Transition toward integrated destination coordination
Local Government Role	Administrative support functions only	Planning, licensing, investment facilitation, event promotion	Support role → Decentralized governance	Local governments became institutionalized actors
Stakeholder Participation	Limited industry association advisory role	Co-regulatory public-law tourism association with governance functions	State-centered → multi-stakeholder	Collaborative governance principles embedded in law
Sustainability Integration	Indirect, weak environmental references	Explicit sustainable tourism as foundational principle; zone management plans	Weak → Sustainability mainstreaming	Sustainability integrated into legal framework
Environmental Governance	General conservation references	Carrying capacity, tourism resource definition, ecological protection	Basic → Integrated sustainability governance	Tourism aligned with environmental objectives
Community-Based Tourism	Not recognized	Distinct legal category with exemptions and support	Absent → Formal policy instrument	Tourism as mechanism for local community development
Cultural Heritage	General cultural resource references	Strategic integration with defined tourism resource categories	Passive → Strategic cultural governance	Tourism connected with cultural sustainability
Tourist Protection	Basic contract provisions and licensing	Comprehensive safety, insurance, personal data, emergency response	Operational regulation → Service governance	Enhanced consumer protection framework
Investment Support	Indirect export-equivalent tax treatment	Structured investment facilitation and PPP mechanisms	Limited → Strategic development support	Development-oriented governance introduced
Digitalization	Absent	Digital payment, e-registration, information systems	Traditional → Smart tourism orientation	Adaptation to global modernization trends
Institutional Coordination	Sector-based, fragmented	National Committee chaired by PM; inter-sectoral coordination	Fragmented → Network governance	Tourism governance evolved toward integration
International Alignment	Limited convergence with global norms	Explicit UNWTO-aligned sustainable destination governance	Domestic → Global convergence	Reflects international tourism governance standards
Overall Paradigm	Administrative regulation model	Integrated, sustainability-oriented governance framework	Administrative → Institutional modernization	Revised Tourism Law of 2023 represents governance paradigm transformation

Source: Authors' compilation based on Mongolia Tourism Law 2000 and Tourism Law 2023.

The concept of tourism resources is newly defined to encompass natural formations, wildlife, paleontological, archaeological, religious, and intangible cultural heritage, establishing a comprehensive resource governance framework.

Stakeholder participation architecture was substantially reconfigured. The Revised Tourism Law of 2023 establishes the Tourism Professional Association as a public-law non-profit entity with substantive governance functions including operator registration, guide certification, professional ethics standard-setting, and dispute mediation. This institutional innovation represents a meaningful shift toward co-regulatory governance absent from the 2000 framework. Community-based tourism is recognized as a distinct legal category, creating a more inclusive governance space accommodating diverse actor types beyond formal corporations.

Table 7. Governance Transformation Indicators Across the Tourism Law of 2000 and Revised Tourism Law of 2023

Code	Indicator	Tourism Law of 2000	Revised Tourism Law of 2023	Interpretation	Dir.
GOV-1	Governance centralization	High – central ministry	Moderate – multi-level	Decentralization of tourism authority	Moderate improvement
GOV-2	Local government role	Administrative only	Planning, licensing, coordination	Institutionalization of local governance	Significant improvement
GOV-3	Inter-agency coordination	Limited, fragmented	Structured inter-sectoral body	Network governance development	Significant improvement
GOV-4	Tourism governance body	Advisory council under PM	National Tourism Development Committee	Enhanced strategic coordination	Moderate improvement
GOV-5	Public-private partnership	Not articulated	Explicitly recognized and supported	Institutionalization of PPP	Significant improvement
SUS-1	Environmental provisions	Indirect references	Explicit sustainability principles; zone plans	Mainstreaming environmental governance	Significant improvement
SUS-2	Cultural heritage	General references	Strategic integration; resource definition	Cultural governance strengthened	Moderate improvement
SUS-3	Community-based tourism	Not recognized	Distinct legal category	New policy instrument	Significant improvement
STK-1	Tourism associations	Advisory role	Regulatory and governance functions	Strengthened institutional role	Significant improvement
STK-2	Private sector participation	Limited to licensing	Investment and planning engagement	Enhanced private sector role	Moderate improvement
COM-1	Investment support	Indirect tax treatment	Structured investment facilitation	Strategic investment governance	Moderate improvement
COM-2	Digitalization	Absent	Digital systems, e-governance	New technological dimension	Significant improvement
QUA-1	Tourist protection	Basic contract provisions	Comprehensive safety and data framework	Enhanced consumer protection	Moderate improvement
QUA-2	Mandatory insurance	Not required	Liability and accident insurance compulsory	Risk governance introduced	Significant improvement

Source: Authors' compilation based on Mongolia Tourism Law 2000 and Tourism Law 2023.

Tourist protection provisions were comprehensively expanded. The Revised Tourism Law of 2023 introduces mandatory liability insurance for tour operators and travel agents, and compulsory accident insurance for participants in high-risk activities including mountain climbing, hunting, deep-sea diving, motorsports, and helicopter tours. A comprehensive safety framework addresses physical safety, property protection, personal data security, and emergency response protocols - provisions reflecting internationally aligned risk management absent from the

2000 framework. Digitalization provisions are introduced for the first time, requiring electronic payment systems, digital registration, and an integrated tourism information database.

4. Discussions

The comparative findings provide substantial evidence that Mongolia's Revised Tourism Law of 2023 represents a fundamental shift in the institutional philosophy of tourism governance. Using institutional theory language, the legal transformation reflects a transition from a governance logic of administrative control - characteristic of post-socialist regulatory frameworks - toward a governance logic of strategic coordination, sustainability, and multi-stakeholder partnership. This transition aligns with broader patterns of governance evolution identified in the comparative tourism policy literature (Hall, 2011; Bramwell and Lane, 2011).

The integration of sustainability principles into the Revised Tourism Law of 2023's foundational purpose clause is particularly significant. By positioning sustainable tourism development as the primary governance objective, the Revised Tourism Law of 2023 establishes sustainability not as a constraint on development but as its organizing principle - consistent with UNWTO guidance and international sustainable destination management frameworks. However, the effectiveness of sustainability mainstreaming depends ultimately on implementation capacity and enforcement mechanisms. Experience from comparable transition economy contexts demonstrates that legal provision and governance practice can diverge significantly when institutional capacity is limited (Spenceley, 2008).

The substantial expansion of local government responsibilities reflects a deliberate decentralization strategy consistent with global trends in destination governance. However, effective exercise of these responsibilities presupposes administrative capacity, financial resources, and technical expertise that may not be uniformly available across Mongolia's diverse *aimags* (provinces). Governance effectiveness therefore depends not only on formal responsibility assignment but on capacity-building investments enabling local actors to fulfil their expanded roles.

The Revised Tourism Law of 2023 exhibits clear evidence of convergence with international governance norms. The incorporation of sustainable tourism principles, mandatory insurance, digital system requirements, community-based tourism provisions, and destination-based planning all reflect the diffusion of internationally promoted governance standards into Mongolia's national legal framework - consistent with the broader 'governance turn' in international tourism policy (Hall 2011).

4.1 Political, Economic, and Institutional Drivers of the 2023 Reform

The governance transformations documented in this study did not emerge in a policy vacuum. Three interconnected categories of drivers can be identified as shaping the 2023 reform trajectory: political-institutional, economic-developmental, and international alignment pressures.

From a political-institutional perspective, the 2023 reform reflects the accumulated governance experience of two decades of tourism sector administration under the Tourism Law of 2000. The fragmented institutional architecture of the 2000 framework - characterized by weak inter-agency coordination, limited local government authority, and an advisory-only role for industry associations - generated governance gaps that became increasingly visible as Mongolia's tourism sector expanded. The transition from the fragmented advisory Tourism Council established under Article 15 of the Tourism Law of 2000 to the strategically empowered National Tourism Development Committee chaired by the Prime Minister under the Revised Tourism Law of 2023 reflects a deliberate political decision to elevate tourism governance to the level of cross-sectoral national policy coordination. This institutional upgrade is consistent with broader patterns of governance reform observed in post-socialist transition economies seeking to strengthen executive coordination capacity (Levi-Faur, 2012; Sofield and Li, 2011).

Economically, Mongolia's tourism sector faced mounting pressure to diversify beyond its traditional dependence on extractive industries, particularly in the context of commodity price volatility and growing awareness of the long-term sustainability risks of mineral-dependent growth (Erdenebat and Yang, 2022). Tourism's recognized potential as a relatively low-impact, high-value sector capable of supporting rural livelihoods and distributing development benefits geographically provided the economic rationale for the 2023 law's expanded investment facilitation provisions, public-private partnership mechanisms, and community-based tourism framework. The formal recognition of community-based tourism as a distinct legal category reflects an economic policy choice to direct tourism development benefits toward local communities in ways that the 2000 framework's purely commercial orientation could not accommodate.

Internationally, Mongolia's active engagement with UNWTO programs, the 2030 Sustainable Development Agenda, and regional tourism governance networks created sustained normative pressure toward the adoption of

internationally recognized sustainable destination management standards (UNWTO, 2019; UNWTO, 2022). The explicit framing of sustainable tourism in Article 1.1 of the Revised Tourism Law of 2023 as the primary legal objective, and the introduction of zone management plans aligned with UNWTO best-practice guidelines, reflect this international alignment dynamic. Together, these three driver categories produced the conditions for a governance paradigm transition from the administrative regulation model of the Tourism Law of 2000 to the integrated destination governance framework of the Revised Tourism Law of 2023.

4.2 Empirical Signals: Industry and Community Perspectives

While the present study is grounded in formal legal document analysis, complementary empirical signals from the Mongolian tourism industry and community stakeholders provide contextual evidence on the extent to which legislative changes are being translated into governance practice. These signals, drawn from publicly available industry reports, official statements, and documented stakeholder consultations, suggest that the 2023 reform has generated tangible governance responses beyond the formal legal domain.

The Mongolian Tourism Organization (MTO), the national industry representative body, publicly acknowledged the 2023 law as "a significant step toward establishing a modern governance framework for Mongolian tourism" and specifically highlighted the formalization of the professional association's co-regulatory role as a long-advocated institutional reform (MTO Annual Report 2023). This industry endorsement is consistent with the co-regulatory governance provisions of Article 26 of the Revised Tourism Law of 2023, which assign the Tourism Professional Association substantive functions including operator registration, guide certification, and dispute mediation.

At the community level, the explicit legal recognition of community-based tourism under Article 4.1.10 of the Revised Tourism Law of 2023 has been identified in the UNWTO-supported Mongolia Rural Tourism Development Assessment (2024) as a critical enabling condition for expanding herder community participation in the tourism value chain. The assessment noted that "prior to the 2023 revision, the absence of a formal legal category for community operators created significant administrative barriers for herder families seeking to offer tourism services," a barrier the Revised Tourism Law of 2023 directly addresses through its registration exemptions for community-based operators. These empirical signals, while not constituting systematic implementation evidence, indicate that the governance transformations documented in this study are beginning to generate observable institutional responses consistent with the legislative intent of the 2023 reform.

Theoretical Contributions

Beyond the empirical findings, this study advances the theoretical understanding of tourism governance transformation in three substantive ways. These contributions are situated at the intersection of institutional theory, sustainable tourism governance scholarship, and comparative policy analysis.

Contribution 1. Tourism Law as a Governance Transformation Instrument

This study demonstrates that national tourism legislation functions as more than a regulatory mechanism - it constitutes a primary instrument through which governance paradigm transformation is enacted, documented, and institutionalized. The comparative analysis of the Tourism Law of 2000 and Revised Tourism Law of 2023 reveals that legislative reform can produce measurable shifts across multiple governance dimensions simultaneously, redefining the roles of state actors, private sector participants, and community stakeholders within a single reform cycle. This finding extends Hall's (2011) governance typology by demonstrating empirically how legal instruments operationalize transitions between governance types - from hierarchical administrative control toward network and collaborative governance - in the specific context of a transition economy tourism sector.

Contribution 2. Institutionalization of Sustainability through Legislative Reform

The study provides evidence that sustainability transitions in tourism governance are not merely rhetorical or aspirational but can be structurally embedded through legislative reform. The Revised Tourism Law of 2023 demonstrates that sustainability can be mainstreamed as a foundational governance principle through four distinct legislative mechanisms: (i) explicit purpose-clause framing positioning sustainable tourism as the primary legal objective; (ii) definitional innovation establishing tourism resources as legally protected assets; (iii) mandatory management planning instruments (zone management plans) operationalizing sustainability governance; and (iv) carrying capacity provisions introducing ecological limits into destination governance. This four-mechanism model of sustainability institutionalization through law advances the theoretical literature on sustainable tourism governance (Bramwell and Lane, 2011; Sharpley, 2020) by providing a replicable analytical framework for

assessing sustainability depth in national legal instruments, extending beyond the binary presence/absence evaluations that characterize much existing comparative work.

Contribution 3. Evolution from State-Centered Regulation to Collaborative Destination Governance in Transition Economies

The study contributes a theoretically grounded characterization of the governance trajectory specific to post-socialist transition economies in the tourism sector. While the 'governance turn' in tourism studies (Hall, 2011; Beaumont and Dredge, 2010) has been extensively theorized in advanced economy contexts, its manifestation in transition economies has received comparatively limited systematic attention (Sofield and Li, 2011). This study documents a distinct governance evolution pattern in which the institutional legacies of socialist administrative centralization are progressively displaced through legislative reform toward multi-stakeholder, co-regulatory, and destination-based governance models. The formalization of the Tourism Professional Association as a public-law entity with co-regulatory functions, the recognition of community-based tourism as a legally protected category, and the establishment of the National Tourism Development Committee as a cross-sectoral strategic body collectively constitute an empirically grounded model of governance transition applicable to comparable transition economy cases. This model contributes to the theoretical synthesis of institutional change theory (North, 1990; Scott, 2014) and tourism governance scholarship by specifying the legislative mechanisms through which governance paradigm transitions are enacted in post-socialist contexts.

Together, these three contributions establish the comparative legal analysis of tourism governance frameworks as a methodologically productive and theoretically generative research approach, with the Governance Transformation Index introduced in this study providing a replicable instrument for future cross-national comparative work.

Conclusions and Further Research

This study conducted a systematic comparative analysis of Mongolia's Tourism Law of 2000 and Revised Tourism Law of 2023, examining institutional transformation across six governance dimensions. The findings demonstrate that Mongolia's tourism governance has undergone significant modernization over the twenty-three-year interval. The Tourism Law of 2000 established a foundational regulatory framework appropriate to the early transition economy context but characterized by centralized administration, limited sustainability provisions, and restricted stakeholder participation. The Revised Tourism Law of 2023 represents a substantively more advanced governance architecture incorporating sustainability as a foundational principle, multi-level and multi-stakeholder mechanisms, destination management planning, comprehensive tourist protection, and digital governance instruments.

The study contributes to the comparative tourism policy literature by providing a structured longitudinal institutional analysis in a transition economy context. It demonstrates that Mongolia's tourism governance evolution reflects broader international trends toward sustainable destination management and stakeholder co-governance, while also highlighting country-specific innovations: the formalization of the tourism professional association as a public-law entity with co-regulatory functions, and the recognition of community-based tourism as a distinct policy category.

The study's primary limitation is its reliance on formal legal documents as the principal evidence base, which does not capture implementation dynamics, enforcement effectiveness, or informal governance practices that shape tourism outcomes in practice. As noted in Section 5.3, initial empirical signals from industry and community stakeholders suggest that legislative changes are beginning to generate observable governance responses; however, systematic implementation research remains a priority for future work. Future research should examine the institutional capacity available to support the Revised Tourism Law of 2023's governance provisions, assess enforcement mechanisms through field-based qualitative inquiry, and explore the perspectives of tourism operators, local communities, and government officials on the governance transformation underway. Cross-national comparative studies extending the analytical framework to other Central Asian transition economies would further advance the comparative tourism governance literature.

Declarations

Declaration of Competing Interest: The author declares that she has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies: The author declares that she used AI-assisted technologies to improve the language and readability of this paper, with appropriate disclosure.

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Gender Norms and Entrepreneurial Persistence among Women Tourism Entrepreneurs in the North Indian Himalaya



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Abstract: This study examines gender norms, entrepreneurial barriers and entrepreneurial persistence among women tourism entrepreneurs working as adventure guides in Ladakh, North India.

Using survey data collected from 346 respondents - women adventure guides, male guides, tourism managers and women tourists across Leh, Nubra, Zaskar and Kargil - the study employs descriptive statistics, one-way ANOVA, hierarchical regression and structural equation modelling to examine entrepreneurial participation, barriers, business sustainability and career continuity.

Women guide continue to face income inequality, harassment, limited organizational support and social barriers that constrain long-term persistence. Social support, family approval and income stability emerged as the strongest predictors of entrepreneurial persistence, while women-only tour formats independently improved perceived safety and professional confidence.

The study contributes quantitative evidence on entrepreneurial persistence in Himalayan adventure tourism and develops a framework linking gender norms, social support, economic viability and institutional barriers to long-term entrepreneurial continuity in remote mountain destinations, thereby connecting gender-inclusive workforce participation to wider debates on socially sustainable tourism.

Keywords: women tourism entrepreneurship, entrepreneurial persistence, adventure tourism, gender norms, sustainable tourism.

JEL Classification: Z31; J16; L26; Q01; R11.

Introduction

Adventure tourism in Ladakh, North India - encompassing trekking, mountaineering, rafting and expedition travel - has become an important source of employment and workforce participation in the regional tourism economy. The landscape of snow-laden passes, Buddhist monasteries and stark desert valleys draws a clientele seeking precisely the physical and psychological challenge that extreme terrain provides and this clientele is diversifying rapidly. Women now account for approximately 38% of adventure-tourism participants in Ladakh (Ladakh Tourism Department, 2023) and the proportion of solo or group women travellers requesting women-specific guide services has grown measurably since 2018. Yet the occupational structure of guide services has barely begun to reflect this demand shift. Women constitute an estimated 12-15% of certified trekking guides in Ladakh, a proportion that lags behind both the growth in women's tourism participation and the broader global trend toward gender diversification in outdoor recreation leadership (Adventure Travel Trade Association, 2022).

Despite the expansion of women-owned tourism enterprises, women remain underrepresented in frontline adventure-tourism occupations such as trekking and expedition guiding. This underrepresentation raises concerns regarding entrepreneurial inclusion, retention, workplace safety and career sustainability. The low participation of women in adventure guiding reflects persistent workplace inequalities, limited organizational support and traditional gender expectations (Rosado Varela and Medina-Argueta, 2025), it both reflects and reproduces a set of gender norms that assign outdoor mobility, physical risk tolerance and leadership authority to men, while confining women's legitimate occupational sphere to domestic and care-adjacent roles. Understanding how women who enter guiding navigate, contest and partly transform these norms is both a theoretically interesting problem in gender sociology and a practically urgent one for policymakers seeking to democratise economic participation in Ladakh's tourism economy.

The women-only tour format - tours designed for and by women, marketed on safety and solidarity and led exclusively by women guides - represents a significant institutional innovation: it simultaneously creates a market for women's guiding labour and a social context in which traditional norms of public feminine immobility are systematically challenged (Nguyen and Nguyen, 2025). Beyond workforce participation, the inclusion of women in adventure tourism relates directly to broader questions of social sustainability, equitable employment and inclusive tourism development in geographically peripheral regions. Women guides may also be viewed as micro-entrepreneurs who independently market services, build client networks, generate income and sustain tourism careers within a challenging institutional environment. While prior tourism studies have documented the barriers women face in tourism enterprises, less attention has been paid to the mechanisms through which women sustain entrepreneurial careers in remote mountain destinations. This study therefore develops and tests an entrepreneurial persistence perspective that links gender norms, social support and economic viability to long-term career continuity.

The study addresses five research questions. First, what is the quantitative profile of women trekking guides in Ladakh in terms of demographics, income, employment conditions and career persistence and how does it compare with that of their male counterparts? Second, how do different stakeholder groups - women guides, male guides, tourism managers and women tourists - differ in their attitudes toward gender norms in the guiding profession? Third, which workplace, social and organizational factors most strongly influence women guides' career persistence and which barriers most significantly constrain it? Fourth, do women-only tours independently predict changes in participants' and guides' safety perceptions and sense of agency, controlling for other factors? Fifth, what are the implications of workplace inclusion and organizational support for women's long-term participation in tourism enterprises?

Research Hypotheses

H1: Gender-inclusive attitudes positively predict women guides' career persistence.

H2: Social support from family, peers and tourism organizations positively predicts career persistence.

H3: Income stability positively predicts career persistence among women guides.

H4: Workplace and social barriers negatively predict women guides' career persistence.

H5: Career persistence positively predicts perceived safety and professional confidence among women guides.

H6: Career persistence positively influences role-model effects for younger women in the local community.

H7: Participation in women-only tours improves perceptions of safety among participants.

H8: Participation in women-only tours improves women guides' professional confidence and workforce participation.

1. Literature Review

1.1. Gender and Occupational Segregation in Tourism

The tourism sector globally exhibits pronounced occupational gender segregation: women dominate lower-paid, care-adjacent roles (housekeeping, food service, retail) while men predominate in technical, managerial and outdoor-leadership positions (Baum, 2013, UNWTO, 2019, Santos, 2023). Kinnaird and Hall's (1996) early feminist political economy of tourism argued that this distribution is not a technical outcome of skill differentials but a social construction in which tourist-space norms mirror and amplify the gender ideologies of host and guest societies. Subsequent work has largely confirmed this assessment while refining the mechanisms: Alarcón and Cole (2019)

demonstrate that the gender wage gap in tourism enterprises is larger than in comparable non-tourism sectors even after controlling for hours, education and experience, suggesting active employer discrimination rather than compositional differences. Recent studies likewise show that women in tourism experience limited access to leadership positions, lower income stability and reduced organizational support relative to men, particularly in adventure and outdoor segments (Khoo *et al.* 2024, Altinay *et al.* 2026). Inclusive workplace policies, mentorship and supportive organizational environments are repeatedly identified as conditions that improve women's long-term participation and leadership representation (Brandão *et al.* 2020, Domínguez Vila *et al.* 2025, Stylianou *et al.* 2025).

Adventure tourism represents one of the most gender-segregated segments of the tourism workforce. Frohlick (2006) documented that mountaineering and extreme-trekking communities deploy a discourse of 'toughness' and 'rationality' that is tacitly gendered male, using the language of risk tolerance and physical performance to naturalise masculine leadership. The 'outdoor recreation gender gap' has been extensively documented in Western contexts (Laurendeau and Sharara, 2008, Hargreaves, 2013), but its operation in non-Western - specifically Himalayan - settings, where gender norms are rooted in distinct religious-cultural traditions and colonial-era administrative legacies, has received much less sustained quantitative attention.

1.2. Women's Mobility, Safety and Public Space

Feminist geography's conceptualisation of gendered mobility constraints (Hanson and Pratt, 1995, Massey, 2013) provides the vocabulary for understanding why women's occupation of outdoor, remote and physically challenging tourism spaces is not merely an employment question but a spatial one. Valentine (1989) demonstrated that women's movement through public and semi-public space is systematically constrained by the anticipation of male violence, a finding replicated across cultural settings, including India (Phadke, 2007, Goel, 2023) and, more recently, Himalayan tourism corridors (Ali *et al.* 2025).

The women-only tour format addresses this constraint both instrumentally - by removing the threat of harassment through group composition - and symbolically, by constituting an exclusively female claim on wilderness space. Cole (2018) studied women-only adventure tourism in Southeast Asia and found significant pre-to-post-tour gains in participants' self-reported confidence in physical environments, a result the present study quantifies in the Ladakhi context through a safety-perception scale. Frohlick's (2006) argument that women in mountaineering must balance social expectations against the physical demands of guiding work resonates with interview evidence on Himalayan women guides (Namgail *et al.* 2007, Ali *et al.* 2025) and informs the present measurement of gender-norm attitudes. Workplace safety and perceived security are increasingly recognised as determinants of women's entrepreneurial retention in tourism operating in remote, outdoor environments (GSMA, 2020, Sun and Lu, 2025).

1.3. Women's Entrepreneurship and Leadership in Himalayan Tourism

Scholarship on women's economic participation in Himalayan tourism is growing but remains predominantly qualitative and small-scale. Adams (2014) documented Sherpa women's roles in the trekking economy of Nepal's Khumbu region, noting that women's labour was systematically undervalued and their public presence in mixed-gender guiding contexts was discouraged by both local custom and foreign trekking-agency preferences. Gurung and Seeland (2008) examined women's participation in community-based eco-tourism and found that economic empowerment through tourism was genuine but fragile - conditional on male household members' approval and on the physical separation of tourism roles from domestic obligations. Movono and Dahles (2017) extended the analysis to Pacific Island contexts, finding that tourism enterprise improves women's relative income and social status but does not automatically translate into leadership recognition. Recent work suggests that women's leadership and entrepreneurial participation are strongly shaped by access to social networks, digital visibility, organizational support and local institutional structures (Stylianou *et al.* 2025, Altinay *et al.* 2026), with digital platforms emerging as important tools for professional networking (Khoo *et al.* 2024).

For Ladakh specifically, Aggarwal (2004) and Butcher (2015) provide historical-anthropological accounts of women's social roles within the region's Buddhist social structure, which differs from Hindu patriarchal systems in permitting relatively greater public participation for women, while still confining authority largely to domestic and monastic spheres. Bhatt and Kalkundiya (2025) highlight the growing role of women-led self-help groups and digitally mediated economic participation in the Himalaya. Nonetheless, quantitative research examining women's participation in trekking and adventure-guiding occupations in Ladakh remains extremely limited. The present study addresses this gap by examining workforce participation, career persistence and workplace inclusion among women guides in Ladakh's adventure tourism sector.

1.4. Gender-Norm Measurement: Scales and Frameworks

Quantitative measurement of gender-norm attitudes has relied on several established instruments. Klugman *et al.*'s (2014) voice-and-agency framework operationalises norm liberalism as attitudes toward women's decision-making autonomy, freedom of movement and right to economic participation. Kabeer's (1999) framework identifies three dimensions of empowerment - resources, agency and achievements - that map onto the present study's constructs of income, career persistence and role-model effects, respectively. Hofstede's (2001) masculinity-femininity dimension provides a comparative frame for occupational gender norms: India's relatively high masculinity index contextualises expectations of occupational segregation, while Ladakh's distinct Buddhist cultural setting complicates simple national generalisations.

The Gender Role Attitude Scale (GRAS) developed by King and King (1997) and subsequently refined by Kollmayer *et al.* (2018) provides the measurement foundation for the present attitude battery. The GRAS assesses respondents across subscales of physical-capability equality, social acceptance of non-traditional gender roles, leadership attribution and safety/risk perception - subscales directly applicable to the guiding context. Adapted items from Kabeer (1999) and Klugman *et al.* (2014) complement the GRAS to capture income-legitimacy and agency constructs. To our knowledge, this is the first application of this combined measurement framework to Himalayan adventure-tourism guiding.

1.5. Entrepreneurial Persistence: Conceptual Definition and Boundaries

Because the central construct of this study is entrepreneurial persistence, it is necessary to define it precisely and differentiate it from related but distinct concepts. Following Gimeno *et al.* (1997) and DeTienne *et al.* (2008), we define entrepreneurial persistence as the sustained behavioural commitment of an entrepreneur to continue operating a venture over time despite institutional, social and economic adversity and despite the availability of alternative occupational options. Persistence is therefore a longitudinal, behavioural outcome - the continuation of the activity itself - rather than a prior cognitive state or a single survival event.

This definition allows persistence to be distinguished from three neighbouring constructs with which it is frequently conflated. First, entrepreneurial intention (Krueger *et al.* 2000) is a pre-entry cognitive disposition - the stated plan to start or continue a venture - whereas persistence concerns realised continuation behaviour after entry. Second, entrepreneurial resilience (Bullough and Renko, 2013) denotes the psychological capacity to absorb and recover from adverse shocks, resilience is an antecedent trait that may enable persistence, but the two are not identical, since a resilient individual may nonetheless choose to exit. Third, business survival is an objective firm-level status (the venture has not closed) that can persist through inertia, sunk costs or absence of alternatives, persistence, by contrast, is an agentic, individual-level commitment that may continue even when formal survival metrics are marginal and that captures the active decision to remain in the occupation. In the present context, persistence is operationalised as a composite of continuation behaviour and forward career trajectory among women guides and is modelled as a function of gender-norm liberalism, social support, income stability and institutional barriers (Section 1.6).

1.6. Entrepreneurial Persistence Framework

Building on the definition above and on social-support theory in gendered entrepreneurship, we propose that entrepreneurial persistence among women tourism entrepreneurs is shaped not only by economic resources but also by social legitimacy, family support and access to professional networks. In remote tourism economies these factors are especially salient because market opportunities are constrained by geography, seasonality and cultural norms. The framework specifies that gender-norm liberalism, social support and income stability positively influence persistence, while institutional barriers reduce it and that sustained persistence in turn contributes to professional confidence, safety perceptions and role-model effects within local communities. This framework is tested empirically through the structural equation model reported in Section 3.9.

1.7. Research Gap

Three gaps motivate this study. First, existing research documents women's participation in and barriers to, tourism enterprise but devotes limited attention to entrepreneurial persistence among women in remote mountain economies. Second, little is known about how gender norms, social support and economic viability jointly influence long-term career continuity. Third, women-only tourism formats have received limited quantitative evaluation despite their growing importance as both market innovations and mechanisms for expanding women's entrepreneurial participation.

2. Methodology

2.1. Research Design

The study uses a quantitative cross-sectional survey design to examine entrepreneurial experiences, business sustainability and entrepreneurial persistence. A cross-sectional design is appropriate for the study's primary aim - establishing the current distribution of gender-norm attitudes, career indicators and barrier perceptions across a stratified sample - while its limitations for causal inference are acknowledged and partially addressed through the theoretically specified structural equation model. A comparative multi-group design assesses attitudinal differences across the four respondent categories, enabling simultaneous examination of supply-side perspectives (guides, managers) and demand-side perspectives (women tourists).

2.2. Sampling Strategy

The target population comprised four sub-populations: (a) women who had worked as certified or semi-certified trekking guides in Ladakh for at least one full season (minimum 60 working days), (b) male trekking guides matched approximately for experience level, (c) tourism-agency managers and owners with hiring authority over guiding staff and (d) women tourists who had participated in at least one guided trek or adventure activity led by a woman guide or in a women-only format in Ladakh in the two preceding seasons. Stratified random sampling was used for sub-populations (a) and (b), drawing from the registration lists of the Ladakh Mountaineering and Tourism Guide Association (LMTGA) and the LAHDC tourism register, with a snowball extension for informal-sector guides not formally registered. Sub-populations (c) and (d) were reached through purposive sampling, with agencies and tourists contacted through Leh-based trekking-agency networks and traveller-review databases, respectively. The final sample of $N = 346$ was achieved from 388 approaches, yielding a response rate of 89.2%.

2.3. Instrument Design

The questionnaire comprised five sections. Section A covered the demographic profile (14 items). Section B measured gender-role attitudes using a 28-item adapted GRAS battery on a five-point Likert scale (Cronbach's $\alpha = 0.86$ overall, subscale alphas 0.71-0.89). Section C assessed career profile, income and employment conditions for the guide sub-groups (18 items, mixed interval and ordinal formats). Section D administered a barrier inventory (nine barriers rated on a five-point severity scale, $\alpha = 0.82$). Section E asked women-tourist respondents about pre-to-post-tour safety-perception change and agency empowerment using a 12-item scale ($\alpha = 0.84$). Content validity was established through expert-panel review (three gender-studies scholars, two LMTGA officials and one NGO specialist in women's economic empowerment). Face validity was confirmed through a bilingual (Hindi/Ladakhi) pilot administration to 28 respondents. All items were translated into Hindi and Ladakhi Bodhi, with independent back-translation to verify equivalence.

2.4. Data Collection

Prior to participation, all respondents were informed of the purpose of the study and their right to voluntary participation. Informed consent was obtained verbally before the survey interviews and participants were assured of confidentiality, anonymity and the exclusively academic use of the data. Data were collected between November 2024 and January 2025 by five trained enumerators: three women (fluent in Ladakhi, Hindi and English) and two men (for interviews with the male-guide comparison group). The use of female enumerators for all women-guide and women-tourist interviews followed evidence that gender matching on sensitive topics improves disclosure quality (Groves *et al.* 2011). Interviews averaged 44 minutes and were conducted in participants' preferred language. All data were double-entered into SPSS within 48 hours of collection, with 100% verification.

2.5. Measurement Model: Latent Variables, Reliability and Validity

Because several constructs in the structural model are latent, the measurement model was specified and evaluated before estimating structural paths, following the two-step procedure of Anderson and Gerbing (1988). Six reflective latent constructs were operationalised from multiple observed indicators: Gender-Norm Liberalism (six GRAS items), Social Support (six items spanning family, peer and agency support), Income Stability (three items: income level, seasonal coefficient of variation and income-legitimacy perception), Institutional Barriers (nine barrier-severity items), Career Persistence (five continuation and trajectory items) and the two outcome constructs, Safety-Perception Change (four items) and Agency Empowerment (four items). Each indicator was assigned to a single latent factor and factor variances were fixed to unity for identification.

Confirmatory factor analysis (maximum likelihood, AMOS 27) was conducted to assess the measurement model prior to hypothesis testing. Internal-consistency reliability was satisfactory for all constructs, with composite reliability (CR) ranging from 0.79 to 0.91 and Cronbach's α from 0.74 to 0.89, all exceeding the 0.70 threshold (Hair *et al.* 2019). Convergent validity was supported: all standardised factor loadings exceeded 0.60 and were significant at $p < .001$ and the average variance extracted (AVE) for every construct exceeded the 0.50 criterion (range 0.52–0.68). Discriminant validity was established using the Fornell-Larcker criterion - for each construct the square root of the AVE exceeded its correlations with all other constructs - and corroborated by heterotrait-monotrait (HTMT) ratios, all of which fell below the conservative 0.85 threshold. The measurement model exhibited acceptable fit ($\chi^2/df = 1.84$, CFI = 0.958, TLI = 0.949, RMSEA = 0.049, SRMR = 0.058), justifying progression to the structural model reported in Section 3.9. Common-method bias was assessed via Harman's single-factor test, in which the first unrotated factor accounted for 24.7% of variance (below the 50% threshold), indicating that common-method variance is unlikely to threaten the findings.

2.6. Analytical Methods

Descriptive statistics (means, standard deviations, frequencies) were computed for all variables. Between-group attitudinal differences were assessed using one-way ANOVA with Tukey HSD post-hoc tests across the four groups. Independent-samples t-tests with Cohen's d effect sizes compared women and male guides on income and employment metrics, with Welch correction applied where Levene's test indicated unequal variances. Pearson correlations examined bivariate relationships. Hierarchical multiple regression (dependent variable: career-persistence score, log-transformed) was conducted with women guides only ($n = 118$), entering predictors in four theoretically ordered blocks. The structural equation model (maximum likelihood, AMOS 27) tested the hypothesised framework, with model fit assessed via χ^2/df , CFI, TLI, RMSEA and SRMR and bias-corrected bootstrap confidence intervals for indirect effects (2,000 resamples). Statistical significance was set at $\alpha = .05$ throughout.

3. Results

3.1. Demographic Profile

Table 1 presents the demographic profile of the 346 respondents. The largest age cohort is 26–35 years (37.0%), reflecting the physical-demand profile of the sector. Among women guides, the predominance of the 2–5-year experience band (41.5%) indicates a growing but still early-career workforce, while the graduate-level education rate (47.4%) is consistent with the increasing formalisation of certification requirements.

Table 1. Demographic Profile of Respondents (N = 346)

Characteristic	N	%	Cumulative %	χ^2 / F
Age group				
18-25 years	76	21.9	21.9	F(3,342) = 5.14*
26-35 years	128	37.0	58.9	
36-45 years	94	27.2	86.1	
46+ years	48	13.9	100.0	
Education level				
Below matriculate	29	8.4	8.4	$\chi^2(3) = 22.87^{***}$
Matriculate / higher secondary	89	25.7	34.1	
Graduate	164	47.4	81.5	
Postgraduate and above	64	18.5	100.0	
District / region				
Leh (urban core)	172	49.7	49.7	$\chi^2(3) = 13.41^{**}$
Nubra Valley	84	24.3	74.0	
Zaskar	59	17.1	91.1	
Kargil / other	31	9.0	100.0	
Respondent category				
Active women trekking guides	118	34.1	34.1	
Tourism managers / agency owners	72	20.8	54.9	
Male guides (comparison group)	87	25.1	80.1	
Women tourists (participants)	69	19.9	100.0	

Characteristic	N	%	Cumulative %	χ^2 / F
Years of experience (guides only, n = 118)				
< 2 years	32	27.1	27.1	
2-5 years	49	41.5	68.6	
> 5 years	37	31.4	100.0	F(2,115) = 8.22**
TOTAL	346	100.0	-	

*Note: ** $p < .05$, $p < .01$, * $p < .001$. Chi-square values test distributional uniformity within categories, F-statistics test between-group mean differences on experience-related outcomes. Experience rows are restricted to the women- and male-guide sub-samples.

3.2. Gender-Role Attitude Scale: Item-Level Results

Table 2 reports mean scores on the ten core Likert items by respondent group. Three patterns are theoretically salient. The physical-capability item shows the largest inter-group gap, with women guides (4.61) scoring well above male guides (3.48, Cohen's $d = 1.09$). Because women tourists - who have no occupational stake - score even higher (4.74), the scepticism about women's physical capability appears concentrated within the male-guide community rather than reflecting a broader societal consensus, echoing Frohlick's (2006) account of gendered competence discourse in mountaineering. The social-acceptance item yields the lowest overall mean (3.17), with all groups below the scale midpoint, indicating that even successful women guides do not perceive their occupational presence as socially normalised - a structural-perception finding consistent with Alarcón and Cole (2019). The family-opposition item achieves cross-group consensus (3.83), corroborating the barrier-severity data in Section 3.5.

Table 2. Gender-Role Attitude Scale: Mean Scores by Respondent Group (N = 346, scale 1-5)

Statement (1 = Strongly disagree ... 5 = Strongly agree)	Women guides M (SD)	Male guides M (SD)	Mgr/owners M (SD)	Women tourists M (SD)	Overall M (SD)
Women are as physically capable as men for high-altitude trekking	4.61 (0.62)	3.48 (1.04)	4.12 (0.81)	4.74 (0.51)	4.20 (0.85)
Society in Ladakh accepts women working as guides	2.87 (1.08)	3.04 (1.11)	3.31 (0.97)	3.58 (0.94)	3.17 (1.04)
Family opposition is the main barrier for women guides	4.38 (0.74)	3.72 (0.98)	3.94 (0.86)	3.41 (1.02)	3.83 (0.93)
Women-only tour groups are safer than mixed groups	4.12 (0.88)	2.91 (1.18)	3.74 (0.91)	4.48 (0.71)	3.82 (1.03)
A woman guide demonstrates leadership for younger women	4.74 (0.51)	3.38 (1.09)	4.21 (0.77)	4.61 (0.62)	4.24 (0.80)
I have experienced harassment or discrimination on trails	3.94 (0.92)	1.84 (0.94)	2.61 (1.07)	3.28 (1.14)	2.89 (1.12)
My income as a guide is respected by my household	3.42 (1.01)	4.28 (0.78)	-	-	3.78 (0.96)
Adventure tourism has improved women's social mobility	4.18 (0.81)	3.61 (0.94)	4.44 (0.69)	4.32 (0.77)	4.14 (0.82)
Traditional gender norms restrict women's guiding careers	4.44 (0.71)	3.17 (1.08)	3.88 (0.84)	3.74 (0.92)	3.86 (0.94)
Female-led tours attract premium-paying women clients	3.88 (0.84)	2.78 (1.04)	4.31 (0.72)	4.22 (0.80)	3.82 (0.92)

*Note: * One-way ANOVA significant at $p < .001$ for all items. SD in parentheses. '-' indicates item not applicable to that group. Groups: women guides $n = 118$, male guides $n = 87$, managers $n = 72$, women tourists $n = 69$.

3.3. Income and Employment Comparison

Table 3 shows an absolute gender income gap of approximately 30.5% (women ₹98,400, men ₹141,700, $t(203) = -7.88$, $p < .001$, $d = 1.09$). Adjusted for the gap in days employed (84.3 vs. 118.6), the daily-earnings gap narrows substantially, indicating that part of the total gap reflects differential access to working days rather than differential daily rates. The striking exception is income from women-only tours (41.7% of women's income vs. 4.2% of men's), confirming that this segment constitutes a distinct market niche in which women guides hold a near-exclusive competitive advantage. Non-significant differences in year-on-year income growth and repeat-client rate suggest that, once established, women guides perform comparably to men in sustaining client relationships, the binding

constraints are entry and access to working days rather than service quality - a pattern consistent with the 'unexplained' component of gender wage gaps documented by Blau and Kahn (2000).

Table 3. Income and Employment Metrics: Women vs. Male Guides (n = 205)

Variable	Women guides (n = 118)	Male guides (n = 87)	t / F	p	D
Mean annual income (INR '000)	98.4	141.7	t(203) = -7.88	<.001	1.09
SD of annual income (INR '000)	42.1	54.8	-	-	-
Mean days employed (season)	84.3	118.6	t(203) = -9.12	<.001	1.27
Income from women-only tours (%)	41.7	4.2	t(203) = 18.44	<.001	2.57
Guides holding certified training (%)	53.4	71.3	$\chi^2(1) = 7.84$	.005	-
Guides with own equipment (%)	34.7	62.1	$\chi^2(1) = 16.22$	<.001	-
Seasonal income variability (CV)	0.68	0.51	F(1,203) = 11.37	.001	-
Mean group size managed	6.2	9.4	t(203) = -6.71	<.001	0.93
Income growth YoY (%)	58.5	67.8	$\chi^2(1) = 2.18$	.140	-
Repeat-client rate (self-reported, %)	44.1	38.6	$\chi^2(1) = 0.84$	.360	-

*Note: * t-tests use Welch correction where Levene's test $p < .05$. Cohen's $d = |\text{mean difference}|/\text{pooled SD}$. CV = coefficient of variation (SD/mean), YoY = year-on-year.

3.4. GRAS Subscale ANOVA

Table 4 presents the six-subscale GRAS profile. The most theoretically significant pattern is the consistent positioning of women tourists as the most gender-liberal group on all applicable subscales, scoring above women guides on physical-capability equality (4.71 vs. 4.58) and social acceptance (3.62 vs. 2.91). This suggests a selection effect - women who seek out women-guided experiences bring pre-existing liberal attitudes - with implications for interpreting the causal direction of the safety-perception findings in Section 3.8. Male guides score lowest on physical capability, leadership attribution and safety perception, again locating attitudinal resistance in the direct male-competitor group rather than in the wider population or managerial class.

Table 4. GRAS Subscale Mean Scores by Respondent Group (one-way ANOVA, N = 346)

GRAS subscale	Women guides	Male guides	Managers	Women tourists	F(3,342)	Post-hoc
Physical Capability Equality (PCE)	4.58	3.41	4.09	4.71	44.72***	WG > M***
Social Acceptance of Guiding (SAG)	2.91	3.06	3.34	3.62	14.38***	T > WG**
Leadership Attribution to Women (LAW)	4.68	3.31	4.18	4.57	38.24***	WG > M***
Safety Perception: Women-only (SPW)	4.17	2.88	3.71	4.51	36.91***	T > M***
Institutional Barrier Recognition (IBR)	4.41	3.22	3.84	3.71	22.14***	WG > M***
Income Legitimacy (ILG)	3.44	4.26	-	-	18.63***	M > WG**
Overall GRAS mean	4.00	3.36	3.83	4.22	28.47***	T > M***

*Note: * Tukey HSD post-hoc comparisons, WG = women guides, M = male guides, T = women tourists. ILG not applicable to the tourist sub-group. F-ratios significant at $p < .01$, * $p < .001$.

3.5. Barrier Analysis

The barrier analysis (Table 5) yields a clear, policy-relevant hierarchy. Family opposition and household gender norms constitute the most severe constraint (severity 4.44, ranked first by 48.3% of women guides), most acute in Zanskar (sub-group severity 4.71). Male peer resistance within guide networks ranks second (4.11), reflecting the occupational dimension of exclusion: women guides report systematic disadvantage in referrals, equipment sharing and access to male-dominated bargaining platforms. The positive severity difference between women and male guides across all nine barriers ($\Delta = +0.43$ to $+2.18$, all significant) confirms that the barrier landscape is not merely shared at differing intensities but is qualitatively gendered in its social and institutional operation.

Table 5. Barriers to Women's Guiding Careers: Severity Index and Ranking (n = 118)

Barrier	Ranked #1 (%)	Ranked #2 (%)	Ranked #3 (%)	Severity (1-5)	Δ vs. male guides
Family opposition / household norms	48.3	19.5	11.2	4.44	+2.18***
Male peer resistance in guide networks	29.7	22.0	14.6	4.11	+1.84***
Absence of formal certification pathways	22.0	24.6	18.6	3.94	+0.92**
Physical infrastructure (toilets, camps)	19.5	21.2	22.0	3.78	+1.12***
Client hesitancy to hire women guides	17.8	18.6	16.9	3.62	+0.88**
Safety concerns on remote trails	16.1	17.8	19.5	3.54	+0.74**
Income gap vs. male counterparts	14.4	15.3	14.4	3.41	+0.67*
Lack of mentorship / role models	12.7	13.6	16.9	3.28	+0.51*
Agency / employer gender bias	11.0	12.7	12.7	3.17	+0.43*

*Note: * Severity index = mean rating on a 1-5 scale by women guides (n = 118). Ranking columns show the percentage nominating each barrier as their primary, secondary or tertiary obstacle. Δ vs. male guides = severity difference between groups, independent t-tests: * $p < .05$, $p < .01$, * $p < .001$.

3.6. Correlation Matrix

The correlation matrix (Table 6) confirms strong bivariate associations in the expected directions. Career persistence correlates most strongly with role-model effect ($r = .57$), social support ($r = .52$) and the barrier index ($r = -.51$). Positive inter-correlations among the predictors indicate that the determinants of persistence are co-occurring rather than independent, consistent with the multi-pathway specification of the structural model.

Table 6. Pearson Correlation Matrix: Career Persistence and Key Predictors (n = 118)

Variable	1	2	3	4	5	6	7
1. Career persistence	-						
2. Social support	.52**	-					
3. Income level	.48**	.39**	-				
4. Gender-norm liberalism	.46**	.44**	.31**	-			
5. Barrier index (reverse)	-.51**	-.43**	-.37**	-.48**	-		
6. Safety perception	.44**	.38**	.42**	.41**	-.39**	-	
7. Role-model effect	.57**	.49**	.38**	.52**	-.44**	.61**	-

*Note: ** $p < .01$ (two-tailed). The barrier index is scored so that higher values denote more barriers.

3.7. Hierarchical Regression: Predictors of Career Persistence

The regression model (Table 7) explains 59.7% of the variance in career persistence (adjusted $R^2 = 0.597$). Social support is the strongest predictor ($\beta = 0.341$), followed by income level ($\beta = 0.298$) and family approval ($\beta = 0.264$), indicating that enabling relationships and economic viability - rather than individual characteristics - are the most actionable levers for retention. Among constraining factors, the barrier index exerts the largest negative effect ($\beta = -0.289$), a one-SD reduction in barriers is associated with a 0.289-SD increase in persistence, roughly equivalent to gaining agency affiliation plus a full education-level increment. Each additional harassment incident is associated with a 0.187-SD reduction in persistence, underscoring that physical and psychological safety directly conditions whether women remain in the profession. The incremental variance contributed by the constraining-factors block ($\Delta R^2 = .133$) confirms that these factors operate independently of social support and income.

Table 7. Hierarchical Multiple Regression: Predictors of Career Persistence (n = 118)

Predictor	β	SE	t	p	VIF
(Constant)	-	0.841	-	<.001	-
Social support score	0.341	0.061	5.59	<.001	1.72
Income level ($\log_{10}$ INR)	0.298	0.074	4.03	<.001	1.58
Family approval (binary)	0.264	0.082	3.22	.001	1.43
Peer network size (count)	0.217	0.044	4.93	<.001	1.91
Agency affiliation (binary)	0.198	0.079	2.51	.013	1.37

Education level (ordinal 1-4)	0.162	0.058	2.79	.006	1.44
Years of experience	0.147	0.037	3.97	<.001	1.28
Barrier index (reverse-scored)	-0.289	0.067	-4.31	<.001	1.83
Perceived safety score	0.141	0.055	2.56	.011	1.34
Harassment incidents (count)	-0.187	0.051	-3.67	<.001	1.56
R² = 0.614, Adj. R² = 0.597, F(10,107) = 17.09, p < .001					

*Note: * Dependent variable: career-persistence composite (log-transformed), standardised betas. Blocks entered sequentially: B1 = demographic controls, B2 = household/social context, B3 = employment conditions, B4 = constraining factors. All VIF < 2.0. ΔR^2 : B1 = .089, B2 = .214, B3 = .178, B4 = .133 (all $p < .001$).

3.8. Safety Perception by Tour Type and Experience

Table 8 reveals a consistent two-way pattern: safety-perception scores are higher under women-only formats than mixed-gender formats at every experience level and higher for more-experienced guides within each format. The highest cell mean is for women-only tours led by guides with over five years' experience (4.62), against the lowest for inexperienced guides in mixed-gender tours (3.12). The format gap widens with experience (0.74 points at the highest tier), suggesting a positive feedback dynamic between professional development and format-specific safety delivery.

Table 8. One-Way ANOVA: Safety-Perception Score by Tour Format and Guide Experience (n = 149)

Group	n	Safety perception (M)	SD	F	Post-hoc
< 2 yrs, mixed-gender tours	32	3.12	0.91		Lowest***
< 2 yrs, women-only tours	21	3.84	0.78		
2-5 yrs, mixed-gender tours	28	3.61	0.84	F(5,112)	
2-5 yrs, women-only tours	27	4.31	0.67	= 19.47	
> 5 yrs, mixed-gender tours	19	3.88	0.77	p < .001	
> 5 yrs, women-only tours	22	4.62	0.54		Highest***

*Note: * Safety-perception score = composite of four safety-related Likert items (scale 1-5). Tukey HSD post-hoc: *** $p < .001$.

3.9. Structural Equation Model

Following confirmation of the measurement model (Section 2.5), the structural model was estimated to test H1-H8 (Table 9). All eight hypotheses are supported. The strongest direct effect is career persistence → role-model effect ($\beta = 0.518$), indicating that women's sustained presence generates measurable normative change through visibility to younger women and family members. Career persistence → safety perception ($\beta = 0.447$) confirms that accumulated experience improves the perceived safety of hiring a woman guide.

Table 9. Structural Equation Model: Standardised Path Coefficients (N = 346)

Construct relationship	β	SE	p	95% CI	Hypothesis
Gender-norm liberalism → persistence	0.381	0.054	<.001	[0.275, 0.487]	H1: supported
Social support → persistence	0.344	0.061	<.001	[0.224, 0.464]	H2: supported
Income level → persistence	0.301	0.068	<.001	[0.167, 0.435]	H3: supported
Barrier index → persistence	-0.312	0.058	<.001	[-0.426, -0.198]	H4: supported
Persistence → safety-perception change	0.447	0.049	<.001	[0.351, 0.543]	H5: supported
Persistence → role-model effect	0.518	0.044	<.001	[0.432, 0.604]	H6: supported
Women-only tours → safety-perception change	0.362	0.057	<.001	[0.250, 0.474]	H7: supported
Women-only tours → agency empowerment	0.334	0.061	<.001	[0.214, 0.454]	H8: supported
Indirect: norm liberalism → safety (via persistence)	0.171	0.034	<.001	[0.104, 0.238]	Mediation
Model fit: $\chi^2/df = 1.91$, CFI = 0.954, RMSEA = 0.051, SRMR = 0.064					Good fit

*Note: * Maximum-likelihood estimation, bias-corrected bootstrap CIs (2,000 resamples). RMSEA 90% CI [0.034, 0.068]. CFI = comparative fit index, RMSEA = root mean square error of approximation, SRMR = standardised root mean square residual.

The two women-only-tour paths - to safety perception ($\beta = 0.362$) and agency empowerment ($\beta = 0.334$) - confirm that the format generates independent safety and empowerment gains beyond those explained by persistence. The mediation result is theoretically important: gender-norm liberalism affects safety perception primarily through career persistence (indirect $\beta = 0.171$, 95% CI [0.104, 0.238]), meaning that liberal attitudes improve safety outcomes mainly by enabling guides to persist long enough to accumulate experience - a pathway disrupted when persistence is short-circuited by barriers, family opposition or economic non-viability. Model fit was good ($\chi^2/df = 1.91$, CFI = 0.954, RMSEA = 0.051, SRMR = 0.064).

4. Discussion

The findings are interpreted below in relation to the entrepreneurial-persistence framework (Section 2.5-2.6) and the international literature on women's tourism entrepreneurship and gender norms, rather than as a restatement of the individual statistics already reported in Section 3.

4.1. The Income Gap: Structural rather than Experiential

The 30.5% gender income gap (Table 3) admits three proximate explanations consistent with the data: women guides work fewer days per season, partly reflecting family-obligation constraints and differential access to referral networks, they are concentrated in the women-only niche, which offers a near-exclusive position but greater booking seasonality and they are markedly less likely to own equipment, which raises operating costs and signals lower occupational formalisation to clients and agencies. The non-significant differences in year-on-year income growth and repeat-client rates caution against an 'experiential deficit' reading in which the gap self-corrects with tenure. The pattern aligns with Blau and Kahn's (2000) decomposition of professional gender wage gaps, in which the component remaining after controlling for observable productivity reflects exclusion that market processes do not resolve. Interpreted through the persistence framework, the income gap is therefore not merely an earnings outcome but a determinant of business sustainability: constrained capital accumulation limits investment in equipment and network expansion, so that persistence depends on the availability of economic resources as much as on individual capability - consistent with Alarcón and Cole (2019) and with the resource dimension of Kabeer's (1999) empowerment framework.

4.2. Family Opposition as a Structural Barrier

The primacy of family opposition in the barrier hierarchy (severity 4.44) warrants theoretical contextualisation rather than mere documentation. In Ladakhi social structure, women's overnight outdoor employment entails a household absence that is culturally coded as transgressive irrespective of its economic justification. The multi-day character of high-altitude trekking - absences of seven to twenty-five consecutive days - generates a household-negotiation challenge qualitatively different from market-based or guesthouse work. The 'care penalty' documented in feminist economics (Folbre, 1994, Williams, 2001) thus takes a specifically spatial form here: women's absence from the domestic sphere is simultaneously economic non-contribution and symbolic transgression, a compound sanction that male guides do not face. This locates entrepreneurial persistence as socially embedded rather than purely market-driven: unlike conventional opportunity-recognition models, persistence among women guides in Ladakh depends heavily on household approval and social legitimacy. The significant social-support path in the SEM ($\beta = 0.344$) indicates, however, that this barrier is not immutable - guides who sustain careers do so through household income negotiation and peer support, with the emerging community of women guides performing this normative negotiation collectively through the role-model mechanism ($\beta = 0.518$).

4.3. Women-Only Tours as Institutional Innovation

The SEM confirms that participation in women-only tours independently predicts both safety-perception improvement ($\beta = 0.362$) and agency empowerment ($\beta = 0.334$), controlling for experience and persistence. The format's specific social composition therefore generates normative and psychological effects beyond individual career development. From an institutional-theory perspective (DiMaggio and Powell, 1983), women-only tours function as a normative reference point for what gender-inclusive adventure tourism looks like, gradually shifting the cognitive script that clients, agencies and guides apply to the occupation. The format's near-exclusive revenue contribution to women guides (41.7%) supplies a market rationale for its expansion that is independent of normative arguments, while the positive experience-safety relationship (Table 8) indicates that investment in experienced women guides yields measurable product-quality gains in precisely the format with the highest commercial potential. Interpreted through the persistence framework, women-only tours operate as entrepreneurial platforms -

specialised niches that lower entry barriers, strengthen professional visibility and support business sustainability among women tourism entrepreneurs in remote destinations.

5. Implications

5.1. Theoretical Implications

The study contributes to gender-and-tourism scholarship by introducing and empirically testing an entrepreneurial-persistence framework for women tourism entrepreneurs in remote mountain destinations. By defining persistence as realised continuation behaviour distinct from intention, resilience and firm survival (Section 1.5), the framework clarifies a construct that prior tourism research has often used loosely and demonstrates that persistence is jointly conditioned by gender-norm liberalism, social support, economic viability and institutional barriers. The mediation finding - that gender-norm liberalism influences downstream safety outcomes primarily through persistence - extends Kabeer's (1999) empowerment logic by specifying persistence as the behavioural mechanism linking attitudinal resources to achievements. These results position women guides not merely as employees but as entrepreneurial actors whose continuation depends on the interaction of market opportunity and social legitimacy.

5.2. Managerial and Practical Implications

The findings indicate, rather than prescribe, several directions for entrepreneurial support within Ladakh's adventure tourism sector. Because social support and family approval are the strongest predictors of persistence, support measures that strengthen these enabling relationships - for example, mentorship and peer-network structures and family-facing engagement - are likely to be more consequential than measures targeting individual attributes alone. Given the observed equipment-ownership and certification gaps, improving access to equipment, training and professional networks could plausibly strengthen business sustainability, although the cross-sectional design means these expectations require confirmation through intervention studies. The harassment finding (Section 3.7) suggests that workplace-safety mechanisms are relevant to retention, their effectiveness, however, should be evaluated empirically rather than assumed. These implications are offered as evidence-consistent possibilities for tourism agencies, guide associations and public bodies and their causal effects on persistence remain to be tested.

6. Policy Considerations

The following considerations follow from and are bounded by, the empirical findings, they are presented as candidate interventions whose effects warrant evaluation rather than as established prescriptions.

6.1. Women-Accessible Certification and Training

Because the absence of women-accessible certification pathways ranks as the third most severe structural barrier (severity 3.94) and because the certification gap (Table 3) is substantial, certification arrangements adapted to the overnight-absence constraint - for instance, modular rather than continuous-residency formats - may lower a documented barrier to entry. Whether such adaptations improve persistence is an empirical question best addressed through a pilot with measured outcomes.

6.2. Equipment Access

The 27.4-percentage-point equipment-ownership gap (34.7% vs. 62.1%) represents a measurable operational disadvantage. Equipment-finance arrangements channelled through occupational associations are one plausible response, the evidence base for their effectiveness in comparable Himalayan settings remains limited and any such scheme should incorporate outcome monitoring rather than rely on assumed repayment performance.

6.3. Women-Only Tour Recognition and Marketing

The revenue evidence (women-only tours at 41.7% of women guides' income) and the format's independent safety and empowerment effects (Section 3.9) provide a commercial and social rationale for formal recognition of women-led tour standards. A quality-recognition scheme aligning the interests of operators, guides and tourism authorities is consistent with these findings, though the precise standards and their uptake would need to be developed and assessed locally.

6.4. Harassment Reporting Mechanisms

The regression finding that each additional harassment incident is associated with a 0.187-SD reduction in persistence, holding income and support constant, provides a direct quantitative justification for a confidential trail-

harassment reporting mechanism with a defined response process. The design and governance of such a mechanism should be developed with women guides as participants and its effect on retention evaluated over time.

7. Limitations and Future Research

Several limitations qualify these findings. First, the cross-sectional design cannot establish whether positive safety perceptions are generated by women-only-tour participation or whether pre-existing liberal attitudes select participants into these formats - a self-selection concern partly evident in the GRAS subscale data (Table 4). A pre-post longitudinal design with a matched comparison group would be needed to identify the causal effect cleanly. Second, although the women-guide sub-sample ($n = 118$) satisfies the case-to-parameter ratios recommended for SEM (Kline, 2023), a larger guides-only sample would improve the precision of path estimates. Third, the study under-samples the informal guide sector - women who guide without LMTGA registration - who are likely to face more severe barriers and lower incomes. Fourth, self-reported income and attitude measures may be subject to social-desirability bias, although the low common-method variance (Section 2.5) mitigates this concern.

Future research should prioritise: (a) a longitudinal cohort study tracking women guides' trajectories across three to five seasons, (b) a randomised or quasi-experimental evaluation of the certification and equipment interventions discussed in Section 6, with persistence and income as primary outcomes, (c) an intersectional analysis of how religion (Buddhist vs. Muslim women), caste and district interact with gender and (d) comparative extension of the framework to Nepal's Everest region, Sikkim and Spiti Valley to assess which findings are Ladakh-specific and which generalise across the Himalayan adventure-tourism context.

Conclusion

This study provides the first quantitative characterisation of women trekking guides' career conditions, gender-norm attitudes and structural barriers in Ladakh's adventure-tourism industry, drawing on a stratified sample of 346 respondents across four sub-populations. Women guides occupy a structurally disadvantaged but economically viable and normatively significant position. The 30.5% income gap is real and partly explained by differential access to working days, equipment and referral networks rather than by performance differences - a distinction with direct implications for where support should be targeted. The identification of social support and family approval as the strongest predictors of persistence locates the household as the primary site where career decisions are contested and peer networks as the primary resource through which women sustain themselves against that pressure.

Theoretically, the study contributes an entrepreneurial-persistence framework for women tourism entrepreneurs in remote mountain destinations, defining persistence precisely and demonstrating that it is shaped by the interaction of gender norms, social support, economic viability and institutional barriers. By treating women guides as entrepreneurial actors rather than employees alone, it extends gender-and-tourism entrepreneurship scholarship and connects gender-inclusive workforce participation to wider debates on socially sustainable tourism. Strengthening institutional support, entrepreneurial inclusion and workplace safety for women guides is therefore relevant not only to gender equality but to the long-term sustainability and resilience of Himalayan tourism systems.

Declarations

Ethical Considerations: The study followed the ethical guidelines and research regulations of the University of Ladakh, India. At the time of data collection, the University Ethics Committee did not issue formal approval numbers for non-clinical, survey-based social-science research. Participation was voluntary, informed consent was obtained from all respondents and confidentiality and anonymity were maintained throughout.

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Author Contributions

Mohd Rafee: conceptualization, methodology, supervision, writing - original draft, formal analysis.

Tsewang Dolma: data collection, investigation, writing - review and editing, field coordination.

Stanzin Khenrab: field support, stakeholder coordination, resources, proofreading. All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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Plural Valuation of Nature in a Peri-Urban Mountain Trail: An Exploratory Analysis Using Principal Component and Cluster Analysis



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Abstract: This study examines how visitors to a peri-urban mountain trail organize the ecological, hydrological, recreational, cultural, and spiritual dimensions of nature valuation.

An exploratory quantitative design analyzed eight five-point ordinal items from 22 visitors to Bogotá's Kilómetro 11 trail, Colombia. Principal component analysis was used descriptively to examine associations among valuation dimensions, and k-means clustering was applied to the scores of the first two components to explore provisional respondent configurations. The analyses were not intended to validate the latent structure or establish population-level typologies.

All eight dimensions obtained mean scores above the scale midpoint. The first component revealed a shared association pattern across dimensions, while the second positioned cultural, spiritual, and hydrological meanings apart from biodiversity, recreation, landscape, and air quality, with ecological connectivity occupying an intermediate position between them. The selected three-cluster solution provided a provisional description of three overlapping respondent configurations.

This study advances plural valuation research by examining how multiple dimensions are jointly organized rather than treating them as isolated preferences. It connects the IPBES plural-value framework with a visitor-based multivariate analysis in a peri-urban mountain setting.

The small, non-probabilistic sample may affect the stability of the PCA loadings and cluster assignments. These findings should be interpreted as provisional patterns that require validation with larger, heterogeneous, and independent samples.

The results suggest that environmental interpretation and trail management should combine water-related meanings, biodiversity, landscape, cultural significance, and responsible recreation rather than assuming a homogeneous visitor profile.

Keywords: nature valuation; plural values of nature; relational values; peri-urban ecosystems; mountain trails; principal component analysis; cluster analysis; environmental perception; hydrological regulation; human-nature relationships

JEL Classification: C38; Q51; Q56; Q57; Z13.

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Introduction

Peri-urban mountain ecosystems are socioecological spaces where ecological processes, urban dynamics, and diverse human-nature relationships converge. These environments are associated with hydrological regulation, biodiversity conservation, ecological connectivity, and landscape continuity, while also supporting cultural, recreational, and experiential values. However, environmental management in these contexts often relies on partial assessments centered on biophysical indicators, overlooking the plurality of ways in which nature is valued.

Recent studies have emphasized the need to incorporate multiple dimensions of nature valuation, including relational and cultural aspects, to better inform environmental decision-making. From this perspective, valuation is not limited to isolated preferences but involves configurations of meaning shaped by experience, perception, and interaction with specific territories.

This study examines how ecological, hydrological, recreational, cultural, and spiritual valuation dimensions are organized among visitors to the Kilómetro 11 trail in Bogotá, Colombia. It addresses the following research question: How are multiple dimensions of nature valuation associated and expressed through exploratory visitor configurations in a peri-urban mountain trail? To answer this question, principal component analysis and cluster analysis were used as complementary exploratory techniques. This study contributes to the literature by moving beyond the separate description of individual values and examining their joint multivariate organization in a visitor-based peri-urban setting. In doing so, it connects the plural-values framework with empirical evidence relevant to environmental management, environmental interpretation, and trail-based tourism.

1. Literature Review

Nature valuation has traditionally been approached from an instrumental perspective, emphasizing measurable ecosystem services, economic valuation, and biophysical indicators in environmental decision-making processes. While these approaches have provided useful analytical tools, they have also been criticized for overlooking the diversity of ways in which people relate to nature, assign meaning to ecosystems, and construct responsibilities toward the territories they inhabit or visit (Gómez-Baggethun and Ruiz-Pérez, 2011; Chan *et al.* 2016; Pascual *et al.* 2017).

In response, conceptual and policy-oriented frameworks have advanced the notion of the plural values of nature, particularly through the work of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2022). This perspective recognizes that nature is valued through multiple dimensions, including instrumental, intrinsic, and relational values, and highlights the importance of integrating this plurality into environmental governance and decision-making processes (Díaz *et al.* 2018; Pascual *et al.* 2023; Luque-Lora, 2024). Recent debates have emphasized that plural valuation requires careful attention to the frameworks used to classify, compare, and communicate values, as these frameworks can shape what becomes visible or invisible in environmental decisions and influence the values prioritized in environmental governance (Jacobs *et al.* 2016; IPBES, 2022; Vatn *et al.* 2024).

Relational values are particularly relevant because they explain how individuals and communities construct meanings, attachments, responsibilities, and forms of connection with ecosystems (Arias-Arévalo, Martín-López, and Gómez-Baggethun 2017; Muradian and Pascual 2018). These values broaden the scope of environmental assessment by situating valuation within social contexts, lived experiences, and human-nature relationships that cannot be fully captured through monetary or biophysical indicators (Himes and Muraca 2018; Grubert 2018; Pascual, Balvanera, and Christie 2023; Kleespies *et al.* 2025). This perspective is also connected to debates on shared and social values, which emphasize that valuation involves collective, deliberative, and place-based meanings rather than individual preferences (Raymond *et al.* 2010; Kenter *et al.* 2015; Kenter 2016).

Empirical research increasingly examines how plural values are expressed in specific socioecological contexts, showing that valuation processes are shaped by perceptions, experiences, interactions, and situated environmental meanings. Recent studies have shown the importance of recognizing and articulating plural values in water-related systems to make the different ways of relating to aquatic ecosystems and their contributions to social life visible (Ricart and Kirk 2022; Suarez *et al.* 2022). These perspectives are particularly relevant to peri-urban mountain ecosystems, where hydrological regulation, biodiversity, landscape, recreation, and cultural meanings are closely linked.

Urban and peri-urban ecosystems reveal this complexity with particular clarity and precision. Natural spaces in and around cities are associated not only with ecological processes but also with cultural, recreational, educational, spiritual, and symbolic significance. Studies on urban ecosystem assessment and green spaces have shown that urban nature is valued through multiple dimensions that exceed conventional biophysical and economic

metrics (Haase *et al.* 2014; Kabisch, Qureshi, and Haase 2015; Kondolf and Pinto 2017; Zambrano-Monserrate and Tarupi-Montenegro 2024). Urban ecology research has further shown that green and peri-urban spaces contribute to ecological functions, well-being, social interaction, and place-based experiences, reinforcing the need to examine valuation beyond single indicators (Andersson *et al.* 2014; Elmqvist *et al.* 2015; Madrigal-Martínez *et al.* 2025).

Although research on urban and peri-urban ecosystems has documented the coexistence of ecological functions, recreational experiences, and cultural meanings, these dimensions are frequently reported through separate indicators or descriptive summaries (Haase *et al.* 2014; Kabisch, Qureshi, and Haase 2015; Madrigal-Martínez *et al.* 2025). Less attention has been paid to how multiple dimensions of nature valuation are jointly associated and expressed through respondent-level configurations, particularly in visitor-based studies of peri-urban mountain trails. Multivariate techniques, such as principal component analysis and cluster analysis, can support an exploratory examination of these relationships by reducing dimensionality and describing provisional groupings within observed data (Everitt *et al.* 2011; Jolliffe and Cadima 2016; Hair *et al.* 2022).

This gap is particularly relevant for tourism and visitor management because trail use involves not only recreational demand but also ecological, hydrological, cultural, and relational meanings that may influence conservation, environmental interpretation, and management strategies of the area. This study addresses this gap by examining how eight nature valuation dimensions are jointly organized among visitors to the Kilómetro 11 trail in a peri-urban mountain ecosystem in Bogotá, Colombia.

The original contribution of the study lies in moving beyond the separate description of individual valuation dimensions to analyze their multivariate organization and expression in exploratory visitor configurations. By combining principal component analysis with cluster analysis, the study provides empirical evidence on how ecological, hydrological, recreational, cultural, and spiritual dimensions may coexist, overlap, and acquire different relative emphases within the same peri-urban setting. This approach complements existing research on the plural values of nature by connecting the IPBES conceptual framework with a visitor-based empirical analysis relevant to environmental management and trail-based tourism.

2. Materials and Methods

This study adopted an exploratory quantitative design to examine the organization of the dimensions of nature valuation among visitors to a single peri-urban mountain trail. The analytical approach focused on describing associations among the observed dimensions and exploring provisional respondent configurations rather than estimating population-level effects, testing causal relationships, or validating stable visitor typologies.

This study was conducted on the Kilómetro 11 trail located in the eastern hills of Bogotá, Colombia. This peri-urban ecosystem is associated with hydrological regulation, vegetation cover, landscape connectivity, and recreational and cultural experiences, making it suitable for analyzing plural valuation processes in socio-ecological contexts. Figure 1 shows the location of the study area in Bogotá and its broader territory.

Fieldwork was conducted from June to November 2025, using a non-probabilistic convenience sampling strategy. Adult visitors were approached after completing the Kilómetro 11 trail, and those who voluntarily agreed to participate completed the questionnaire individually, following a consistent administration protocol. A total of 22 visitors completed the questionnaire and constituted the final analytical sample. Because recruitment followed a non-probabilistic convenience strategy, the sample should not be considered representative of the wider population of trail visitors. The analyses were used exclusively to identify preliminary associations and exploratory valuation patterns and do not support statistical generalization, prevalence estimates, or stable population-level conclusions. Primary field data were collected directly from adult visitors using a consistent survey protocol, providing an appropriate basis for the exploratory analysis of valuation patterns within the observed sample.

Data were collected using a structured questionnaire designed to capture the perceived importance of multiple contributions of nature. The instrument included eight five-point ordinal items assessing biodiversity, hydrological regulation, air quality, landscape, ecological connectivity, recreation, cultural values, and spiritual values. Additional variables were collected to characterize the respondents, including age, gender, frequency of visit, transport mode, and visitor interests. Responses to the multiple-response visitor-interest item were grouped into three analytical domains. Environmental education and research were classified under Education; hiking, nature observation, and photography were classified under Nature; and recreation and sports were classified under Recreation. Each participant was assigned to the domain containing the largest number of selected options, which was used as the participant's dominant analytical interest category. No ties between analytical interest domains were observed in the dataset.

Figure 1. Location of the Kilómetro 11 Trail within the Eastern Hills peri-urban socioecological system of Bogotá, Colombia



Source: Authors' elaboration based on fieldwork records and spatial data from the Institute of Hydrology, Meteorology, and Environmental Studies (IDEAM), Colombia.

Note: The map shows the spatial distribution of the sampling area and drainage network within the urban–peri-urban interface of Bogotá.

Responses were coded on a five-point ordinal scale: 1 = Not at all important, 2 = Slightly important, 3 = Moderately important, 4 = Important, and 5 = Very important. Higher scores represent greater perceived importance. The English translation of the complete questionnaire is provided in Supplementary File S1. Although the instrument allowed responses across the full scale, the observed responses in this exploratory sample were concentrated between categories two and five.

Data processing and analysis were conducted using Python 3.12.3 and Google Colab as the computational environment. The main libraries used were pandas and NumPy for data management and numerical processing, scikit-learn for principal component analysis and k-means clustering, factor_analyzer for the Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity, Matplotlib for data visualization, adjustText for improving label readability in figures, and openpyxl for exporting the analytical outputs. Prior to analysis, the dataset was cleaned and pre-processed, including the identification of missing values, recoding of categorical variables, and standardization of numerical variables to ensure comparability across dimensions. No missing values were identified in the eight nature valuation variables; therefore, imputation or case deletion was not required. The valuation variables were standardized prior to PCA to avoid differences in scale affecting component extraction. Because the valuation dimensions were measured using five-point ordinal items, they were treated as approximately continuous solely for the purpose of exploratory dimensional reduction after standardization. This analytical decision was intended to summarize patterns of association among the eight dimensions and should not be interpreted as assuming exact interval-level measurement or as validating a latent construct. PCA was therefore used as a descriptive exploratory technique rather than as a confirmatory factor-analytical procedure (Jolliffe and Cadima 2016; Hair *et al.* 2022). Subsequently, cluster analysis was performed using the scores of the first two principal components.

Given the small sample size, the analytical sequence was designed as a descriptive and exploratory procedure rather than a confirmatory multivariate model. PCA was used to summarize the shared variation among the eight valuation dimensions within a reduced component space, thereby limiting redundancy before clustering. Subsequently, K-means clustering was applied to the scores of the first two principal components to explore

provisional respondent configurations in that reduced space. This two-stage strategy was selected to support pattern identification in a small dataset, without interpreting the resulting components or clusters as stable population structures

To examine patterns of association among the valuation dimensions, principal component analysis (PCA) was performed. PCA is a multivariate technique that reduces dimensionality by transforming correlated variables into a smaller set of orthogonal components. The suitability of the correlation structure for exploratory PCA was examined using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The global KMO value was 0.701, suggesting adequate preliminary sampling adequacy, and Bartlett's test was statistically significant ($\chi^2 = 87.27$, $p < 0.001$), indicating that the correlation matrix differed from an identity matrix. These diagnostics supported the exploratory examination of associations among the valuation dimensions; however, they did not compensate for the limited ratio of 22 participants to eight variables or demonstrate a validated and stable component structure. Accordingly, the loadings were interpreted as provisional association patterns within the observed sample rather than as evidence of a confirmed latent structure.

The KMO measure and Bartlett's test were used as preliminary diagnostics of the correlation structure and should not be interpreted as eliminating the limitations associated with the sample size. Although these diagnostics supported exploratory PCA, the ratio of participants to variables remained limited. Accordingly, the component loadings were used to describe provisional association patterns within the observed sample and not to establish a validated factor structure.

Component retention was guided by cumulative explained variance, parsimony, and substantive interpretability, consistent with the exploratory purpose of the analysis (Jolliffe and Cadima 2016; Hair *et al.* 2022). The first two components were retained because they jointly explained 66.8% of the total observed variance and provided an interpretable two-dimensional representation of the relationships among the eight valuation dimensions. Variable loadings were examined to describe the relative contribution and position of each dimension within the reduced space. Given the small sample size, the retention of two components was treated as a descriptive analytical decision and not as confirmation of a definitive latent structure. Therefore, the resulting component solution should be assessed for stability in future studies using larger independent samples.

Subsequently, cluster analysis was conducted using the component scores derived from the PCA. The k-means clustering algorithm was applied to identify groups of respondents with similar valuation configurations. Considering the small sample size, the clustering results were interpreted as exploratory respondent groupings based on the similarity of their component scores rather than as stable visitor typologies. The number of clusters was set to $k = 3$ as an exploratory analytical decision based on the interpretability of the resulting configurations and their distribution in the space defined by the first two principal components. The selection was not based on a confirmatory classification procedure and was not treated as evidence that three clusters constituted an optimal, unique, or statistically stable solution. Given the limited number of observations, the purpose was to obtain a parsimonious descriptive representation that could support the interpretation of relative differences among respondents. Alternative cluster solutions and the reproducibility of the three-cluster configuration should be assessed in future studies using larger independent samples. No inferential comparisons among the clusters were performed because of the small, non-probabilistic sample. Therefore, the cluster-related results are reported as descriptive exploratory patterns.

K-means was selected because the retained PCA scores provided continuous coordinates suitable for exploratory partitioning according to within-group similarities (Everitt *et al.* 2011). Its use was intended to generate an interpretable descriptive segmentation of the observed respondents rather than to estimate latent classes or establish a definitive classification. Given the sample size, no claims were made regarding the optimality, reproducibility, or out-of-sample stability of the three-cluster solutions. Therefore, the resulting configurations should be understood as provisional analytical patterns that require validation using larger and more heterogeneous independent sample sizes.

The multivariate results were examined through numerical outputs and graphical representations, including a PCA loading plot and a radar chart. These outputs were used to describe the relationships among valuation dimensions and configuration-specific tendencies. Ethical considerations were addressed by ensuring voluntary participation, prior informed consent, and anonymity of respondents. No names, identification numbers, email addresses, or other direct personal identifiers were collected. Potentially identifying contextual variables were analyzed and reported only in aggregate form. The study did not involve any intervention in the ecosystem.

3. Research Results

The results are presented in four sections. First, the general characteristics of the sample and the overall valuation scores are described. Second, the structure of the valuation dimensions was examined using principal component analysis (PCA). Third, the exploratory configurations identified through cluster analysis are presented. Finally, the age group and interest distributions were described as indicative tendencies across configurations.

The sample included 22 participants in total. Women represented 59.1% of the respondents, and men represented 40.9%. Public transport was the most common means of accessing the trail (59.1%), followed by private vehicles (27.3%) and other types of motorized transport (13.6%). Most respondents reported visiting the trail for the first time (81.8%), while 13.6% described their visits as occasional, and 4.5% reported visiting the trail weekly. These results show variations in gender and transport mode, while the sample was concentrated among first-time visitors and public transport users. Table 1 summarizes the general characteristics of the visitors.

Table 1. General characteristics of visitors (n = 22)

Variable	Category	n	Percentage (%)
Gender	Women	13	59.1
	Men	9	40.9
Transport mode	Public transport	13	59.1
	Private vehicle	6	27.3
	Motorized transport	3	13.6
Visit frequency	First visit	18	81.8
	Occasional	3	13.6
	Weekly	1	4.5

Source: Authors' elaboration based on survey data.

At the aggregate level, the mean score for each valuation dimension was above the midpoint on the five-point scale. Hydrological regulation showed the highest mean value (4.727), followed by biodiversity (4.500), and air quality (4.455). Cultural values (4.318) and recreation (4.136) also had relatively high scores. Landscape (3.818), ecological connectivity (3.682), and spiritual values (3.500) showed comparatively lower values, although they were still above the midpoint. The pattern of the mean scores suggests that importance was distributed across multiple valuation dimensions rather than being concentrated in a single contribution of nature. Table 2 presents the overall mean valuation scores by dimensions.

Table 2. Overall mean valuation scores by dimension

Dimension	Mean score
Hydrological regulation	4.727
Biodiversity	4.500
Air quality	4.455
Cultural values	4.318
Recreation	4.136
Landscape	3.818
Ecological connectivity	3.682
Spiritual values	3.500

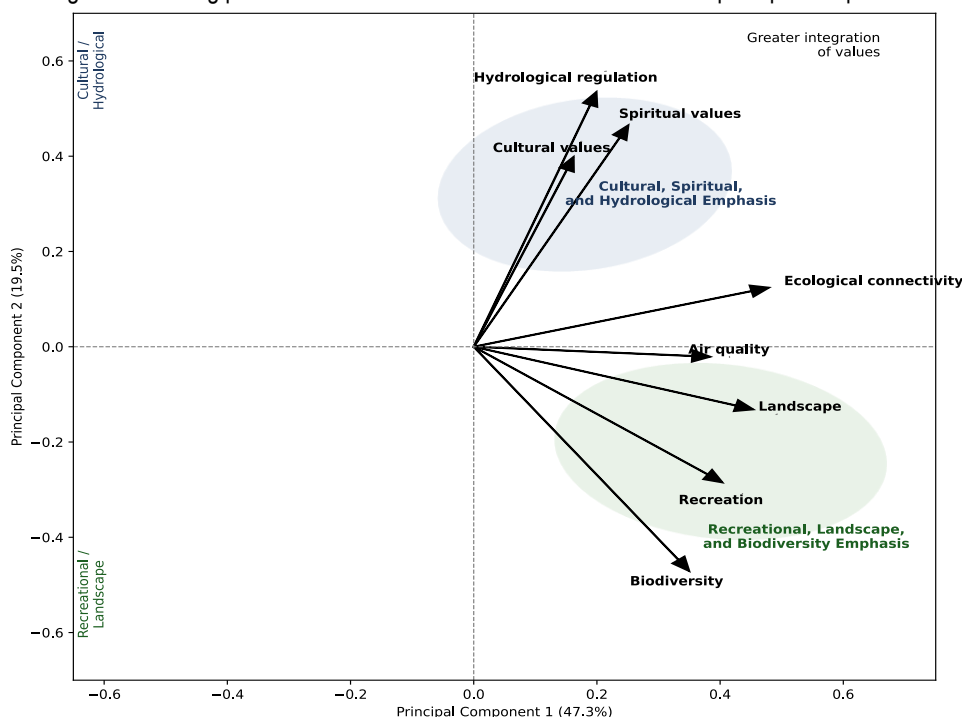
Source: Authors' elaboration based on survey data.

The first two principal components were retained for descriptive interpretation and jointly explained 66.8% of the total variance in the data. PC1 explained 47.3% of the variance, and PC2 explained 19.5%. All eight valuation dimensions loaded in the same general direction on PC1, indicating a shared pattern of association within the sample, rather than independent or opposing valuation domains.

PC2 differentiated the relative positions of the valuation dimensions. Cultural values, spiritual values, and hydrological regulation were located toward one side of the component, whereas biodiversity, recreation, landscape, and air quality were located toward the other. Ecological connectivity occupied an intermediate position.

Because the orientation of component axes is arbitrary, these positions do not represent positive and negative value judgments or statistically distinct categories. They describe relative association patterns within the observed sample and should be interpreted as provisional. Figure 2 illustrates the distribution of the valuation dimensions across the first two principal components of PCA.

Figure 2. Loading plot of nature valuation dimensions on the first two principal components



Source: Authors' elaboration based on survey data.

Note: Arrows represent the variable loadings on the first two principal components. The direction of the component axes is arbitrary; therefore, interpretation focuses on the relative position and association of the variables rather than the positive or negative sign itself. The shaded areas represent interpretative groupings derived from the loading pattern and should not be interpreted as statistically distinct factors.

To examine how these dimensions were articulated at the respondent level, cluster analysis was conducted using PCA scores. The selected three-cluster solution yielded three exploratory Configurations A, B, and C. These configurations represent provisional and partially overlapping patterns of how respondents combine valuation dimensions. Table 3 summarizes the size, mean age, and predominant interest profile of each exploratory configuration.

Table 3. Cluster size and selected visitor characteristics by configuration

Configuration	n	Mean age	Predominant interest profile
A	5	34.8	Nature-based activities
B	8	42.2	Mixed (education and recreation)
C	9	37.0	Environmental education

Source: Authors' elaboration based on survey data.

Configuration A included five respondents and showed comparatively higher scores for biodiversity (4.800) and recreation (4.400), while presenting lower scores for spiritual values (2.800) and ecological connectivity (2.800). Configuration B included eight respondents and showed higher scores for hydrological regulation (4.875) and cultural values (4.500), with comparatively lower scores for landscape (3.000), recreation (3.500), and ecological connectivity (3.125). Configuration C included nine respondents and displayed consistently high scores across most dimensions, particularly biodiversity (5.000), hydrological regulation (5.000), air quality (4.889), landscape (4.778), and ecological connectivity (4.667). These results show that Configuration C had higher mean scores across most valuation dimensions. Table 4 presents the mean valuation scores for each of the configurations.

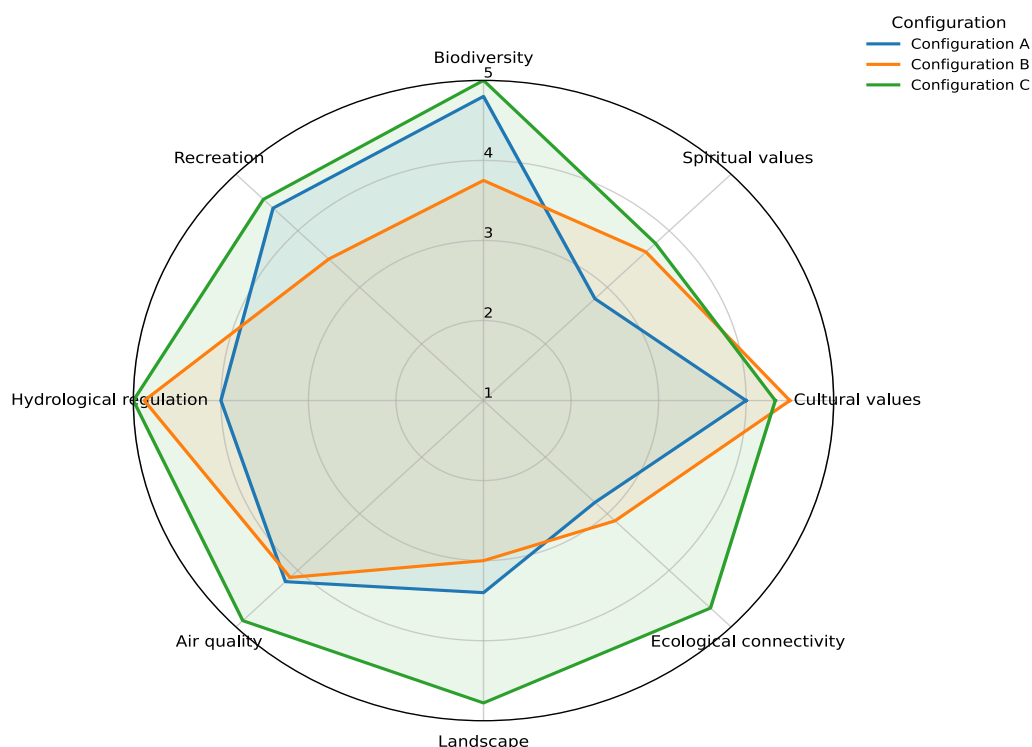
Table 4. Mean valuation scores by cluster configuration

Dimension	Configuration A	Configuration B	Configuration C
Cultural values	4.000	4.500	4.333
Spiritual values	2.800	3.625	3.778
Biodiversity	4.800	3.750	5.000
Recreation	4.400	3.500	4.556
Hydrological regulation	4.000	4.875	5.000
Air quality	4.200	4.125	4.889
Landscape	3.400	3.000	4.778
Ecological connectivity	2.800	3.125	4.667

Source: Authors' elaboration based on cluster averages.

These configurations describe the tendencies in the relative emphasis placed on the valuation dimensions rather than fixed, mutually exclusive, or population-level visitor groups. Configuration A showed comparatively greater emphasis on biodiversity and recreation, while Configuration B showed greater relative emphasis on hydrological regulation and cultural values. Configuration C obtained higher mean scores across most dimensions, representing a broader pattern of valuation within the observed sample. However, this configuration may also partly reflect a general tendency toward higher response intensity rather than a substantively distinct valuation type. Accordingly, no definitive labels or inferential distinctions were assigned to the configurations. Their partial correspondence with the differentiation observed in the second principal component is interpreted only as an exploratory pattern requiring validation with larger samples. Figure 3 visually summarizes the differences between the configurations.

Figure 3. Mean valuation profiles of the exploratory configurations



Source: Authors' elaboration based on cluster analysis.

Note: Values correspond to the mean scores of respondents assigned to each exploratory configuration on a five-point ordinal scale. The radar chart is provided only to facilitate a descriptive comparison of the relative valuation profiles observed in the sample. The configurations are not statistically validated visitor types, and differences among them should not be interpreted as being inferentially significant.

Additional cross-tabulations suggested descriptive differences in the distribution of age groups and visitor interests across configurations. Configuration A was concentrated in the 30-39 age group (80.0%), while Configuration B showed a higher proportion of respondents aged 40-49 (50.0%). Configuration C presented a more even distribution across age groups. Regarding the recoded dominant analytical interest category, Configuration A was mainly associated with Nature (60.0%), Configuration B showed the same proportion of Education and Recreation profiles (37.5% each), and Configuration C showed a higher concentration of Education profiles (66.7%). These patterns are presented as descriptive tendencies given the exploratory design and sample size. Table 5 presents the distribution of age groups and dominant interests by configuration. These cross-tabulations are reported only as descriptive tendencies and should not be interpreted as evidence of statistically significant differences among configurations. No inferential tests were applied to the differences in mean valuation scores, age distributions, or analytical interest categories across the three configurations. Given the small number of respondents within each configuration, such tests would not provide a reliable basis for population-level comparison. Accordingly, the reported percentages and cluster-specific means are presented exclusively to describe the internal composition of the exploratory solution.

Table 5. Age group and dominant interest distribution by configuration (%)

Variable	Category	Configuration A	Configuration A	Configuration A
Age group	18-29	0.0	12.5	33.3
	30-39	80.0	25.0	22.2
	40-49	20.0	50.0	22.2
	50 or more	0.0	12.5	22.2
Dominant interest	Education	20.0	37.5	66.7
	Nature	60.0	25.0	33.3
	Recreational	20.0	37.5	0.0

Source: Authors' elaboration based on cross-tabulations.

Overall, the descriptive results revealed a shared pattern of association across the eight valuation dimensions, together with differences in their relative emphasis among respondents. The PCA summarized these associations through two components, while the selected three-cluster solution provided a provisional description of respondent-level valuation profiles. The cluster-specific means and cross-tabulations were not subjected to inferential testing and should not be interpreted as evidence of statistically distinct visitor populations. Accordingly, the results describe patterns observed within the analytical sample and provide the empirical basis for the theoretical and practical interpretation developed in the Discussion.

4. Discussion

The results provide exploratory evidence that nature valuation on a peri-urban mountain trail involves both a shared multidimensional structure and differentiated relative emphases among visitors. Although all eight dimensions obtained mean scores above the midpoint of the scale, the principal contribution does not lie only in their individual levels of importance. Rather, the PCA and cluster results show how ecological, hydrological, recreational, cultural, and spiritual meanings were associated and combined within the observed sample. This distinction is important because plural valuation involves not merely recognizing the presence of multiple values but also examining how those values coexist, relate to one another, and acquire different prominence in specific socioecological contexts. Therefore, the findings are consistent with approaches that reject the reduction of nature valuation to instrumental or economic dimensions and instead emphasize relational, cultural, shared, and context-dependent meanings (Chan *et al.* 2016; IPBES 2022; Pascual *et al.* 2017; Pascual *et al.* 2023; Vatn *et al.* 2024).

All valuation variables loaded in the same direction on the first principal component, indicating a shared pattern of association across dimensions. This empirical pattern complements the IPBES plural-values framework by showing that, within the study sample, ecological, hydrological, recreational, cultural, and spiritual meanings were not expressed as isolated domains but as interconnected elements of the valuation of the trail. Whereas conventional assessments frequently examine individual ecosystem contributions or visitor preferences separately, the results suggest that multiple meanings can be simultaneously embedded in visitors' relationships with a peri-urban socioecological setting. Therefore, the contribution of this finding lies not in identifying a single dominant value, but in making visible the coexistence and mutual association of several valuation dimensions within the same multivariate structure.

The differentiation observed along PC2 adds a second analytical layer to this shared valuation pattern. Cultural values, spiritual values, and hydrological regulation were positioned on one side of the component,

whereas biodiversity, recreation, landscape, and air quality were positioned on the other. Because the orientation of the PCA axes is arbitrary, this distribution should not be interpreted as an opposition, hierarchy, or separation into statistically distinct value categories. Rather, it describes the differences in the relative association of the dimensions within the observed sample. One possible interpretation is that cultural, spiritual, and hydrological meanings were more closely connected to place-based, symbolic, and relational experiences, whereas biodiversity, recreation, landscape, and air quality were more closely associated with the directly perceived ecological and experiential attributes of the visit. This pattern complements relational-value approaches by showing that ecological processes and socially constructed meanings may coexist within the same valuation structure while acquiring different relative emphases (Arias-Arévalo *et al.* 2017; Himes and Muraca, 2018; Muradian and Pascual, 2018).

The intermediate position of ecological connectivity on PC2 also deserves attention. Unlike the other dimensions, it was not located clearly toward either of the two relative orientations observed in the component. This position may reflect its cross-cutting character in a peri-urban mountain setting, where connectivity refers both to ecological continuity among habitats and to the spatial relationships through which visitors experience the connection between the city, the mountain landscape, and broader ecological processes. Rather than constituting an isolated value, ecological connectivity may therefore operate as a bridging dimension linking biodiversity, landscape, hydrological processes, and place-based experience. This interpretation complements research showing that urban and peri-urban ecosystems depend on relationships among ecological functions, spatial continuity, and human experience (Andersson *et al.* 2014; Haase *et al.* 2014; Elmqvist *et al.* 2015). From a practical perspective, this suggests that environmental interpretation should make these often less visible territorial connections understandable to visitors, while recognizing that this interpretation remains provisional within the present sample.

The comparatively high mean assigned to hydrological regulation provides additional insight into the differences among the valuation dimensions. Within the observed sample, water-related processes received the highest average importance score, exceeding the means recorded for biodiversity, air quality, recreation, landscape, ecological connectivity and spiritual values. This result may reflect the visibility and perceived relevance of water in mountain ecosystems connected to Bogotá's urban–peri-urban interface. However, its position alongside cultural and spiritual values on PC2 suggests that hydrological regulation was not necessarily understood as a biophysical function. Water-related valuation may also incorporate place-based meanings, everyday dependencies, symbolic associations, and broader relationships between visitors and mountain territories. This interpretation is consistent with studies emphasizing that water valuation involves ecological, social, cultural, and relational dimensions that cannot be reduced to a single functional category (Ricart and Kirk, 2022; Suarez *et al.* 2022; IPBES, 2022). Although the small sample size does not allow for conclusions about the wider visitor population, the results highlight the analytical importance of examining how highly valued ecological processes may also carry cultural and relational significance.

The comparatively lower means recorded for spiritual values, ecological connectivity, and landscape should not be interpreted as evidence that these dimensions are unimportant or irrelevant. All three remained above the midpoint of the response scale, indicating that they were part of the valuation process in the sample. Their lower relative position may reflect differences in visibility, immediacy, or ease of recognition during a trail visit. Landscapes can be directly experienced, whereas ecological connectivity involves spatial and ecological relationships that may not be immediately perceptible without prior knowledge or environmental interpretation. Spiritual values may also depend more strongly on personal experience, cultural background, attachment to place, or the circumstances of a visit. These differences support the argument that valuation scores are shaped not only by the characteristics of the ecosystem but also by the ways in which visitors encounter, understand, and relate to these characteristics (Chan *et al.* 2016; Himes and Muraca, 2018; Kenter, 2016; IPBES, 2022). From a management perspective, lower relative scores may identify dimensions that require more explicit interpretation rather than those that require less attention.

It is important to distinguish the mean level of importance assigned to each dimension from its position in the multivariate structure. A comparatively high mean indicates that a dimension was rated as important by the respondents, whereas its PCA loading describes how it varied in relation to other dimensions within the observed sample. Consequently, hydrological regulation having the highest mean does not imply that it independently determines the component structure, just as the comparatively lower means of spiritual values or ecological connectivity do not imply that these dimensions are analytically irrelevant. Therefore, PCA and cluster analyses complement, rather than replace, the descriptive mean scores by showing how dimensions with different levels of importance are associated and combined across respondents (Jolliffe and Cadima 2016; Hair *et al.* 2022).

The selected three-cluster solution adds a respondent-level layer to the interpretation of the valuation structure of the data. Configuration A placed greater relative emphasis on biodiversity and recreation, suggesting a valuation pattern more closely associated with directly perceived ecological attributes and experiential trail use. Configuration B combined stronger hydrological and cultural valuation, reinforcing the possibility that water-related meanings are connected not only to ecological regulation but also to place-based and socially constructed significance. Configuration C displayed consistently high scores across most dimensions and may represent a broader or more integrated valuation pattern than the other configurations. However, because of the small sample size, this configuration may also partly reflect a general tendency toward higher response intensity, and the analysis cannot conclusively distinguish between these interpretations. Therefore, configurations should not be treated as discrete visitor typologies. Their analytical contribution lies in showing that plural valuation may be expressed through different combinations of relative emphasis rather than through mutually exclusive categories of value. This respondent-level differentiation complements studies of urban and peri-urban nature by illustrating how ecological functions, recreational experiences, and cultural meanings can coexist while acquiring different levels of prominence among visitors (Kabisch, Qureshi, and Haase 2015; Kenter 2016; IPBES 2022; Madrigal-Martínez *et al.* 2025).

The observed differences among valuation dimensions have practical implications for environmental management and trail-based tourism. A management approach centered exclusively on recreational use or biophysical monitoring may overlook the cultural, hydrological, spiritual, and relational meanings through which visitors interpret the trail. The strong valuation of hydrological regulation suggests that water-related processes could be incorporated more explicitly into environmental interpretation, visitor communication, and educational activities, not only as ecological functions but also as elements connected to place-based meanings. Similarly, the relevance of biodiversity, landscape, and ecological connectivity supports the inclusion of messages and management actions that make the trail's role within the broader peri-urban socioecological system visible.

The exploratory configurations also suggest that visitor engagement should not assume a homogeneous recreational profile. Interpretive materials, guided activities, and communication strategies could combine different entry points, including biodiversity observation, water-related narratives, landscape experience, cultural meanings, and responsible recreation. Such diversification may help environmental managers address overlapping valuation orientations while avoiding the reduction of the trail to a single function. These implications should be understood as context-specific inputs rather than prescriptive recommendations, given the limited sample and provisional character of the configurations.

This study extends previous research on urban and peri-urban ecosystems in two ways. First, existing studies have established that green and mountain spaces near cities support ecological functions, recreation, well-being, social interaction, and place-based experiences (Haase *et al.* 2014; Kabisch, Qureshi, and Haase 2015; Elmquist *et al.* 2015; Madrigal-Martínez *et al.* 2025). The present study complements this literature by showing that these dimensions were not only simultaneously valued but were also associated with the multivariate structure observed in the sample. Second, whereas much of the existing literature identifies the presence or relative importance of individual benefits and cultural meanings, the exploratory configurations identified here illustrate how visitors may combine these meanings with different relative emphases. In this respect, the Kilómetro 11 trail can be understood not merely as an urban green space or recreational destination, but as a peri-urban socioecological setting in which water-related meanings, biodiversity, landscape, recreation, and cultural experience become interconnected within visitor valuation.

From a methodological perspective, the study illustrates the sequential exploratory use of PCA and cluster analysis to examine plural valuation in a small visitor-based sample. PCA reduced the eight interrelated valuation dimensions to two components that summarized 66.8% of the observed variance, while clustering the resulting component scores provided a descriptive representation of how respondents combined those dimensions. This sequence was analytically useful because it reduced redundancy among the original variables before exploring respondent-level configurations. However, its contribution should be understood as a methodological illustration rather than statistical validation. With only 22 observations, the estimated loadings, component scores, and cluster memberships may change substantially with the inclusion of additional participants. Therefore, the procedure offers a preliminary method of organizing plural valuation data, but it does not establish a reproducible dimensional structure or a definitive segmentation of trail visitors.

However, the statistical results require cautious interpretation. The sample was small and non-probabilistic, and the ratio between the 22 respondents and the eight valuation variables limited the stability of the correlation matrix, component loadings, and individual component scores. Although the KMO measure and Bartlett's test

supported an exploratory application of PCA, these diagnostics did not compensate for the limited number of observations or validate the resulting component structure. Additionally, the use of five-point ordinal items and the concentration of responses in the upper categories may have reduced variability and influenced the observed associations. The cluster solution is subject to further uncertainty because cluster membership can be sensitive to the composition of a small dataset and changes in the component scores used as inputs (Everitt *et al.* 2011; Jolliffe and Cadima 2016; Hair *et al.* 2022). Consequently, the three configurations should not be interpreted as stable population segments, and no inferences should be made regarding their prevalence among all trail visitors. Validation will require larger and more heterogeneous samples, replication across different periods of visitation, assessment of alternative cluster solutions, and comparisons with other peri-urban mountain trails. Therefore, the present results should be regarded as provisional analytical patterns intended to inform subsequent research rather than confirmed statistical structures.

Overall, this study makes three complementary contributions to the literature on plural valuation in peri-urban ecosystems. Empirically, it shows that visitors' valuations of the Kilómetro 11 trail were organized through interconnected ecological, hydrological, recreational, cultural, and spiritual dimensions rather than through a single dominant preference. Theoretically, it supports an understanding of plural valuation as a configuration of overlapping meanings whose relative emphasis may vary among visitors, complementing approaches that examine values as separate categories (Chan *et al.* 2016; IPBES 2022; Pascual *et al.* 2023; Vatn *et al.* 2024). Practically, it indicates that environmental interpretation and trail management may benefit from recognizing multiple ways of relating to the same peri-urban socioecological setting. These contributions remain exploratory and context-specific, but they provide a clearer basis for subsequent research on how plural values of nature are organized and expressed in visitor-based studies.

Conclusions and Further Research

This study examined how multiple dimensions of nature valuation were organized among visitors to the Kilómetro 11 trail. The findings answer the research question by indicating that these dimensions were structured through a shared pattern of association, while retaining different relative emphases among respondents. Therefore, hydrological regulation, biodiversity, air quality, cultural values, recreation, landscape, ecological connectivity, and spiritual values were not expressed as isolated preferences or as a single dominant hierarchy, but as overlapping elements of a plural valuation process. Given the exploratory design, this conclusion applies to the observed sample and should not be generalized to the broader population of trail visitors.

The principal component analysis provided exploratory evidence of two main tendencies. The first component indicated a shared pattern of association across the valuation dimensions, while the second differentiated cultural, spiritual, and hydrological meanings from recreation, landscape, biodiversity, and air quality. The selected three-cluster solution complemented this result by yielding three exploratory configurations: one more associated with biodiversity and recreation, another with hydrological and cultural valuation, and a third with a broader integrated valuation. These configurations should not be interpreted as fixed visitor categories but as indicative ways in which valuation dimensions were combined among respondents.

The practical contribution of this study lies in showing that the Kilómetro 11 trail should not be managed or communicated solely as a recreational space. Within the observed sample, water-related meanings, biodiversity, landscape, ecological connectivity, cultural significance, and recreation formed part of an interconnected valuation process. Environmental interpretation and visitor communication could therefore combine information on hydrological regulation, biodiversity conservation, landscape relationships, cultural meanings, and responsible recreational practices. Monitoring strategies could also incorporate visitor perceptions alongside ecological indicators to identify how management actions affect the multiple meanings associated with the trail. These implications are context-specific and should be treated as preliminary management inputs rather than general prescriptions.

From a methodological perspective, the sequential use of principal component and cluster analyses provided a preliminary way of summarizing the associations among the valuation dimensions and exploring respondent-level configurations. Its usefulness in this study lies in organizing a small multivariate dataset and generating hypotheses for subsequent research rather than validating a stable dimensional structure or visitor segmentation. Because the analysis was based on 22 respondents and five-point ordinal items, the component loadings, scores, and cluster memberships should be interpreted as being sample-dependent. Replication with larger independent samples is required before the analytical sequence can be considered transferable to other visitor populations or peri-urban contexts in the future.

Future research should expand the sample size and include more heterogeneous groups of visitors, as well as residents, environmental managers, local organizations, and institutional stakeholders. The stability of the component structure should be assessed with larger independent samples, and the three-cluster solution should be compared with alternative numbers of clusters and other exploratory classification procedures. Data collection across different seasons, days of the week, and stages of the visitor experience would also help determine whether the observed configurations remain consistent under changing visitation conditions. Complementary qualitative methods, including interviews, participatory mapping, and deliberative valuation exercises, could deepen the interpretation of how different actors assign meaning to water, biodiversity, landscapes, ecological connectivity, and cultural experiences. Comparative studies across other trails in Bogotá's Eastern Hills and additional peri-urban mountain ecosystems would further clarify the transferability and practical relevance of the exploratory analytical framework.

Beyond its specific empirical findings, the original contribution of this study lies in demonstrating how plural values of nature can be examined as interconnected and differently emphasized configurations rather than isolated dimensions. By combining exploratory PCA with clustering based on component scores, the analysis connected the IPBES plural-value perspective with a visitor-based empirical application in a peri-urban mountain setting. The value of the case does not lie in statistical generalization or in establishing stable visitor typologies, but in providing a preliminary analytical framework for examining how ecological, hydrological, recreational, cultural, and spiritual meanings may coexist and acquire different relative prominence. This framework requires validation with larger samples and in other peri-urban socioecological contexts before its broader applicability can be established.

Declarations

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Credit Authorship Contribution Statement:

Johana Regino Vergara: Conceptualization, investigation, research design, methodology, data collection, project administration, theoretical framework, original draft writing, interpretation of results, visualization, validation, review, and editing.

Jainet Orlando Bernal Orozco: Methodology, software, formal statistical analysis, data curation, validation of quantitative procedures, interpretation of multivariate results, visualization, review and editing.

Data Availability Statement: The data supporting the findings of this study are available from the corresponding author upon reasonable request. The dataset is not publicly deposited because the small sample size and combination of contextual variables could create a risk of indirect participant identification.

Ethics Statement: This study involved adult visitors who participated voluntarily after receiving information about the purpose of the study. Informed consent was obtained from all the participants. The survey was anonymous, and no names, identification numbers, email addresses, or other direct personal identifiers were collected from the participants. Potentially identifying contextual variables were analyzed and reported only in the aggregate form. This study did not involve any interventions in the ecosystem. Formal ethics committee approval was not required. The research was conducted as an anonymous, minimal-risk survey of adult participants.

Declaration of Competing Interest: The authors declare that they have no competing financial interests or personal relationships that could have influenced the work reported in this paper.

Declaration of use of generative AI and AI-assisted technologies: The authors declare that generative AI and AI-assisted technologies were used only to improve the language, readability, and editorial organization of this manuscript. The authors reviewed, edited, and validated all AI-assisted outputs and took full responsibility for the content, accuracy, interpretation, and integrity of the work.

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Supplementary File S1. Research Instrument
Visitor Characterization and Nature Valuation Questionnaire for the Kilómetro 11 Trail

Related manuscript	Plural Valuation of Nature in a Peri-Urban Mountain Trail: An Exploratory Analysis Using Principal Component and Cluster Analysis
Study location	Kilómetro 11 Trail, Eastern Hills of Bogotá, Colombia
Original language of administration	Spanish
Purpose of this file	English translation of the Spanish-language research instrument administered during the study, provided to support editorial transparency and analytical reproducibility

Document status: This supplementary file provides an English translation of the Spanish-language questionnaire used in this study. It was prepared solely for publication, editorial transparency, and methodological reproducibility; no data were collected using the English version of the questionnaire. The questionnaire was administered to adult visitors after they completed the Kilómetro 11 trail to characterize visitor profiles and assess the perceived importance assigned to multiple dimensions of nature valuation within this peri-urban mountain ecosystem.

Participant Information and Consent Procedure

Before administering the questionnaire, adult visitors were informed about the academic purpose of the study, the voluntary nature of participation, the anonymous handling of their responses, and their right to decline participation or withdraw at any time before submitting the questionnaire, without penalty or adverse consequences. No names, identification numbers, email addresses, or other direct personal identifiers were requested. Only those who voluntarily agreed to participate completed the questionnaire.

Section A. Visitor Characterization

The following items reproduce the English translation of the visitor-characterization module, which was administered in Spanish during the fieldwork. Items marked with an asterisk () were mandatory in the original questionnaire.*

1. How many people are there in your visitor group? *

- ☐ I am visiting alone
- ☐ 2 people
- ☐ 3 people
- ☐ 4 people
- ☐ 5 people
- ☐ More than 5 people

2. How is the group composed? *

- ☐ Family
- ☐ Couple
- ☐ Friends
- ☐ Organized group
- ☐ Tourism company

3. Does anyone in your group have any of the following mobility restrictions or support needs? * (Select all that apply)

- ☐ Wheelchair
- ☐ Crutches
- ☐ Baby stroller
- ☐ None

4. Are you familiar with the visitor guidelines for this trail? *

- ☐ Yes
- ☐ No

5. Are you carrying any of the following items while on the trail? * (Select all that apply)

- ☐ Speakers, loudspeakers, or horns
- ☐ Plastic bags for waste collection
- ☐ Alcohol, cigarettes, or psychoactive substances
- ☐ Food or beverages

6. Were any of the items listed above purchased within the trail area? *

- ☐ Yes
- ☐ No

7. How many pets accompanied the group? *

- ☐ None
- ☐ One
- ☐ Two
- ☐ More than two

8. Please specify the type of pet accompanying the group: ***9. What mode of transportation did you use to reach the trail? ***

- ☐ On foot
- ☐ Bicycle
- ☐ Private vehicle
- ☐ Other motorized transport
- ☐ Public transportation

10. Age ***11. Gender ***

- ☐ Man
- ☐ Woman
- ☐ Other (including non-binary or gender-fluid identities)

12. Country of residence *

- ☐ Colombia
- ☐ Other

13. If other, please specify the country: ***14. Place of residence or accommodation (neighborhood or locality) *****15. Educational level ***

- ☐ No formal education
- ☐ Secondary education
- ☐ Technical education
- ☐ Technological education
- ☐ University degree
- ☐ Postgraduate degree

16. Occupation or current activity ***17. Main interests during the visit * (Select all that apply)**

- ☐ Hiking
- ☐ Nature observation
- ☐ Environmental education
- ☐ Research
- ☐ Recreation
- ☐ Photography
- ☐ Sports

18. Please indicate whether you used any of the following specialized equipment during your visit: *

Item	Yes	No
Hiking poles	☐	☐
Hiking boots	☐	☐
Water bottle or hydration pack	☐	☐
Crampons	☐	☐
Running shoes	☐	☐

19. How often do you visit the Kilómetro 11 trail? *

- ☐ First visit
☐ Occasionally
☐ Frequently (at least twice a month)
☐ Weekly

20. Approximate duration of the visit. Please specify minutes or hours***21. How satisfied were you with your visit? ***

- ☐ Very satisfied
☐ Satisfied
☐ Neither satisfied nor dissatisfied
☐ Dissatisfied
☐ Very dissatisfied

22. How do you perceive the safety of the trail? *

- ☐ Very safe
☐ Safe
☐ Neither safe nor unsafe
☐ Unsafe
☐ Very unsafe

23. How do you perceive the environmental impact generated by visitors concerning the following factors?

Item	Very high	High	Medium	Low	None
Littering	☐	☐	☐	☐	☐
Damage to flora	☐	☐	☐	☐	☐
Damage to fauna	☐	☐	☐	☐	☐
Disturbance of wildlife	☐	☐	☐	☐	☐
Consumption of trail resources	☐	☐	☐	☐	☐
Fire risk	☐	☐	☐	☐	☐
Use of water sources	☐	☐	☐	☐	☐

Section B. Nature Valuation Dimensions

The following module was administered in Spanish during the same fieldwork process and provided the eight nature valuation variables used in the principal component analysis and the subsequent exploratory k-means cluster analysis.

For each nature valuation dimension, indicate the perceived importance of the corresponding contribution of nature to your experience at the Kilómetro 11 trail. The following five-point ordinal scale was used:

1 = Not at all important; 2 = Slightly important; 3 = Moderately important; 4 = Important; 5 = Very important.

Valuation dimension	Item assessed	1	2	3	4	5
Biodiversity	The conservation of the diversity of plants, animals, and other living organisms associated with the trail.	☐	☐	☐	☐	☐
Hydrological regulation	The regulation, protection, and maintenance of water resources are associated with the trail.	☐	☐	☐	☐	☐
Air quality	The maintenance or improvement of air quality in the surrounding area.	☐	☐	☐	☐	☐
Landscape	The scenic quality of the trail and the opportunity to appreciate the landscape.	☐	☐	☐	☐	☐
Ecological connectivity	The maintenance of ecological connections between natural areas and habitats.	☐	☐	☐	☐	☐
Recreation	The availability of the trail as a space for recreation, outdoor activities, and enjoyment.	☐	☐	☐	☐	☐
Cultural values	The cultural meanings, identity, learning, and shared experiences associated with the trail.	☐	☐	☐	☐	☐
Spiritual values	The spiritual meanings, reflection, inspiration, and sense of connection with nature associated with the trail.	☐	☐	☐	☐	☐

Supplementary Methodological Note: Coding and Analytical Use

Nature valuation dimensions	A five-point ordinal scale was coded from 1 to 5, with higher scores indicating a greater perceived importance assigned to each valuation dimension.
Multivariate analysis	Biodiversity, hydrological regulation, air quality, landscape, ecological connectivity, recreation, cultural values, and spiritual values were included in the principal component and subsequent exploratory k-means cluster analyses.
Visitor characteristics	Age, gender, visit frequency, and transport mode were used for descriptive analysis. Responses to the multiple-response visitor-interest item were grouped into the Education, Nature, and Recreation domains and used to derive a predominant analytical interest category for each participant.
Anonymity	No names, identification numbers, email addresses, or other direct personal identifiers were collected from the participants. Potentially identifying contextual variables were analyzed and reported only in aggregate form.

Renewable Energy and Firm Performance: A Bibliometric and Science Mapping Analysis of the Literature



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Abstract: Climate change is a major issue for ecosystems, the economy, human health and livelihoods. Therefore, it has been important to build international cooperation and increase investment between governments and companies to effectively address climate change through emissions reduction and environmental protection. This study aims to review and reflect on studies on the effect of renewable energy on firm performance. For this purpose, an analysis of studies on the effect of renewable energy on the performance of firms using renewable energy sources was conducted. This study conducts a bibliometric analysis for a systematic literature review that examines 1953 scientific studies on the effect of renewable energy on firm performance from 1993 to 2025.

VOSviewer software was used to analyze the data and visualize the findings using the Web of Science database. The findings are presented in nine categories: distribution of studies by year, distribution of studies by genre, distribution of studies by language of writing, author-source- country-institution-keywords analysis.

The analysis reveals a significant increase in annual publications on renewable energy sources and firm performance, indicating a growing global interest in renewable energy. Moreover, the country with the most publications is the People's Republic of China. The author with the most publications and most citations is Saad Mekhilef. The institution with the most publications is "Xi an Jiao Univ" and the source with the most publications is "Energies". The most used word in the studies is "renewable energy". The concept of sustainability, which is involved to renewable energy, ranked 12th in the list of frequently used words, and this may be thought to be due to the fact that this concept is more up to date than the others. The direction of the studies to be conducted in this field will fill the gap in the literature.

Keywords: renewable energy; firm performance; bibliometric analysis; VOSviewer; sustainability; Web of Science.

JEL Classification: Q42; L25; M14; Q56; O13; C80.

Introduction

Fossil fuels such as coal, natural gas, and oil are used in energy production, but these fuels are non-renewable and are at risk of depletion. Fossil fuel production not only harms the environment but also contributes to global warming through greenhouse gas emissions. Renewable energy sources, on the other hand, are constantly replenished and, while causing far less environmental damage than fossil fuels, offer numerous advantages. The advantages of renewable energy sources include protecting the environment, reducing carbon dioxide emissions,

reducing dependence on foreign energy sources by providing domestic energy resources, increasing employment, and lowering energy consumption (Alper & Oguz, 2016). Various actions are also required to realize these advantages and increase the share of renewable energy sources in total energy production. In this regard, both the public and private sectors play a crucial role in financing renewable energy projects (Kim & Park, 2016).

Various incentives offered by governments also contribute significantly to the adoption of renewable energy sources. Thanks to these incentives, renewable energy is overcoming the limitations of current energy consumption models and enabling the modernization that the energy sector requires. This, in turn, supports the achievement of sustainable development goals in the energy sector. Extensive financial investments are largely required to effectively manage this energy transition process. In this context, financial performance is of great importance; it serves as a key factor in determining energy producers' capacity for transition and plays a decisive role in shaping investment decisions. (Dopierala *et al.* 2022). In this context, the study examines research that analyzes the effects of investments in renewable energy sources on corporate performance. Understanding the impact of renewable energy investments on companies' financial and operational performance is important both for businesses' strategic decision-making processes and for the formulation of sustainable development policies. Although there are numerous bibliometric studies in the literature focusing on the field of renewable energy, it is evident that these studies largely concentrate on renewable energy technologies, energy policies, energy transition, and sustainable energy systems. In contrast, research that evaluates studies examining the relationship between renewable energy and firm performance from a comprehensive bibliometric perspective is quite limited. In this regard, this study aims to fill a significant gap in the existing literature by systematically mapping not only the renewable energy literature but also the development, knowledge structure, and research trends of studies examining the impact of renewable energy investments on firm performance.

In this context, the systematic compilation of studies on the subject makes it possible to identify the evolution of the literature, prominent research themes, influential authors, institutions, countries, sources, and the most frequently used keywords. Thus, while the scientific structure of the field is evaluated from a holistic perspective, the diversity of research and the direction of knowledge production are also highlighted. The findings are expected to help researchers identify new areas of study and assist investors and policymakers in their decision-making processes.

The Web of Science database was selected as the data source for this study. Web of Science was chosen because it covers peer-reviewed journals with high impact factors, provides standardized bibliographic and citation data, and is one of the reliable databases widely accepted internationally for bibliometric analyses. The high quality of the data, the ability to consistently track citation relationships, and the capability to perform analyses compatible with the VOSviewer software enhance the reliability and scientific validity of the findings.

This study distinguishes itself from existing research in that it examines studies published over a broad time span covering the period 1993 - 2025, is based on a comprehensive dataset, and holistically evaluates the relationship between renewable energy and firm performance using bibliometric methods. The study aims not only to reveal the intellectual structure and developmental dynamics of the field but also to provide a guiding framework for future empirical and theoretical research. In this way, by bridging the literature on sustainability, renewable energy, and firm performance, it makes significant contributions to both academic scholarship and practice.

1. Renewable Energy Sources

Renewable energy sources are energy sources that have no specific depletion period and are constantly replenished through natural processes. These sources cannot be permanently depleted by humans. A large portion of renewable energy sources is generated through the conversion of solar energy into various forms (Üçgül & Elibüyük, 2017).

Renewable energy sources are considered to be potential alternatives to fossil fuels, and various efforts are currently underway to develop technologies in this field. The most used renewable energy sources include hydropower, geothermal energy, biomass energy, solar energy, and wind energy (Koç *et al.* 2015).

1.1 Solar Energy

The Sun is an indispensable renewable energy source for the Earth and human life. Solar energy consists of energy from the Sun, which ranges from 0-1100 W/m² at the Earth's surface. (Şengül *et al.* 2015)

Solar energy is a powerful form of energy produced when hydrogen atoms are converted into helium as a result of fusion reactions occurring in the Sun's core. Solar energy reaches Earth in the form of sunlight, and specific technologies are used to harness this energy. Thanks to these technologies, solar energy can be used as heat or electricity. (Koç *et al.* 2015).

1.2 Wind Energy

Wind energy is generated by the interaction of air masses with different temperature zones. Wind turbines convert this energy into electricity, providing a sustainable energy source. Wind energy is one of the preferred forms of renewable energy because it does not emit harmful gases into the environment, reduces dependence on foreign sources, and is a domestic, continuously available energy source (Şengül *et al.* 2015).

1.3 Geothermal Energy

Geothermal energy is defined as the thermal energy derived from natural heat accumulated deep within the Earth's crust, in the form of pressurized hot fluids (water vapor, gas) and hot dry rocks. Geothermal energy is a new, inexhaustible, sustainable, environmentally friendly, domestic, green, and renewable energy source. This energy is used efficiently in both electricity generation and heating systems (Koç *et al.* 2015; Şengül *et al.* 2015).

1.4 Biomass Energy

It is a form of energy derived from biological and organic materials such as wood, charcoal, animal manure, agricultural and forestry waste, alcohol and methane fermentation, and various aquatic plants (Torunoğlu Gedik, 2015).

The use of biomass energy dates back to ancient times. While it was initially used primarily to generate heat, today it is also used to generate electricity through various technologies (Şengül *et al.* 2015).

1.5 Hydraulic Energy

Hydraulic Energy is one of the most widely used forms of renewable energy. The most basic method of harnessing this energy involves building dams on rivers to store water in reservoirs and converting the potential energy of the stored water into electrical energy through turbines. Hydroelectric power plants (HPPs) play a significant role in this process (Koç *et al.* 2015).

2. Literature Review

The widespread adoption of changing energy policies in recent years has offered companies engaged in renewable energy investments significant advantages, such as enabling sustainable growth, enhancing competitiveness, and reducing financial risks. In the literature, the impact of renewable energy investments on firm performance has been examined using various methods. This section reviews national and international studies focusing on the relationship between renewable energy sources and firm performance. These studies reveal that performance indicators vary and that renewable energy sources lead to different changes in firm performance.

The studies were categorized into two groups: those examining the relationship between renewable energy investments and firm performance, and those aimed at measuring the financial performance of renewable energy companies.

Studies Examining the Relationship between Renewable Energy Investments and Firm Performance;
Studies examining the relationship between renewable energy investments and firm performance have primarily focused on identifying the factors that influence firms' financial performance, using panel data analysis and econometric methods. In this context, Halkos and Tzeremes (2012) aimed to evaluate the financial performance of companies operating in the renewable energy sector in Greece. To this end, in their analysis using the Data Envelopment Analysis (DEA) framework, they demonstrated that the firms' performance was positively influenced by high levels of return on assets and return on equity, as well as low debt-to-equity ratios.

Marti-Ballester (2017) employed panel data analysis to examine a sample of 574 multinational companies from 36 countries and found that the adoption of sustainable energy systems enhanced firm performance in the short term without adversely affecting long-term firm performance. Similarly, Dopierala *et al.* (2022), by analyzing 328 energy producers operating in the Baltic Sea region using panel data methods, concluded that financial performance is influenced by both firm-specific and macroeconomic factors, and that private limited companies perform better. Environmental and institutional factors affecting financial performance in the energy sector also constitute an important area of research in literature. Paun (2017) compared the performance of energy-producing companies in Romania with that of traditional energy producers using fossil fuels. While noting that investments emerged through opportunistic methods based on subsidies rather than long-term financial performance, Zhang *et al.* (2022) demonstrated that country risks and government incentives have significant effects on firm performance in Chinese energy companies. Similarly, Ibarloza *et al.* (2018) found that solar energy companies in Spain were particularly affected by regulatory changes and economic conditions. In their study, Kludacz-Alessandri and Cyganska (2021) aimed to examine the relationship between the adoption of corporate social responsibility and financial performance at 219 companies in 32 countries operating in the energy sector. In their analysis, which used

2020 data, they found statistically significant relationships between financial performance and the implementation of CSR strategies by energy sector companies.

Leventakos and Dagoumas (2019) compared European energy companies and reported that the renewable energy sector exhibited higher profitability potential, whereas oil and natural gas companies operated at lower levels of risk. There are also studies that examine the impact of energy transition and sustainability practices on firm performance from various perspectives. Morić *et al.* (2020) found that, in a sample of more than 4,000 European SMEs, the impact of circular economy practices on firm performance varied depending on the stages of the adoption process, while Findık (2023), on the other hand, found a positive and significant relationship between circular economy activities and firm performance among SMEs operating in European Union member states and candidate countries.

Another significant group of studies in the literature focuses on evaluating the financial performance of companies operating in the renewable energy sector using multi-criteria decision-making techniques. Methods such as TOPSIS, MOORA, EDAS, WASPAS, ARAS, and similar approaches are widely used in these studies. In this context, Eyüboğlu and Çelik (2016) evaluated the financial performance of 13 energy companies using the TOPSIS method in their study. In their study, Bağcı and Yüksel Yiğiter (2019) assessed the financial performance of 15 energy companies listed on the Istanbul Stock Exchange using the SD and WASPAS methods, determining that the performance rankings of these energy companies varied from year to year. Erdoğan *et al.* (2022) evaluated the financial performance of companies using the SWARA and WASPAS techniques. The study analyzed the three-year financial performance of four renewable energy companies listed on Borsa Istanbul over the 2018–2020 period. The findings of the study, obtained using the SWARA technique, concluded that the most important factor determining the financial performance of the companies participating in the research was the financial leverage ratio. Based on the data obtained using the WASPAS technique, it was determined that companies generating electricity from a single renewable energy source are financially more successful than those generating electricity from multiple renewable energy sources. Similarly, Metin *et al.* (2017) compared energy companies listed on Borsa Istanbul using the TOPSIS and MOORA methods and demonstrated that performance rankings can vary depending on the method used. Özdemir and Parmaksız (2022) aimed to analyze the financial performance of companies operating in the BIST energy sector using the TOPSIS and EDAS methods. By comparing the TOPSIS and EDAS methods, they determined that the two methods produced similar results, albeit with minor differences.

Kılıçarslan (2023), on the other hand, used a combination of the Cloud Index, TOPSIS, ARAS, and Copeland methods to conduct an integrated evaluation of the performance of renewable energy companies listed on Borsa Istanbul. Özçelik (2024) examined the financial performance of renewable and conventional energy companies listed on Borsa Istanbul using the DuPont analysis method. The findings indicated that renewable energy companies achieved higher net profit margins despite having lower asset turnover ratios, whereas conventional energy companies experienced a decline in their financial performance in recent years.

İskenderoğlu *et al.* (2015) aimed to evaluate the performance of the Turkish and European energy sectors using ratio analysis. Based on an analysis of sectoral financial statements covering the 2009–2012 period, the authors found that companies operating in the European energy sector outperformed their counterparts in the Turkish energy sector.

A review of the literature reveals that studies generally focus on two main areas. The first group includes studies that use econometric methods to examine the impact of renewable energy investments, sustainability practices, and institutional factors on firm performance. The second group consists of studies that evaluate the financial performance of companies operating in the energy sector using multi-criteria decision-making methods and financial analysis techniques.

However, while the vast majority of existing studies focus on specific countries, sectors, or company samples, it is evident that there are very few studies that holistically assess the overall development of the literature on the relationship between renewable energy and firm performance - including trends in scientific output, research networks, and the intellectual structure - using bibliometric methods. Therefore, this study aims to fill this gap in literature and provide a comprehensive roadmap for future research by conducting a bibliometric analysis of publications in the Web of Science database using a broad dataset covering the period from 1993 to 2025.

3. WEB of Science - Based Analysis of the Relationship between Renewable Energy and Firm Performance

This section of the study presents the research objective, the dataset, the analyses conducted, and the findings.

3.1 Purpose of the Study

Based on bibliometric analyses of the impact of renewable energy sources on firm performance, using quantitative data and numerical metrics, this study aims to present research on this topic to researchers from a holistic perspective.

3.2 Data and Analysis

The bibliometric method was proposed by Alan Pritchard in 1969. The number of studies conducted worldwide using bibliometric analysis techniques is increasing day by day. The growing use of bibliometric techniques has been facilitated by improved access to scientific data through major bibliographic databases such as Scopus and Web of Science. Furthermore, the development of specialized software tools, including Leximancer, Gephi, and VOSviewer, for the analysis and visualization of bibliometric data has significantly contributed to the increasing adoption of bibliometric analysis in academic research (Öğüt *et al.* 2023).

Bibliometric analysis has become an increasingly popular quantitative research method within the academic community and continues to gain widespread acceptance across various disciplines. The interaction between researchers who employ bibliometric methods and those who utilize the findings of such analyses is also of considerable importance (Ellegaard, 2018).

Bibliometric analysis is a quantitative approach employed to objectively examine the intellectual structure and development of a specific research field. Bibliometric analysis is an effective quantitative approach that combines statistical and mathematical techniques to map the current state, intellectual structure, and emerging trends within a particular research field. Bibliometrics is widely used by the academic community and researchers as an important tool for examining specific research topics, identifying research trends, and analyzing developments within a particular field (Chen *et al.* 2022; Dash *et al.* 2023).

The study conducts a bibliometric analysis of the existing literature to identify the most influential authors, sources, publication years, countries, institutions, and keywords within the research field. The following analyses were carried out in this study: (1) distribution of publications by year, (2) distribution of publications by document type, (3) distribution of publications by language, (4) author analysis, (5) co-authorship analysis, (6) source analysis, (7) country analysis, (8) institutional analysis, (9) keyword analysis. The bibliometric analysis was conducted using VOSviewer. VOSviewer is a widely used software tool that enables the construction, visualization and interpretation of bibliometric networks, thereby facilitating a more comprehensive analysis and presentation of relationships within the scientific literature (Dereli, 2024).

Unlike most software programs used for bibliometric mapping, VOSviewer places particular emphasis on the graphical visualization of bibliometric maps. Its functionality is especially valuable for displaying large-scale bibliometric networks in a clear, intuitive, and easily interpretable manner, thereby facilitating the analysis and interpretation of complex relationships within the scientific literature (van Eck & Waltman, 2009). VOSviewer is regarded as a valuable software tool that facilitates the identification of developments, relationships, and emerging research topics within the scientific literature. In addition, it enables comprehensive analysis, visualization, and mapping of bibliometric datasets, thereby providing researchers with deeper insights into the intellectual structure and evolution of a research field (Dirik *et al.* 2023).

3.3 Data Collection and Search Strategy

The dataset used in this study was obtained from the Web of Science (WoS) Core Collection, a database widely employed in bibliometric research due to its standardized bibliographic records and reliable citation data. The Web of Science Core Collection was selected as the sole data source because it indexes high-impact, peer-reviewed journals, offers advanced search functionalities and comprehensive analytical tools, and provides access to high-quality, ethically published research across a broad range of academic disciplines. Furthermore, its international recognition as a reliable source for bibliometric studies and its compatibility with VOSviewer make it particularly suitable for bibliometric mapping and network analysis (Dirik *et al.* 2023).

Data collection was conducted on March 27, 2025. The literature search was performed using the Topic Search (TS) function of the Web of Science Core Collection. The TS function simultaneously searches publication titles, abstracts, Author Keywords, and Keywords Plus, thereby enabling the comprehensive identification of publications relevant to the research topic.

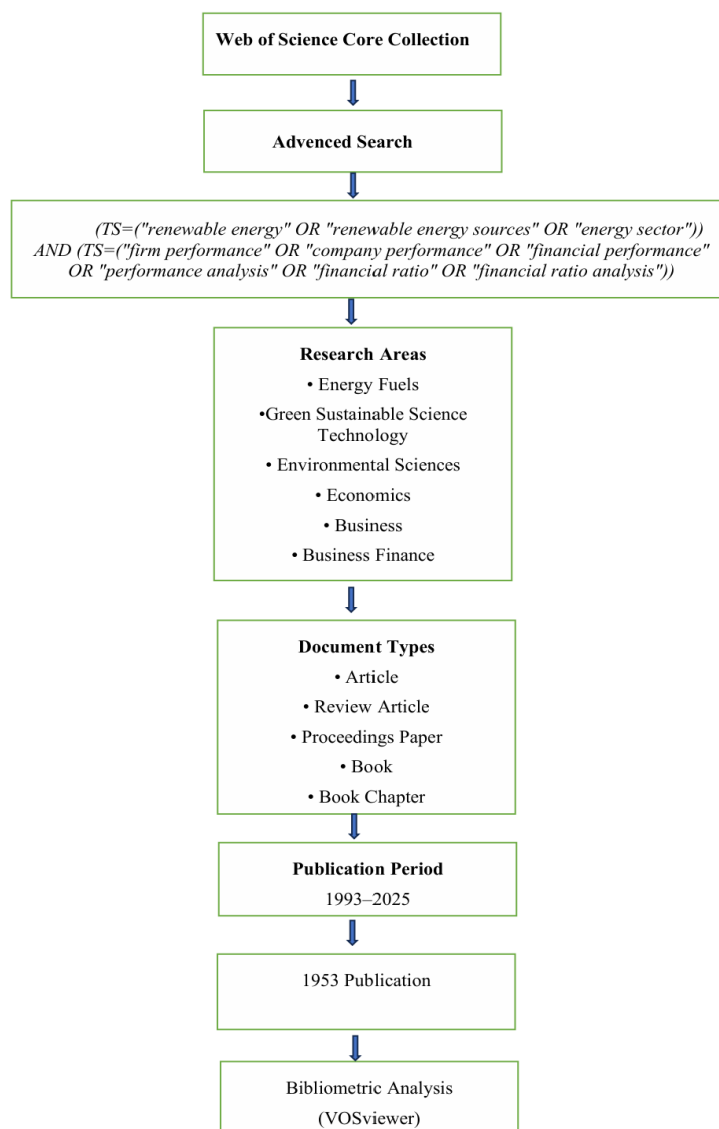
The following search query was used in the study:

(TS=("renewable energy" OR "renewable energy sources" OR "energy sector")) AND (TS=("firm performance" OR "company performance" OR "financial performance" OR "performance analysis" OR "financial ratio" OR "financial ratio analysis"))

During the search process, the research areas of Energy Fuels, Green Sustainable Science Technology, Environmental Sciences, Economics, Business, and Business Finance were selected. To enhance the scientific rigor of the analysis, only publications classified as Articles, Review Articles, Proceedings Papers, Books, and Book Chapters were included in the dataset. Editorial materials, letters, meeting abstracts, corrections, and other similar publication types were excluded because they generally provide limited scientific content and may introduce bias into the results of bibliometric analyses.

Applying the predefined search strategy and filtering criteria yielded a total of 1,953 publications covering the period from 1993 to 2025. Of these, 1,474 were classified as research articles. The retrieved bibliographic data were imported into VOSviewer for analysis. Subsequently, analyses of authorship, citations, countries, institutions, keywords, and abstracts were conducted to reveal the intellectual structure and research trends within the literature. The stages of the research process are presented in the figure below.

Figure 1. Data Collection and Filtering Process



Source: Created by the author.

3.4 Findings

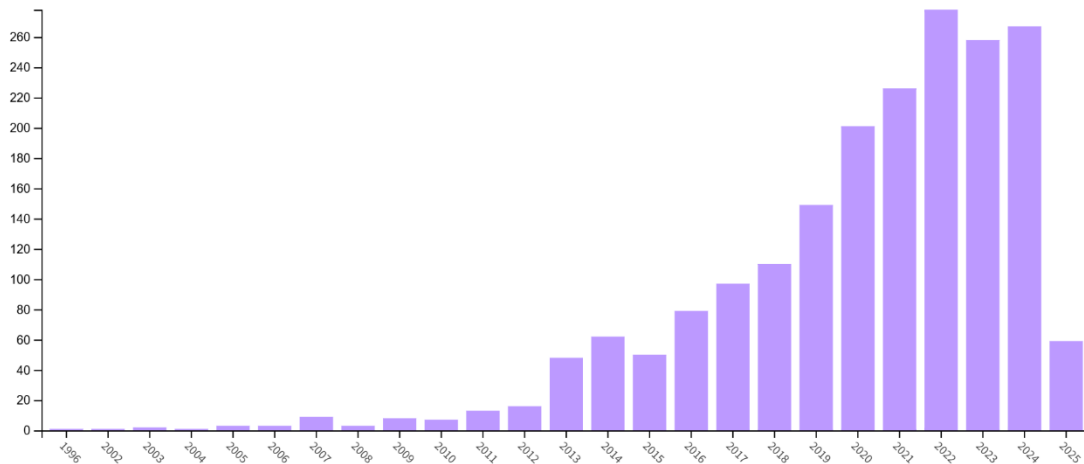
The findings of the study are presented under this heading.

3.4.1. Distribution of Publications by Year

Figure 2 presents the distribution of the studies conducted using the words (TS=(\"renewable energy\" OR \"renewable energy sources\" OR \"energy sector\")) AND (TS=(\"firm performance\" OR \"company performance\" OR

"financial performance" OR "performance analysis" OR "financial ratio" OR "financial ratio analysis"). It is seen that the studies conducted in this field since 1993 have continued to increase until today. With the increasing importance of renewable energy sources, the number of studies in this field has started to increase since 2009. The 59 studies conducted until March 2025 can also be an indicator of the increasing interest in the field.

Figure 2. Distribution of Publications by Year on the Relationship Between Renewable Energy and Firm Performance



Source: Web of Science Database

Table 1. Number of Publications by Year on the Relationship Between Renewable Energy and Firm Performance

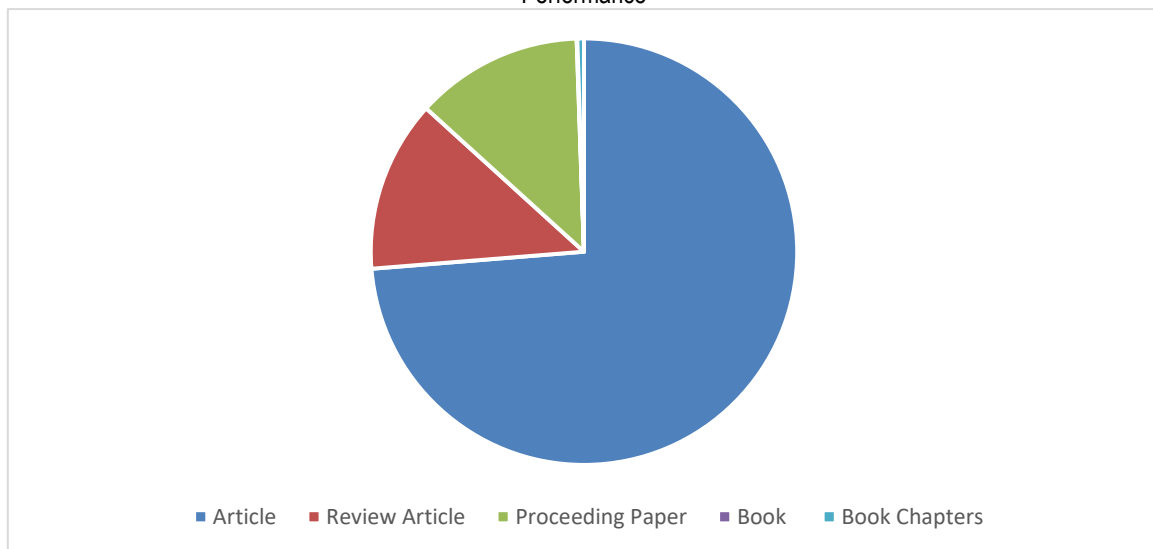
Publication year	Record count	% of 1.953
2025	59	3.021
2024	267	13.671
2023	258	13.210
2022	278	14.235
2021	226	11.572
2020	201	10.292
2019	149	7.629
2018	110	5.632
2017	97	4.967
2016	79	4.045
2015	50	2.560
2014	62	3.175
2013	48	2.458
2012	16	0.819
2011	13	0.666
2010	7	0.358
2009	8	0.410
2008	3	0.154
2007	9	0.461
2006	3	0.154
2005	3	0.154
2004	1	0.051
2003	2	0.102
2002	1	0.051
1996	1	0.051
1994	1	0.051
1993	1	0.051

Source: Web of Science Database

3.4.2. Distribution of Publications by Document Type

Figure 3 shows the distribution of studies on renewable energy sources and firm performance by publication type. According to the table, articles constitute most of the studies. Between 1993 and 2025, 1,473 articles on this topic were published. To enhance the scientific quality of the bibliometric analysis and focus on academic publications representative of the field, the study included the publication types “article,” “review article,” “proceedings paper,” “book,” and “book chapter” in the analysis. These publication types were selected because they have undergone a peer-review process, contribute directly to the production of scientific knowledge, and are commonly preferred in bibliometric analyses. Editorials, letters, conference abstracts, corrections, and similar publication types were excluded from the scope because they offer limited scientific content and may skew citation analyses. As a result of this filtering, a total of 1,953 publications were included in the analysis.

Figure 3. Distribution of Publications by Document Type on the Relationship Between Renewable Energy and Firm Performance

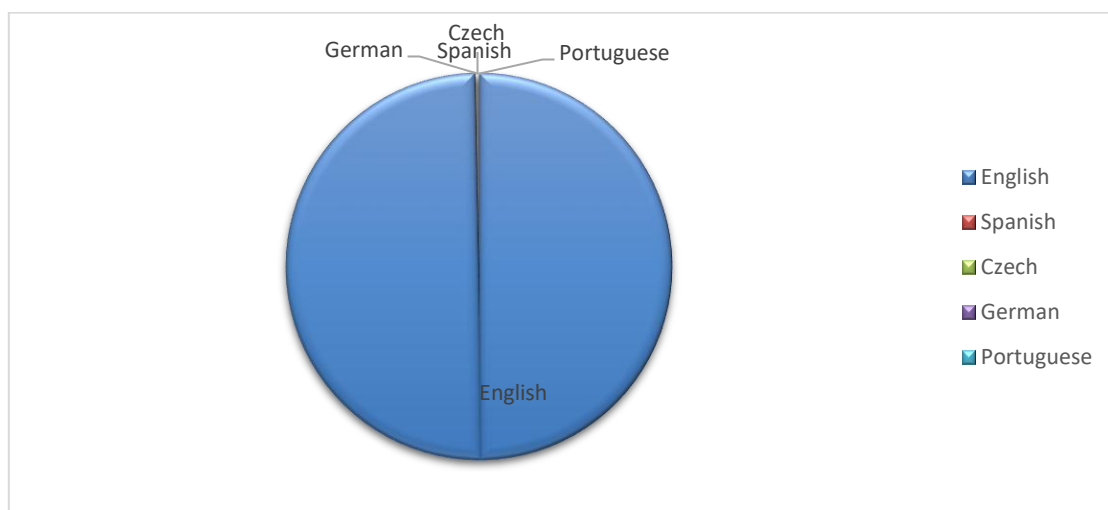


Source: Web of Science Database

3.4.3. Distribution of Studies According to Language of Writing

Figure 4 shows the distribution of studies on renewable energy sources and firm performance according to the language of writing. According to Table 4, approximately 99.6% of the studies were written in English (1947). This is a result that supports the views of authors (Jeyaraj, 2014, p. 1; Ferguson, 2011, p. 41) who state that English is the default language in the scientific world. Other publication languages are Czech (1), German (1), Spanish (3), Portuguese (1).

Figure 4. Distribution of Studies on the Relationship between Renewable Energy and Firm Performance by Language of Writing



Source: Web of Science Database

3.4.4. Author Analysis

Table 2 lists the top 10 authors with the most studies on renewable energy sources and firm performance. There are two commonly used weight attributes. These are the links attribute and the total link strength attribute. The links attribute indicates the number of links between an item and others, while the total link strength attribute reflects the overall effect or strength of these links. For example, the number of co-authorship links between a researcher and others represents the quality of links, while the quality and effect of these links represent the total link strength. These two measures play a critical role in understanding how networks interact. Saad Mekhilef is the most prolific author in the field and the author with the highest number of citations.

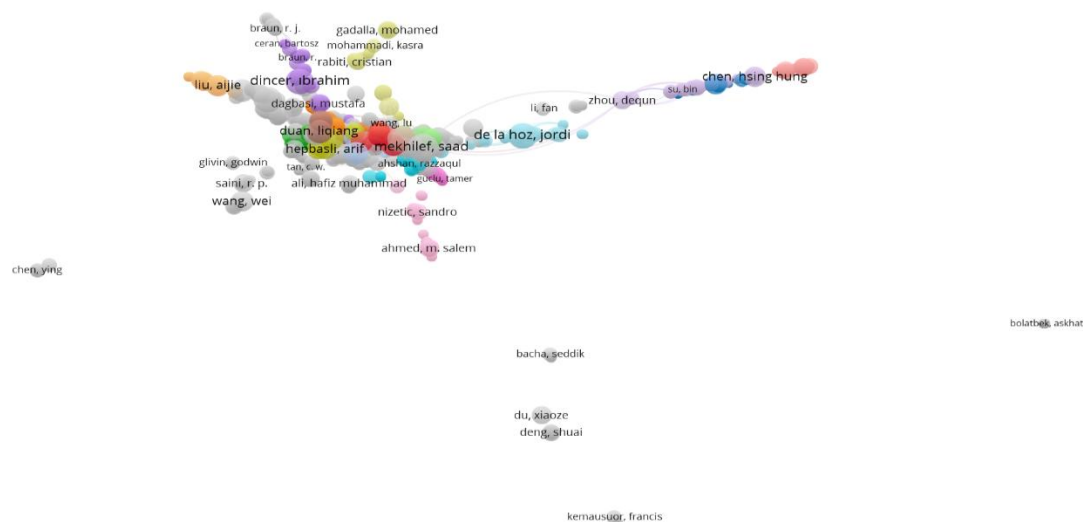
Table 2. Authors with the Most Publications on the Relationship between Renewable Energy and Firm Performance

Researcher	Number of studies	Number of citations	Connection strength
Saad Mekhilef	11	2074	618
Barun k. Das	9	1148	622
Jordi De La Hoz	9	139	237
Helena Martin	9	139	237
İbrahim Dincer	9	230	26
Jiangfeng Wang	9	263	26
Liqiang Duan	8	108	3
Mohamad Ramadan	7	888	37
Pan Zhao	7	148	17
Ruixiong Li	7	28	0

Source: Web of Science Database

Figure 5 shows the visualization of the network analysis on the authors with the most publications on renewable energy sources and firm performance. This analysis aims to easily identify the authors with the most publications and citations. In the study, an author citation analysis based on the criterion of at least one publication and at least one citation was performed to identify citation networks. This analysis was performed on 2779 interconnected units and a total of 52 clusters; 18575 links and 21053 link strengths were identified. The top 3 authors with the most publications are Saad Mekhilef, Barun K. Das and Jordi De La Hoz, while the first of the top 3 most cited authors is Saad Mekhilef with the most publications. The second most cited author is Luisa F. Cabeza with one document and 1330 citations and the next eight authors have one document and 1330 citations.

Figure 5. Network Analysis Image According to Authors with the Most Publications



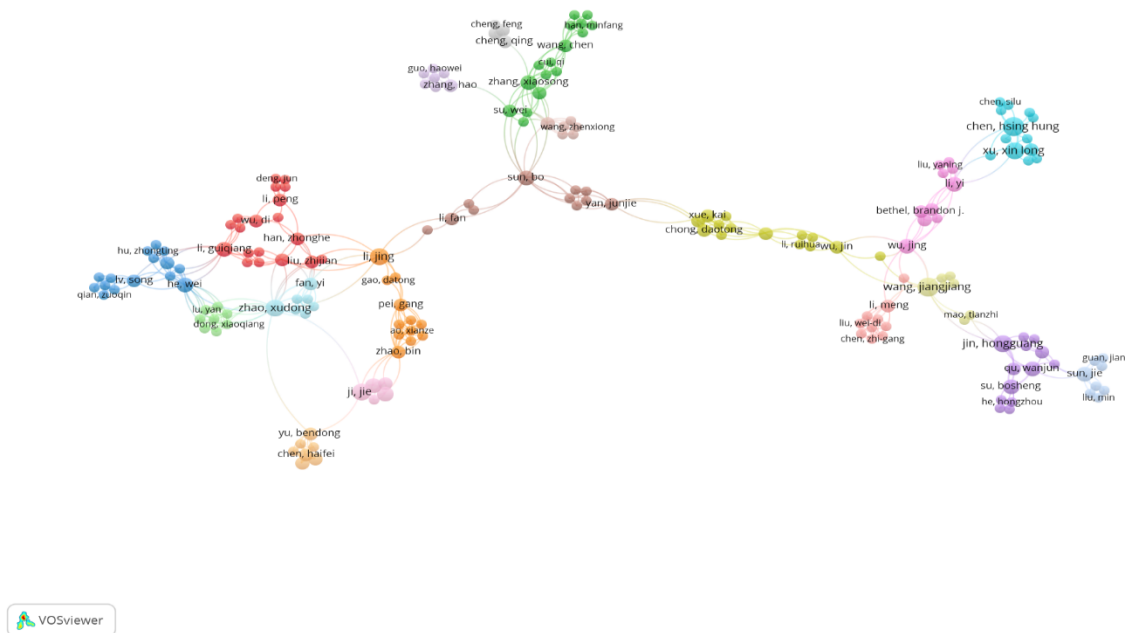
Source: Vosviewer

Each color in the visualization represents a specific cluster of authors, usually of higher relevance. The size of the circles and the font size of the labels indicate the number of occurrences of these clusters. In the link strength analysis, Saad Mekhilef again ranks first with 370 links.

3.4.5. Co-Author Analysis

As a result of the co-authorship analysis of the authors, the authors with the most connections and collaborations were identified. For this purpose, a network map was created by considering at least one publication and one citation criteria. The analysis shows 192 authors coming together in 19 clusters and 601 links in total. The most cited authors (Saad Mekhilef with 2074 citations, Luisa F. Cabeza with 1330 citations and Pablo Dolado with 1330 citations) are not among the most connected authors except Saad Mekhilef, and the authors who have produced the most works (Saad Mekhilef, Jiangfeng Wang, Jordi de la hoz,) do not appear in this group except Saad Mekhilef.

Figure 6. Network Analysis Image of Authors with the Most Connections and Collaboration



Source: Vosviewer

3.4.6. Source Analysis

Table 3 shows the sources with the highest number of studies on renewable energy sources and firm performance.

Table 3. Sources with the Most Publications on the Relationship between Renewable Energy and Firm Performance

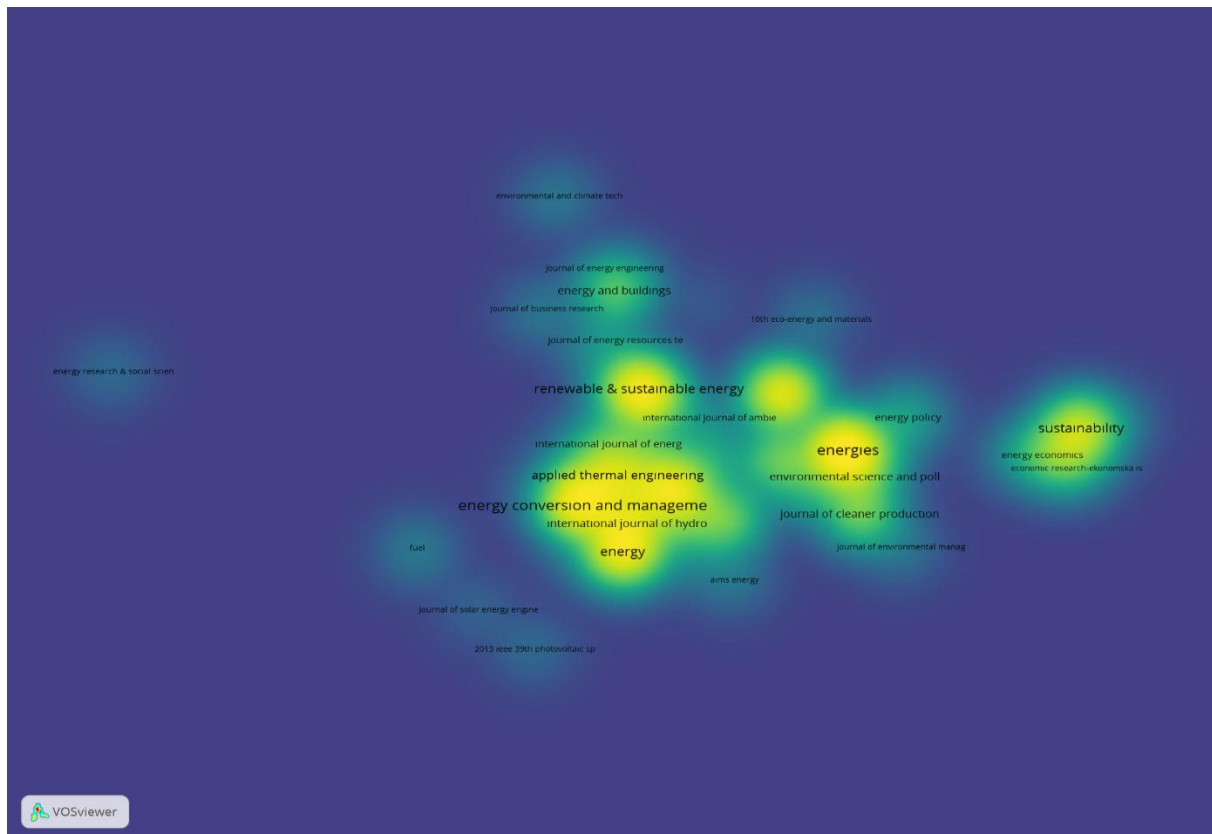
Source	Number of studies	Number of citations	Connection strength
Energies	162	2159	133
Energy conversion and management	133	7040	303
Energy	123	5478	262
Renewable and sustainable energy reviews	119	11382	255
Renewable energy	115	4460	227
sustainability	87	1426	60
Applied energy	62	2834	83
Applied thermal engineering	61	1982	59
Journal of energy storage	59	1034	44
International journal of hydrogen energy	49	1497	72

Source: Vosviewer

The source with the highest number of studies is "Energies" with 150 studies, and the top three sources with the highest number of citations are Renewable & sustainable energy reviews with 10289 citations, Energy conversion and management with 6287 citations, and energy with 4730 citations. The source with the highest link strength is Energy conversion and management.

Figure 7 presents a visualization of the network analysis on the sources publishing on renewable energy sources and firm performance. In the analysis, using the "citation-sources" feature, a network map was created over 192 observation units with at least one published work and one citation. As a result of this analysis, 19 clusters, 601 connections and a total of 633 connection strengths were identified. In this context, Energy conversion and management stands out as the source with the highest link strength with 303 links.

Figure 7. Network Analysis on Sources Publishing on Renewable Energy and Company Performance



Source: Vosviewer

3.4.7. Country Analysis

Table 4 shows the top ten ranking of the most productive countries in renewable energy sources and firm performance.

Table 4. Countries with the Most Publications on the Relationship between Renewable Energy and Firm Performance

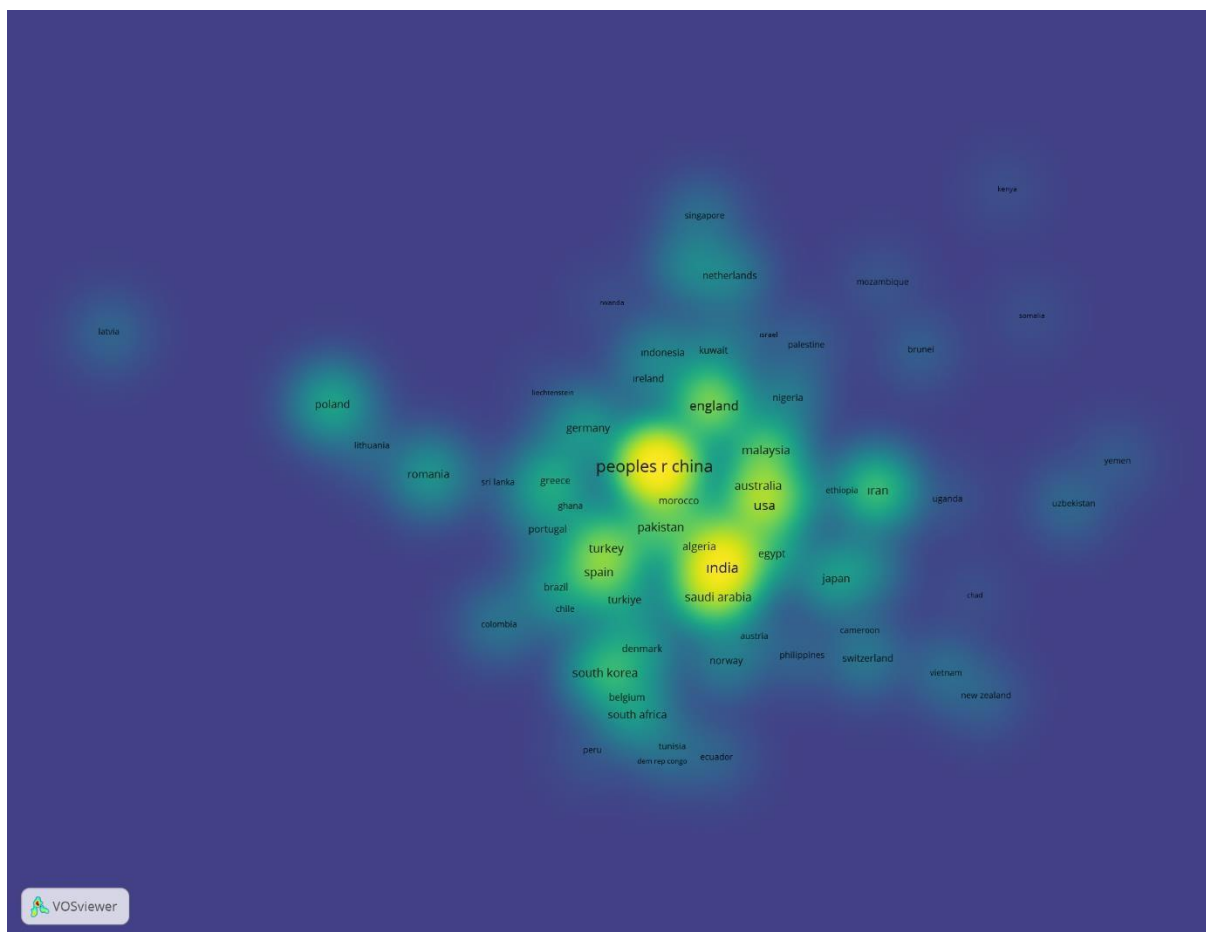
Country	Number of Studies	Number of Citation	Connection Strength
China	474	13407	537
India	281	7705	407
USA	138	4635	310
England	122	4007	232
Italy	115	3350	260
Malaysia	93	6782	607
Saudi Arabia	91	3488	357
Iran	91	5263	313
Spain	85	3224	127
Australia	81	4456	542
Turkey	79	3772	210

Source: Vosviewer

China has contributed the most to the literature in these areas. The top 3 most cited countries are (China with 13407 citations, India with 7705 citations, Malaysia with 6782 citations). While Malaysia ranked 6th in the number of publications, it ranked 3rd in the citation ranking. Turkey ranks 11th in publications and 8th in citations.

Figure 8 shows a visualization of the network analysis on the countries with the highest number of publications on renewable energy sources and firm performance. In order to examine the citations of publications according to their countries of origin, a network map was created using the 'Citation -Countries' feature over 93 observation units that have published at least one work and received one citation. As a result of this analysis, 16 clusters, 909 links and a total of 3557 link strengths were identified. The network analysis image shows clusters in different colors corresponding to the relevant countries. Malaysia (607) stands out as the country with the highest connection strength.

Figure 8. Network Analysis Image of Countries with the Most Publications on Renewable Energy and Firm Performance



Source: Vosviewer

4.4.8. Institution Analysis

Table 5 shows the institutions from which the most studies on renewable energy sources and firm performance came from. Xi'an Jiaotong University from China made the largest contribution to the literature on these issues. The top three institutions in citation ranking are (University of Malaya with 3216 citations, University of Tehran with 2472 citations, University of Sharjah with 1525 citations). Although University of Malaya ranks 4th in terms of the number of documents, it ranks high in the number of citations. Turkey (Ege University) ranks 19th in the number of documents. In the citation ranking, Turkey ranked 13th.

Table 5. Institutions with the Most Publications on the Relationship between Renewable Energy and Firm Performance

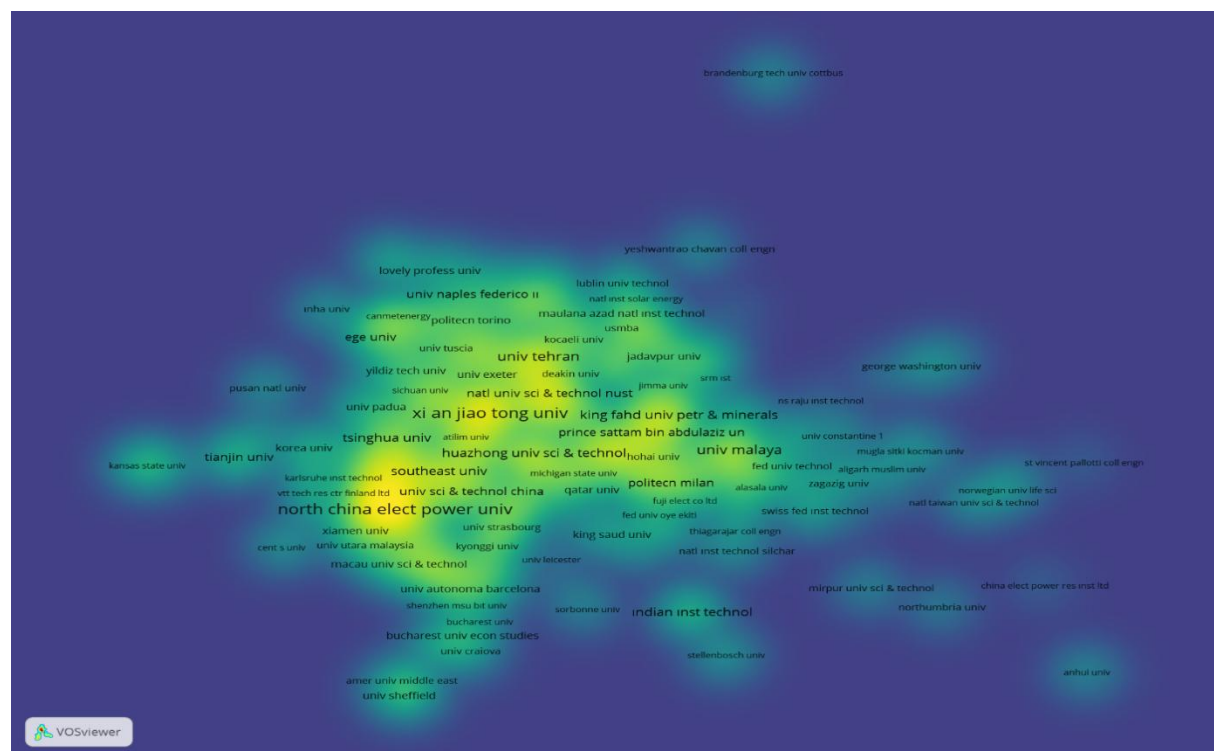
Institution	Number of publications	Number of Citation	Connection Strength
Xi'an Jiaotong University	48	1422	86
North China Electric Power University	47	849	62

Chinese Academy of Sciences	29	845	72
University of Malaya	26	3216	561
University of Tehran	24	2472	161
National Institutes of Technology	21	649	104
Shanghai Jiao Tong University	21	757	33
Huazhong University of Science and Technology	20	1055	148
University of Sharjah	19	1525	143
Institute of Nano Science and Technology	19	630	115

Source: Vosviewer

Figure 9 presents a network analysis of institutions that have published significant publications on renewable energy sources and firm performance. Relevant institutions are grouped in different colours and included in the network analysis visualization. Using the "citation- organization" feature in the analysis, a network map was created over 1126 units that have published at least one work and received a citation. As a result of this analysis, 52 clusters, 5042 links and a total of 6530 link strengths were identified. University of Malaya also stands out as the organization with the strongest link strength (561 link strength).

Figure 9. Network Analysis Image of the Institutions with the Most Publications on Renewable Energy and Firm Performance



Source: Vosviewer

3.4.9. Keyword Analysis

Table 6 lists the most frequently used keywords in the article studies. The concept of "sustainability", which is used extensively in the studies, ranks 12th with 17 repetitions in the list of the most frequently used keywords. This may be due to the fact that this concept is more recent than the others. The most frequently used keyword in the studies on renewable energy sources and firm performance was "renewable energy".

Table 6. Most Frequently Used Keywords in Topics on the Relationship between Renewable Energy and Firm Performance

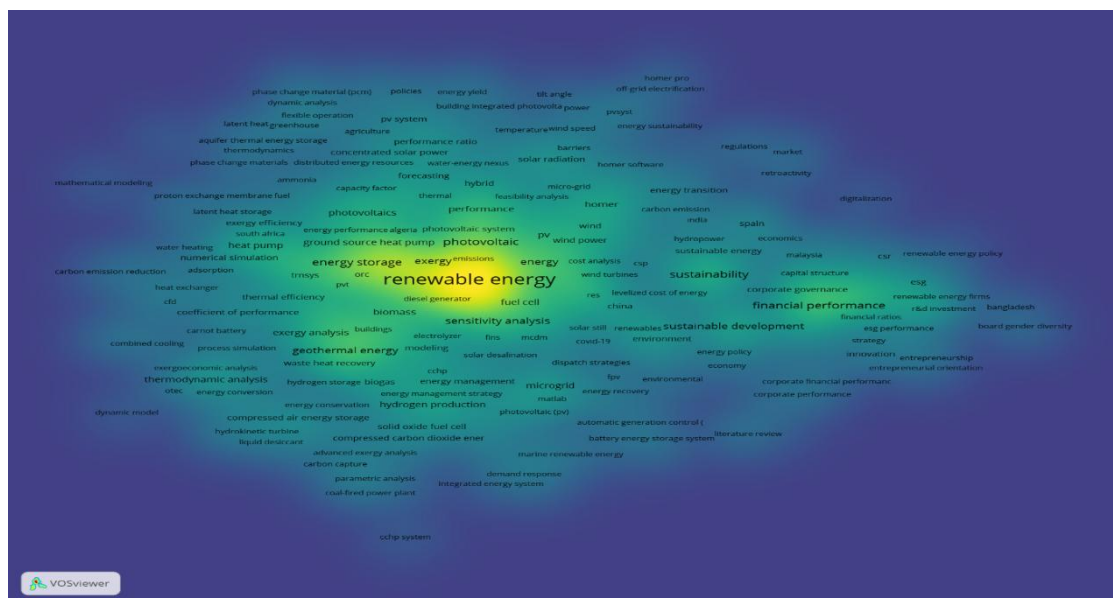
Keywords	Occurrences	Connection strength
Renewable energy	395	866
Solar energy	125	301
Performance analysis	81	139
Energy storage	68	155
Photovoltaic energy	63	174
Financial performance	58	93
Sustainability	53	122
Optimization	46	135
Energy efficiency	46	102
Renewable energy sources	43	96

Source: Vosviewer

Figure 10 shows a network visualization of the analyzed keywords. The most used keyword in the studies analyzed with the "co-occurrence" feature was "renewable energy" with 393 occurrences. In addition to being the most frequently used term, it also has the highest density (866) and frequency. After that, solar energy with 125 repetitions and performance analysis with 81 repetitions follow the order. In terms of connection strength, solar energy (866), performance analysis (301) and photovoltaic (174) were the top 3.

The analysis was performed with 555 observation units that were seen at least three times and had relationships between them, resulting in 20 clusters, 3968 links and a total of 5277 link strengths.

Figure 10. Analysis Image of the Most Frequently Used Keywords on Renewable Energy and Company Performance



Source: Vosviewer

Conclusions and Further Research

The aim of this study is to conduct a bibliometric analysis of the studies on the relationship between renewable energy and firm performance. For this purpose, the advanced search section of the Web of Science database was searched by typing the related words (TS=("renewable energy" OR "renewable energy sources" OR "energy sector")) AND (TS=("firm performance" OR "company performance" OR "financial performance" OR "performance analysis" OR "financial ratio" OR "financial ratio analysis")). It was found that the studies on the subject started in 1993 and continued until 2025. To the data obtained as document type; 'article, review article, proceeding paper, book, book chapters' web of science category Energy fuels, green sustainable science technologies, environmental sciences, economics, business, business finance' special filter was applied and 1953 publications from 1993-2025 were included in the analysis. In the analysis part of the study, the 'analyze results' section of the web of science database was used for the distribution of studies by year, distribution of studies by type, and distribution of studies by language of writing. VOSviewer software program was used to analyze and visualize the relationship between authors, sources, countries, institutions and keywords. As a result of the analysis, tables were created by ranking the

top 10 authors, sources, countries and institutions in terms of number of publications, number of citations and link strength. After the relevant tables, mapping was provided. As a result of the analysis;

- The studies that started in 1993 reached the highest level in 2020 with 280 studies.
- Studies in this field are the most preferred articles
- It is seen that the majority of the studies in this field are articles and 99.60% of the language of writing is English.
- It is seen that Saad Mekhilef is the most prolific author in the related field and also the most cited author.
- The source with the highest number of studies is 'Energies' and the source with the highest number of citations is 'Renewable & Sustainable Energy Reviews'.
- The People's Republic of China made the highest contribution to the related field in terms of the number of studies and citations.
- The most productive institution in terms of number of publications was Xi an Jiao Tong Univ. Univ Malaya is the institution with the highest number of citations.
- The most frequently used keyword in the studies was 'renewable energy', which constitutes the focus of the studies.

This study provides a comprehensive perspective on the scientific development of the research field. While the majority of existing studies have empirically examined the impact of renewable energy investments on firm performance using specific country, industry, or firm-level samples, the present study distinguishes itself by comprehensively evaluating the intellectual structure of the literature, including its research trends, influential authors, institutions, countries, publication sources, and conceptual evolution. In this respect, the study not only synthesizes the existing body of knowledge but also reveals the developmental dynamics of the research field, thereby providing a comprehensive roadmap for future research.

Furthermore, the use of publications indexed in the Web of Science Core Collection, which complies with internationally recognized academic standards, enhances the reliability and comparability of the findings. The scientific collaboration networks, citation networks, and keyword trends identified through bibliometric analysis are expected to assist researchers in identifying knowledge gaps, developing new research directions, and strengthening international research collaborations. In addition, the findings of this study may serve as a valuable reference for policymakers, investors, and firms operating in the energy sector by facilitating the monitoring of research trends in renewable energy and supporting strategic decision-making processes.

The increasing adoption of renewable energy policies offers firms engaged in renewable energy investments significant opportunities to achieve sustainable growth, enhance their competitiveness, and reduce financial risks. At the same time, while firms are expected to assume greater responsibility for renewable energy initiatives, continued support from both central and local governments will be essential to promote the widespread adoption and long-term sustainability of renewable energy.

Nevertheless, this study is subject to certain limitations. The primary limitation is that the analysis is confined to publications indexed exclusively in the Web of Science Core Collection. Future research could provide a more comprehensive understanding of the field by incorporating additional databases, such as Scopus, Dimensions, and Google Scholar. Moreover, complementing bibliometric analysis with systematic literature reviews and content analysis would further enhance the comprehensive evaluation of this research field.

Declarations

Credit Authorship Contribution Statement

Rabia Şen: Conceptualization, Investigation, Methodology, Project administration, Software, Formal analysis, Data curation, Writing – original draft; Funding Acquisition.

Gülfen Tuna: Supervision, Validation, Writing – review and editing; Funding Acquisition.

Declaration of Competing Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of use of generative AI and AI-assisted technologies: The authors used generative AI solely to assist with the translation of selected sections of the manuscript. No AI-generated content was used in the study design, data analysis, interpretation of the results, or the preparation of the scientific content. The authors reviewed all AI-assisted translations and take full responsibility for the accuracy and integrity of the final manuscript.

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Shaping the Future of Senior Tourism: A Conceptual Ecosystem Approach for Australasia Tourism



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Abstract: Australasia is experiencing rapid population ageing, fundamentally reshaping tourism demand and industry practices. Despite this demographic transition, the implications of senior tourism for sustainable and inclusive tourism development remain insufficiently explored.

This study adopts a conceptual research design based on an extensive review and synthesis of contemporary literature, demographic statistics, tourism industry reports, and policy documents relating to population ageing and tourism in Australasia. The reviewed literature was synthesized using NVivo 14 to identify key themes and relationships being the foundation for the development of the proposed conceptual model.

Senior travellers are becoming significant drivers of tourism innovation by increasing demand for health and wellness tourism, accessible travel experiences, multi-generational travel, cultural engagement, and digitally enabled tourism services. The findings further indicate that successful senior tourism ecosystems require coordinated business innovation, destination accessibility, digital inclusion, and supportive government policies.

This study proposes a novel conceptual model of senior tourism ecosystems specifically within the Australasian context by integrating demographic ageing, tourism innovation, sustainability, digital inclusion, and public policy into a single framework. It extends Active Ageing Theory by positioning senior tourism as not only a mechanism for promoting healthy and active lifestyles but also as a catalyst for economic development, social inclusion, and environmentally sustainable tourism practices.

Future research should test the model using quantitative and qualitative approaches across different Australasian destinations, examine behavioural differences among diverse senior traveller segments, and investigate the role of emerging digital technologies in enhancing tourism participation, accessibility, and inclusive destination development.

Keywords: Australian policy; digital inclusion; senior tourism; silver economy; wellness tourism.

JEL Classification: I31; L83; J14; O35; Q56.

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Introduction

Australasia is undergoing one of the world's most rapid demographic transitions, with extended lifespans and declining fertility reshaping population structures. In Australia, the share of residents aged 65 and over has risen steadily and is projected to reach between 21 to 23% by 2066 (Australian Institute of Health and Welfare, 2020),

and as high as 25% to 27% by 2071 (Australian Bureau of Statistics, 2024). Comparable trends across New Zealand and the wider Asia-Pacific suggest that by mid-century nearly a quarter of the population will be aged 60 or older, a shift with profound implications for tourism demand and supply. Within this demographic landscape, the “silver market” of older travellers and retirees has emerged as a critical segment. Empirical evidence increasingly demonstrates the health, psychological, and social benefits of travel for seniors whereby cohort data show older adults who engage in tourism have significantly lower mortality risks than non-travellers (Du *et al.* 2021), while mixed-methods evidence demonstrates that tourism fosters psychological well-being, emotional resilience, and active ageing, while fostering a sense of purpose and social inclusion (Qiao *et al.* 2022). Moreover, qualitative research reveals that older travellers increasingly prioritise meaningful cultural, social, and leisure experiences, moving beyond traditional “sun, sand, and sea” tourism to pursue wellness-oriented and enriching journeys (Carrera, 2025). This redefinition of senior tourism reflects broader socio-cultural shifts toward active ageing and lifelong engagement, challenging stereotypes of older tourists as passive or risk averse.

Technological innovation has become central to this transformation. The COVID-19 pandemic accelerated digital adoption among older adults, broadening their engagement with online booking systems, virtual tours, and technology-enabled travel services. Empirical studies confirm that immersive digital tourism can enhance well-being and older adults in residential care who participated in virtual reality (VR) tourism reported reduced anxiety, improved social engagement, and greater quality of life (Fiocco *et al.* 2021). Similarly, VR cycle-tourism simulations were associated with positive attitudes toward technology and improved perceptions of independence (Ortet *et al.* 2022). Other studies show VR and virtual touring can foster nostalgia, enjoyment, and social connectedness, with potential to reduce isolation among older adults (Muslu *et al.* 2025; Oppert *et al.* 2023). Furthermore, the emergence of tailored digital platforms such as ElderWander illustrates how accessible design and user-centred interfaces can empower older adults to independently plan, book, and navigate their travel experiences (Costa *et al.* 2025).

Despite these advances, critical challenges remain in ensuring equitable access, digital literacy, and inclusivity. Ageing cohorts are highly heterogeneous in terms of physical ability, economic resources, and digital competence, necessitating human-centred and adaptive approaches to technology design and service delivery (Fan *et al.* 2024; Gretzel *et al.* 2015). Moreover, geographic disparities in infrastructure and regional accessibility persist across Australasia, disproportionately affecting older travellers in rural and remote areas. Addressing these challenges requires not only technological innovation but also policy alignment and industry coordination to ensure that tourism systems evolve in ways that are inclusive, sustainable, and responsive to demographic change. Thus, this study addresses the knowledge gap whereby previous research has examined senior tourism motivations, few studies have integrated demographic, business, and policy perspectives to explain how population ageing reshapes tourism systems and their alignment with sustainable development goals. Accordingly, this paper conceptualises the “senior tourism” in Australasian tourism through an integrated framework encompassing four interrelated domains: demographic transformation, wellness and well-being benefits, digital innovation and accessibility, and policy and business adaptation. By bridging these traditionally siloed areas of research, the paper contributes a multi-dimensional understanding of senior tourism that reflects both theoretical advancement and practical relevance. The analysis aims to inform how tourism operators, policymakers, and communities can harness demographic ageing not merely as a challenge, but as a strategic opportunity for innovation, inclusivity, and sustainable growth in the Australasian tourism landscape.

1. Literature Review

1.1 Demographic Shifts and the Silver Economy

Australasia is undergoing one of the most significant demographic transitions globally, with ageing populations reshaping both social and economic landscapes. In Australia, the proportion of adults aged 65 years and older is expected to reach almost 23% by 2066 and 27% by 2071 (Australian Bureau of Statistics, 2024; Australian Institute of Health and Welfare, 2020). Comparable patterns are observed in New Zealand and across the Asia-Pacific, driven by declining fertility rates, rising longevity, and the progression of the baby boomer generation into retirement. This shift has been described as the rise of the “silver economy,” a powerful force where older adults collectively hold greater disposable income, leisure time, and inclination toward lifestyle-oriented consumption (Balderas Cejudo, 2024). In the tourism sector specifically, seniors are not only travelling more frequently but also spending more per trip, particularly on comfort, cultural enrichment, and wellness-related activities (Alén, Losada, & Núñez Domínguez, 2016).

The growing influence of senior travelers is compelling destinations and service providers to rethink tourism products, delivery systems, and policy frameworks. Scholars argue that this market is heterogeneous, encompassing subgroups such as the “young-old” (60 to 74), the “old-old” (75+), and retirees with varying health

statuses, mobility levels, and income profiles (Papcunová & Levický, 2023; Taloş *et al.* 2021). Age-friendly infrastructure, accessible transport, and experiential offerings tailored to slower paces and intergenerational needs are increasingly recognized as competitive advantages (Kežman & Goriup, 2022). At the policy level, governments in the region are encouraged to incentivize inclusive infrastructure and regulate accessibility standards to capture the socio-economic benefits of silver tourism (Yao & He, 2025; Gupta, 2025). Ultimately, the ageing demographic represents not just a challenge but a structural opportunity whereby tourism providers who effectively align with the preferences and capabilities of older adults are positioned to tap into one of the fastest growing and most resilient segments of the global travel market.

Despite widespread recognition of the economic significance of population ageing, much of the existing literature continues to conceptualise senior travellers primarily as a homogeneous market segment characterised by age and purchasing power. This perspective overlooks the considerable diversity within older populations in terms of health conditions, digital capabilities, travel motivations, cultural preferences, and socio-economic circumstances. Consequently, existing silver economy research has predominantly adopted an economic or consumer behaviour perspective, with relatively limited attention given to how demographic ageing interacts with destination governance, technological innovation, sustainability, and accessibility within an integrated tourism ecosystem (Buhalis, 2000; Sedgley *et al.* 2011). Furthermore, while studies acknowledge the growing market potential of senior tourism, they rarely explain how tourism stakeholders can coordinate across public policy, industry, and communities to respond strategically to demographic transformation. This conceptual fragmentation provides a strong rationale for developing a broader ecosystem perspective that extends beyond market segmentation alone.

1.2 Tourism, Health, and Well-Being in Ageing Populations

A growing body of evidence demonstrates that tourism exerts positive effects on the physical, psychological, and social well-being of older adults. Large-scale research in China shows that participation in tourism is associated with significant reductions in mortality risk among older populations, suggesting that travel can contribute to longevity as well as improved quality of life (Du *et al.* 2021). Evidence from cross-national studies similarly indicates that leisure travel among seniors enhances physical health by encouraging mobility, stimulating engagement in outdoor activities, and supporting functional independence (Zhang *et al.* 2025). These findings highlight tourism not merely as a discretionary activity, but as a meaningful contributor to public health and healthy ageing strategies.

Beyond physical health, tourism fosters psychosocial resilience and enriches cognitive functioning among older adults. Research demonstrates that travel encourages social interaction and companionship, helping to mitigate loneliness and strengthen intergenerational ties (Qiao *et al.* 2022). Engagement in leisure tourism has also been associated with greater psychological vitality, self-esteem, and adaptability, promoting sustained participation in community and cultural life (Li *et al.* 2019). Taken together, these outcomes suggest that tourism operates as both a preventive health intervention and a catalyst for social inclusion, making it an increasingly relevant dimension of ageing policy in societies facing demographic transitions.

Although empirical evidence consistently demonstrates positive relationships between tourism participation and healthy ageing, the causal mechanisms underlying these relationships remain insufficiently theorised. Existing studies largely focus on health outcomes, including physical activity, psychological well-being, and social connectedness, but pay comparatively little attention to the organisational and destination-level conditions that enable these benefits to occur (Hu *et al.* 2023). Moreover, much of the evidence originates from Asian and European contexts, limiting its direct applicability to the unique demographic, geographic, and policy characteristics of Australasia. There is therefore a need to move beyond individual-level health outcomes towards a broader systems perspective that examines how tourism destinations can intentionally design experiences that simultaneously promote healthy ageing, economic sustainability, and social inclusion.

1.3 Wellness Tourism and Healthy Ageing

Wellness tourism is defined as travel motivated by the pursuit of health and well-being which has emerged as a vital dimension of senior travel. Older travellers increasingly favour experiences linked to relaxation, holistic wellness, and cultural enrichment over traditional consumption-driven tourism (Carrera, 2025). Research indicates that wellness-oriented tourism products, such as spa retreats, cultural immersions, and nature-based activities, are particularly appealing to older cohorts because they align with lifestyle goals of maintaining vitality and enhancing quality of life. Moreover, these activities contribute to psychological restoration and stress reduction, reinforcing tourism's role in positive ageing (Qiao *et al.* 2022). Within Australasia, the wellness tourism sector has grown in tandem with ageing demographics, positioning destinations to capture both domestic and international senior

markets. However, scholars highlight that wellness offerings must be culturally sensitive, affordable, and inclusive to avoid excluding less affluent ageing groups.

Existing wellness tourism research generally positions wellness as a specialised tourism product rather than as an integrated destination strategy. Most studies concentrate on spa tourism, medical tourism, or wellness retreats, while giving comparatively limited consideration to how wellness principles can be embedded across mainstream tourism experiences. Furthermore, current research rarely examines the interaction between wellness tourism, accessibility, digital technologies, and destination governance (Hu *et al.* 2023; Smith & Puczkó, 2014). As a result, wellness remains conceptually isolated from other dimensions of senior tourism despite increasing evidence that older travellers simultaneously seek physical comfort, social engagement, lifelong learning, cultural authenticity, and technological support. This fragmentation highlights the need for a more holistic conceptualisation of wellness within senior tourism ecosystems.

1.4 Accessible Tourism and Inclusion

Accessible tourism is defined as enabling people of all abilities to participate in tourism equitably that has become a critical area of innovation in response to demographic ageing. Physical accessibility remains a priority, with older adults facing challenges in transport, accommodation, and destination infrastructure. Yet accessibility also encompasses digital inclusion, especially as seniors increasingly interact with tourism services online. For instance, personalised, human-centred digital platforms can support older adults in planning and managing travel experiences (Costa *et al.* 2025).

Immersive technologies like virtual reality (VR) have also expanded the scope of accessible tourism. Studies show that VR-based tourism can reduce anxiety, enhance social connectedness, and improve perceived independence among seniors (Fiocco *et al.* 2021; Ortet *et al.* 2022). VR “time travel” experiences and virtual touring provide nostalgia, enjoyment, and social engagement for older adults, including those unable to travel physically (Muslu *et al.* 2025; Oppert *et al.* 2023). Nevertheless, gaps in digital literacy and the “digital divide” persist, underscoring the need for inclusive design and targeted training to ensure seniors can fully benefit from accessible tourism innovations (Fan *et al.* 2024).

Although accessible tourism has expanded significantly beyond physical infrastructure to encompass digital accessibility and inclusive service design, the literature remains fragmented across multiple disciplinary perspectives including disability studies, information systems, and tourism management. Consequently, accessibility is frequently treated as a compliance issue rather than as a strategic driver of tourism competitiveness and destination resilience. Existing conceptualisations also continue to focus predominantly on removing barriers rather than creating enabling tourism ecosystems that proactively support diverse ageing populations (Darcy & Dickson, 2009; McCabe *et al.* 2011). Moreover, limited research has explored how emerging technologies such as artificial intelligence, virtual reality, smart destinations, and personalised digital platforms can complement physical accessibility to enhance senior travel experiences. These gaps suggest that accessibility should be repositioned as a multidimensional capability embedded within destination governance and innovation strategies rather than viewed as an isolated operational function.

1.5 Policy and Industry Adaptation

Tourism policy in Australasia is increasingly shaped by the demands of ageing populations, with wellness, accessibility, and digital innovation receiving greater attention. Yet, as current research notes, industry adaptation remains fragmented. While progress has been made in wellness tourism and assistive digital tools, integration across demographic, technological, and policy dimensions is limited. Scholars argue for holistic strategies that frame the “senior tourism” not simply as a market opportunity, but as a structural transformation requiring systemic change in infrastructure, services, and governance (Carrera 2025; Fan *et al.* 2024). Despite growing policy recognition of demographic ageing, industry responses remain largely incremental and reactive. Existing policy frameworks tend to address accessibility, wellness, workforce participation, and digital transformation independently, resulting in fragmented implementation across tourism systems. Likewise, industry initiatives often concentrate on individual service innovations rather than destination-wide coordination involving governments, local communities, healthcare providers, transport operators, and tourism businesses. This disconnect between policy ambition and industry practice suggests that existing approaches lack an overarching conceptual framework capable of integrating demographic, technological, environmental, and governance dimensions into a coherent tourism strategy. Addressing this fragmentation represents one of the principal motivations for the conceptual model proposed in this study.

1.6 Theoretical Foundation

This study is grounded in four complementary theoretical perspectives which are the active ageing theory, the silver economy framework, sustainable tourism theory, and the technology acceptance paradigm. Together, these frameworks provide an integrative foundation for understanding how demographic ageing, innovation, and inclusivity converge to reshape Australasian tourism. Active ageing theory (World Health Organization, 2002) positions older adults as active, engaged participants in society who pursue well-being and purpose throughout later life. Within a tourism context, this theory reframes travel as a means of enhancing physical health, psychological resilience, and social connectedness (Qiao *et al.* 2022), supporting the view that tourism contributes to public health and quality of life in ageing populations. Building on this, the silver economy framework conceptualises population ageing as both a social transformation and an economic opportunity, emphasizing the spending power, lifestyle orientation, and market influence of older consumers (Balderas Cejudo, 2024). Sustainable tourism theory further situates senior tourism within the global development agenda, aligning with the United Nations Sustainable Development Goals (SDGs 3, 8, 10, 11, and 12) to promote inclusivity, equity, and intergenerational well-being. Finally, the technology acceptance paradigm (Davis, 1989; Venkatesh *et al.* 2003) provides insights into how digital innovation influences seniors' engagement with tourism, focusing on perceived usefulness, ease of use, and confidence in technology (Fan *et al.* 2024). Integrating these perspectives enables a multidimensional conceptualization of senior tourism as a socio-economic system shaped by demographic trends, technological adaptation, and sustainability imperatives across the Australasian tourism landscape.

While each of these theoretical perspectives has independently contributed valuable insights into ageing, tourism, sustainability, and technology adoption, they have rarely been integrated within a single conceptual framework. Active Ageing Theory primarily explains individual well-being and participation; the Silver Economy Framework focuses on demographic and economic opportunities; Sustainable Tourism Theory emphasises destination resilience and responsible development; and Technology Acceptance Theory explains individual adoption of digital innovations. However, none of these theories independently explains how demographic ageing simultaneously influences destination governance, tourism innovation, digital inclusion, accessibility, business competitiveness, and sustainable regional development. Existing conceptual models therefore remain largely disciplinary and linear, limiting their ability to explain the complex interactions among multiple tourism stakeholders operating within ageing societies (Hu *et al.* 2023; Sedgley *et al.* 2011). The framework proposed in this study addresses this theoretical gap by integrating these complementary perspectives into a multidimensional ecosystem model that conceptualises senior tourism as an interconnected socio-economic system rather than as a collection of independent tourism products or consumer behaviours. This integration represents the principal theoretical contribution of the present study.

1.7 Research Gap and Conceptual Contribution

Although senior tourism has received increasing scholarly attention over the past decade, the literature remains fragmented across several parallel streams, including active ageing, wellness tourism, accessible tourism, digital tourism, and the silver economy. These research domains have evolved largely independently, resulting in conceptual models that explain only selected aspects of senior tourism. Existing frameworks typically focus either on individual traveller behaviour, destination accessibility, wellness experiences, or demographic trends, with limited attention given to the interdependencies among these dimensions. Consequently, there remains no comprehensive framework that explains how demographic ageing influences tourism through the combined effects of policy, technological innovation, accessibility, sustainability, industry adaptation, and stakeholder collaboration.

Furthermore, existing conceptual models have been developed predominantly within European or Asian contexts, despite Australasia representing one of the world's fastest-ageing tourism regions with distinctive institutional, geographic, and socio-economic characteristics. The region's emphasis on sustainable development, digital transformation, Indigenous tourism, and regional accessibility creates unique opportunities and challenges that are not adequately reflected in current theoretical models. Accordingly, this study proposes a novel Senior Tourism Ecosystem Framework for Australasia. Unlike previous models that primarily examine isolated dimensions of senior tourism, the proposed framework adopts an ecosystem perspective by integrating demographic ageing, active ageing principles, silver economy dynamics, accessibility, digital innovation, sustainable tourism, destination governance, and stakeholder collaboration into a unified conceptual model. In doing so, the framework extends existing theory by explaining how these interconnected elements collectively shape inclusive and sustainable tourism development for ageing societies. This represents the principal theoretical contribution of the present study and provides a foundation for future empirical testing across Australasian destinations.

2. Methodology

This study adopts a conceptual research design, which is well-suited for addressing the theoretical and empirical fragmentation across the intersecting fields of ageing and tourism. Rather than generating new primary data, conceptual research aims to synthesise, interpret, and integrate existing literature to develop a coherent framework that advances theoretical understanding and informs future empirical inquiry. This approach is particularly appropriate for emerging and multidisciplinary areas such as senior tourism, where conceptual boundaries, definitions, and methodological approaches remain fluid. By systematically analysing demographic and policy evidence from Australasia, the study constructs an integrative model linking population ageing, tourism adaptation, and sustainable development priorities.

2.1 Research Approach

A narrative synthesis method was applied to organise and interpret findings from multidisciplinary literature spanning tourism studies, gerontology, sociology, economics, digital innovation, and public policy. Narrative synthesis allows for the aggregation of diverse forms of evidence such as qualitative, quantitative, and conceptual subsequently transforming them into coherent analytical categories. The process followed the structured steps recommended by Popay *et al.* (2006):

- (a) Developing a theoretical framework for synthesis;
- (b) Developing a preliminary synthesis of findings;
- (c) Exploring relationships within and between studies; and
- (d) Assessing the robustness of the synthesis.

This systematic yet interpretive approach ensures that conceptual patterns are not self-fulfilling but grounded in a transparent review process.

2.2 Literature Selection and Selection Strategy

A structured literature search was conducted across Scopus, Web of Science, and Google Scholar to identify studies relevant to the research question: How do ageing populations in Australasia shape emerging patterns and preferences in senior tourism? Following reviewer feedback, the search strategy was refined to ensure closer alignment with this research focus and to capture both foundational and contemporary work in the field. To ensure theoretical breadth, the temporal scope was extended to include publications from 2000 onwards, capturing foundational research on senior tourism, active ageing, accessibility, and tourism behaviour, as well as contemporary studies reflecting post-COVID behavioural shifts. Search strings were developed through a concept-driven iterative process across three domains which is shown in Table 1.

Table 1. Keywords search

Domain	Example of Keywords
Ageing and Tourism	"senior tourism", "older adults AND travel behaviour", "active ageing AND tourism"
Experience Dimensions	"accessible tourism", "wellbeing tourism AND ageing", "cultural participation AND older adults", "nature-based tourism AND seniors", "heritage tourism AND ageing"
Regional Context	"Australia", "New Zealand", "Australasia"

Source: Own Elaboration

Boolean operators (AND/OR) were used to combine search terms within and across domains, and results were limited to English-language publications. Reference lists of included studies were also screened to identify additional relevant works.

Inclusion criteria required sources to (a) address ageing and tourism within Australasia or comparable OECD contexts, (b) be published since 2000 onwards, and (c) provide conceptual or empirical insights relevant to older travellers, tourism innovation, or policy. Grey literature such as industry white papers, tourism board reports, and government strategies was incorporated to capture practice-based perspectives often omitted from academic discourse. The expanded scope directly responds to reviewer concerns by ensuring representative coverage of adventure, nature, and cultural tourism domains alongside wellness and accessibility. These inclusion and exclusion criteria are shown in Table 2.

Table 2. Inclusion and Exclusion Criteria

Criterion Type	Inclusion Criteria	Exclusion Criteria
Temporal	Published from 2000 onwards	Pre-2000 publications
Geographical	Focus on Australasia or comparable OECD contexts	Non-OECD regions
Topical	Ageing, tourism behaviour, accessibility, or regional tourism	Studies unrelated to tourism or ageing
Source Type	Peer-reviewed journal articles; grey literature (industry, policy, government reports)	Non-academic media, editorials, or opinion pieces
Language	English	Non-English

Source: Own Elaboration

The search yielded 476 records. After removing 112 duplicates, 364 records remained for screening. Based on title and abstract relevance, 178 sources were retained for full-text review. Following detailed assessment against the inclusion criteria, 112 peer-reviewed articles were selected. To capture practice-oriented insights, an additional 23 grey literature sources including government tourism strategies, ABS/Stats NZ demographic reports, and industry white papers were incorporated. In total, 135 documents were included in the final synthesis as shown in Table 3. The study selection process is illustrated in Figure 1.

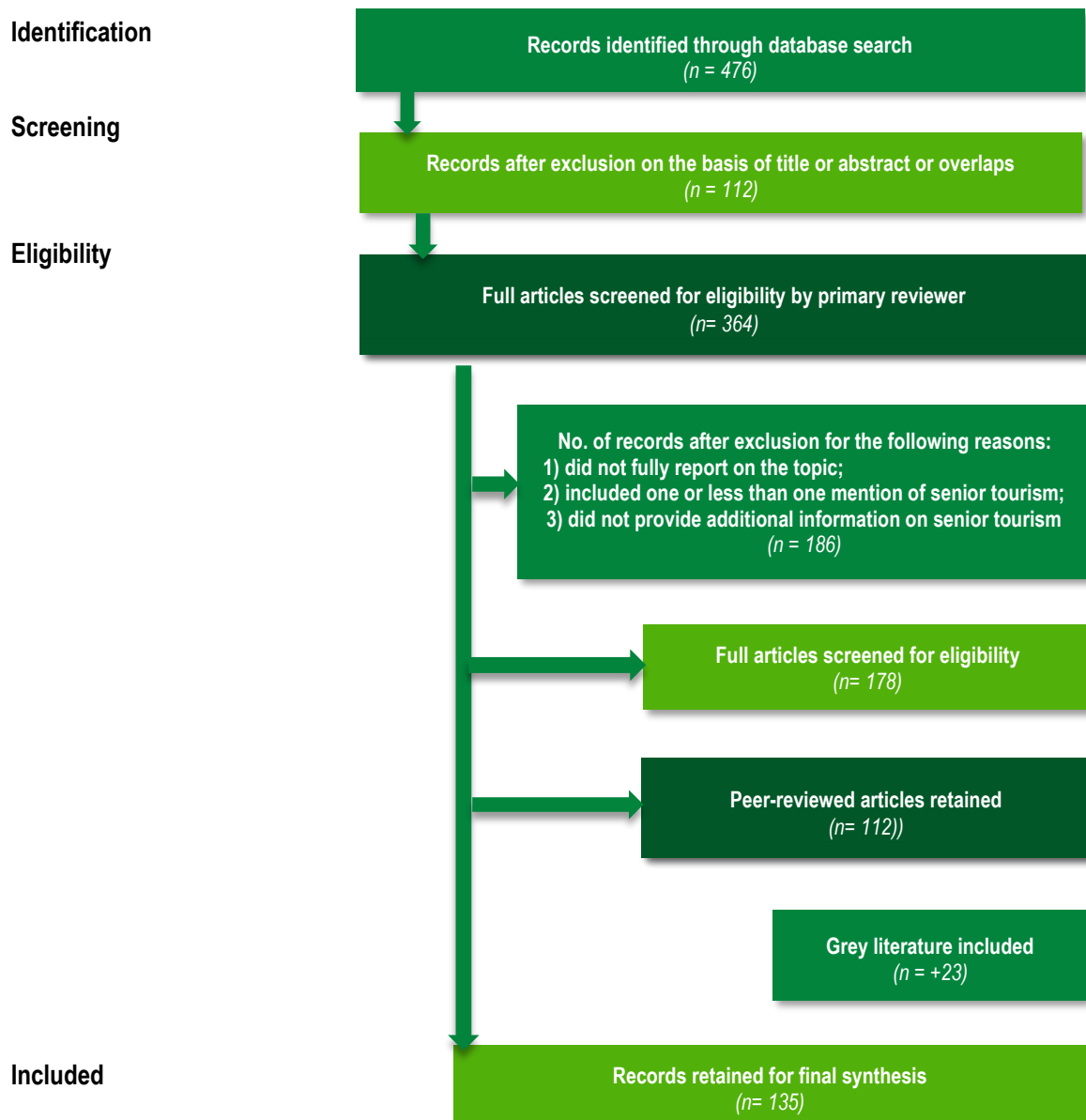
Table 3. Inclusion and Exclusion Criteria

Criterion Type	Number of Records	Exclusion Criteria
Records identified through Scopus, Web of Science, and Google Scholar	476	Initial search results
Duplicates removed	112	Overlaps eliminated
Records screened (titles or abstracts)	364	Relevance assessment
Full-text articles assessed for eligibility	178	Detailed evaluation
Peer-reviewed articles retained	112	Final academic sources
Grey literature included	23	Industry or government sources
Total included in synthesis	135	Final dataset for analysis

Source: Own Elaboration

The study selection process is illustrated in Figure 1.

Figure 1. PRISMA flow diagram on schematic view of search strategy



Source: Page et al. (2021)

2.3 Analytical Framework

An integrative thematic analysis approach was employed, following the principles of Whittemore and Knaff's (2005) framework for mixed-method synthesis. Analysis proceeded in three iterative stages:

(1) Extraction: Each publication was imported into NVivo 14 and coded under initial, deductively derived categories such as demographic change, travel motivations, tourism typology (wellness, adventure, cultural, accessible), and enabling factors (technology, policy, infrastructure).

(2) Synthesis: The coded data were compared, clustered, and refined to identify recurring patterns, contradictions, and theoretical gaps across studies.

(3) Conceptual integration: The findings were synthesised into an emergent conceptual model illustrating the interplay between demographic, technological, and policy drivers shaping senior tourism in Australasia.

A hybrid coding strategy combined deductive coding (based on the conceptual framework) with inductive coding (emerging from the data). Coding consistency was ensured through iterative refinement, memoing, and cross-checking of a random subset of records to maintain reliability. This process enhanced analytical transparency and mitigated confirmation bias, allowing both convergent and divergent insights to emerge. These are the four iterative stages:

(a) Stage 1: Familiarisation and Initial Coding

The selected publications were read multiple times to achieve familiarity with their objectives, theoretical perspectives, methodologies, and principal findings. During this stage, meaningful text segments relating to senior tourism, ageing populations, accessibility, wellness, technology, sustainability, governance, and business innovation were identified and imported into NVivo as coding units. An initial coding framework was developed using a hybrid coding strategy that combined both deductive and inductive approaches. Deductive codes were informed by the study's theoretical foundation and research objectives, including Active Ageing Theory, the Silver Economy Framework, Sustainable Tourism Theory, and the Technology Acceptance Model. Initial deductive nodes included:

- demographic ageing
- silver economy
- travel motivations
- wellness tourism
- accessible tourism
- digital technology
- tourism policy
- destination management
- sustainability
- business innovation
- stakeholder collaboration
- social inclusion

Simultaneously, inductive coding allowed new concepts emerging directly from the literature to be incorporated without being constrained by the initial framework. Examples of emergent codes included digital confidence, hybrid tourism experiences, intergenerational travel, virtual tourism, community resilience, personalised tourism services, age-friendly destination design, and ecosystem collaboration. This iterative coding process resulted in 68 first-order codes (nodes) representing recurring concepts across the reviewed publications.

(b) Stage 2: Pattern Coding and Theme Development

Following initial coding, related nodes were systematically compared using NVivo's coding comparison and matrix query functions to identify conceptual similarities, overlaps, and recurring relationships. Similar codes were merged into broader analytical categories through constant comparison, allowing patterns to emerge across different geographical contexts, research methodologies, and theoretical perspectives. The first-order codes were progressively refined into eight higher-order themes that consistently appeared throughout the literature:

- Demographic Change and the Silver Economy
- Wellness Tourism and Healthy Ageing
- Accessible and Inclusive Tourism
- Digital Transformation and Technology Adoption
- Policy and Governance
- Business and Industry Innovation
- Social and Economic Outcomes
- Sustainability and Destination Resilience

Throughout this stage, analytical memos were maintained within NVivo to document coding decisions, conceptual reflections, emerging relationships, and alternative interpretations. These memos provided an explicit audit trail linking raw coded evidence to the development of higher-order themes, thereby improving analytical transparency.

(c) Stage 3: Cross-Theme Synthesis and Gap Identification

The higher-order themes were subsequently examined to identify convergent findings, divergent perspectives, and unresolved issues within the existing literature. Rather than merely summarising previous studies, the synthesis focused on identifying conceptual fragmentation across research domains. The analysis revealed that existing studies predominantly examine individual aspects of senior tourism such as wellness, accessibility, digital technologies, or demographic ageing in isolation. Limited attention has been devoted to understanding the interactions among these dimensions or to explaining how governments, tourism businesses, technology providers, healthcare systems, transport agencies, and local communities collectively influence senior tourism development. These analytical gaps provided the theoretical justification for proposing an integrated ecosystem framework that connects demographic, technological, business, governance, accessibility, and sustainability perspectives within a single conceptual model.

(d) Stage 4: Conceptual Integration

The final stage involved translating the synthesised themes into a higher-level conceptual representation. Relationships identified during thematic synthesis were mapped to illustrate how demographic ageing acts as the primary contextual driver influencing tourism demand, business innovation, digital transformation, accessibility, policy adaptation, and sustainability outcomes. Rather than presenting these themes as independent constructs, the proposed framework conceptualises senior tourism as an interconnected ecosystem in which multiple stakeholders interact to support healthy ageing, inclusive tourism experiences, regional economic development, and sustainable destination management across Australasia. The resulting framework therefore represents an interpretive synthesis of the reviewed literature rather than a simple aggregation of previous findings.

2.4 Ensuring Analytical Trustworthiness

Several procedures were employed to enhance the credibility, dependability, and transparency of the qualitative synthesis. First, the hybrid deductive-inductive coding strategy reduced the risk of imposing predetermined theoretical assumptions while remaining sensitive to concepts emerging directly from the literature. Second, coding was undertaken iteratively, with previously coded publications revisited whenever new concepts emerged to ensure consistency across the dataset. Third, analytical memos were maintained throughout the coding process to document coding rationale, conceptual decisions, and evolving interpretations, thereby providing an audit trail for the analytical process. Fourth, a random subset of publications was re-coded following completion of the initial analysis to assess coding consistency and refine node definitions where necessary. Finally, the resulting themes were continuously compared against the original publications to ensure that interpretations accurately reflected the evidence and that contradictory findings were retained rather than excluded. Collectively, these procedures enhanced methodological transparency, minimised confirmation bias, and strengthened the credibility of the conceptual framework developed in this study.

2.5 Conceptual Contribution

Through the integration of multi-disciplinary perspectives, this review develops a multidimensional conceptual framework of senior tourism that unites economic, social, cultural, and technological dimensions of older travellers' behaviour. The framework captures how demographic trends, digital inclusion, and policy interventions interact to influence tourism participation, destination preferences, and experience design among older adults in Australasia. The NVivo coding structure is further explained in Table 4.

Rather than testing hypotheses, this study's contribution lies in theorising the structural relationships that shape the evolving market for senior tourism. The resulting framework provides a foundation for:

- (1) Empirical validation through future quantitative or qualitative research; and
- (2) Policy and industry applications, supporting inclusive and sustainable tourism development for ageing populations.

Table 4. Example of NVivo Coding Structure

First-Order Codes (Nodes)	Categories	Final Themes
Ageing population, longevity, retirement	Demographic transition	Demographic Change & Silver Economy
Physical health, mental wellbeing, active lifestyle	Health benefits	Wellness Tourism
Universal design, mobility barriers, digital accessibility	Inclusive tourism	Accessible Tourism
AI, VR, mobile apps, smart tourism	Digital innovation	Technological Innovation
Government policy, destination planning	Governance	Policy & Governance
Senior-friendly services, product innovation	Business adaptation	Business & Industry Innovation
Social participation, community engagement	Wellbeing	Social & Economic Outcomes
SDGs, resilience, inclusive development	Sustainable tourism	Sustainability Integration

Source: Own Elaboration

3. Findings

By bringing the three domains together, the analysis highlights the interdependencies that shape tourism outcomes, such as the demand for accessible infrastructure, the growing importance of digital literacy, and the emergence of wellness, cultural, and nature-based travel as key forms of senior tourism. These interactions, and their implications for future tourism development, are synthesised and presented in Table 5, which outlines the core factors, their mechanisms of influence, and the expected impacts on tourism in the Australasian context.

Table 5. Silver Economy in the Context of Australasian Tourism

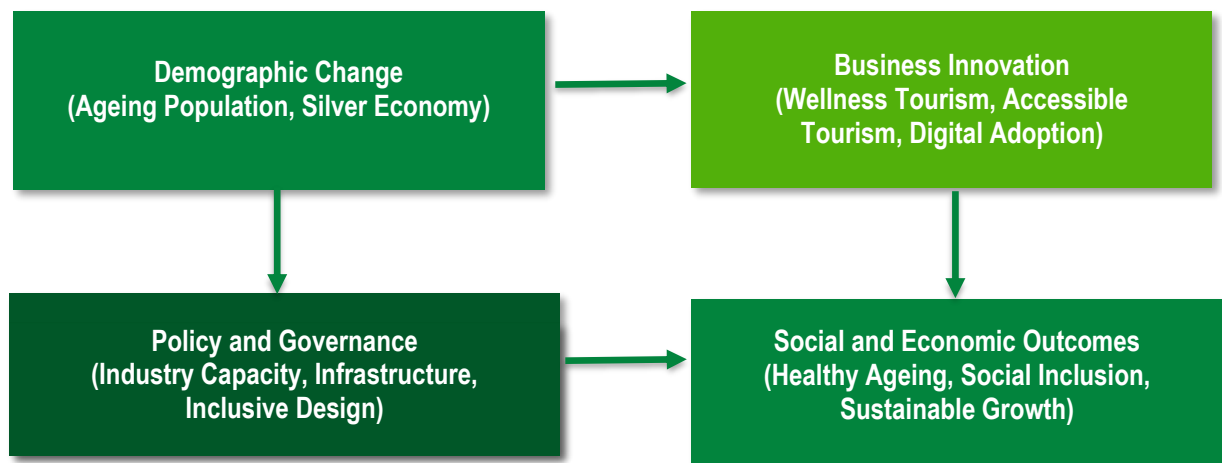
Core Dimension	Key Findings / Thematic Insights	Implications for Tourism in Australasia
Demographic Change	Ageing populations in Australia and New Zealand are redefining tourism demand through greater mobility, higher spending power, and preference for meaningful, health-oriented travel.	Tourism strategies must reposition seniors as an active and influential consumer group, driving product diversification and innovation.
Wellness Tourism	Travel linked to physical and mental wellbeing fosters preventive health outcomes and aligns with national health priorities. However, access remains skewed toward affluent participants.	Opportunities exist for public-private partnerships to expand affordable wellness and nature-based experiences for diverse senior groups.
Accessible Tourism	Seniors face multiple access barriers such as mobility, sensory, and digital but emerging technologies such as virtual reality offer inclusion alternatives.	Investment in universal design, digital literacy, and hybrid (physical-virtual) tourism models will expand participation and equity.
Technological Innovation	Digital tools enhance personalization and accessibility but risk excluding digitally marginalised older adults.	Need for digital inclusion initiatives and age-friendly technological design within tourism infrastructure.
Policy and Governance	Fragmented governance limits alignment across tourism, health, and ageing policy domains.	Cross-sector coordination is critical whereby integrating tourism with aged care, transport, and digital policy to support active ageing through travel.
Business and Industry Innovation	Firms are experimenting with senior-friendly services, but efforts remain fragmented and reactive.	Strategic industry adaptation through capacity building and market segmentation is essential to capture the “silver economy.”
Social and Economic Outcomes	Tourism engagement contributes to healthy ageing, social connectedness, and regional economic vitality.	Viewing older travellers not as a welfare concern but as contributors to sustainable growth strengthens both policy and industry agendas.
Sustainability Integration	Age-inclusive tourism aligns with broader sustainability goals when designed around equity, accessibility, and community wellbeing.	The term “senior tourism” becomes a driver of social sustainability linking profitability with inclusion and resilience.

Source: Based on synthesis from NVivo 14

4. Conceptual Framework

Based on the synthesis, which was done, the conceptual framework was proposed which is shown in Figure 2. This framework positions demographic change as the central catalyst influencing demand across varied tourism segments which includes wellness, adventure, cultural, and accessible tourism. These domains intersect with business innovation, digital transformation, and policy mechanisms (such as infrastructure investment, training, and inclusive design). Together, these dynamics shape outcomes including healthy ageing, social inclusion, regional economic vitality, and environmental sustainability. The framework thus extends beyond wellness and accessibility to encompass the full spectrum of older travellers' motivations, aligning with both academic and practitioner concerns for comprehensive, evidence-informed analysis.

Figure 2. Conceptual Framework for Senior Tourism in Australasia



Source: Own Elaboration

5. Discussions

5.1 Demographic Change as the Structural Driver

Australasia's ageing population represents both a fundamental challenge and a strategic opportunity for the future of tourism. By 2050, nearly one in four Australians and New Zealanders will be over 65, a demographic shift that will reshape demand structures and service delivery models (Australian Bureau of Statistics, 2024). This cohort is not only financially empowered but also markedly different from previous generations in terms of lifestyle aspirations. Today's seniors are more mobile, digitally literate, and wellness-oriented, redefining what constitutes "retirement travel." Consequently, their tourism engagement will transcend traditional leisure motives, gravitating toward experiences that emphasise authenticity, learning, connection, and self-care. The sector must therefore innovate by designing products that cater to differentiated needs while leveraging seniors' strong intergenerational influence on family and community travel behaviours.

5.2 Wellness Tourism as Preventive Health

Growing empirical evidence highlights the positive health externalities of tourism, with travel shown to alleviate stress, enhance psychological wellbeing, and strengthen social connectedness (Du *et al.* 2021; Qiao *et al.* 2022). Within this context, wellness tourism emerges as both an economic opportunity and a preventive health strategy. In Australasia, wellness-oriented travel ranging from nature-based ecotourism in New Zealand to spa retreats and mindfulness centres in Australia can complement national health policies aimed at promoting active ageing and reducing healthcare expenditure. However, the current wellness tourism landscape is often skewed toward affluent participants, limiting accessibility for lower-income or mobility-restricted seniors. This inequity poses a policy challenge and without inclusive design and targeted subsidies, wellness tourism may inadvertently reinforce health and social disparities among older populations. To truly function as a public health partner, the sector must embed equity and affordability into its core business models.

5.3 Accessible Tourism as a Core Market Imperative

Accessibility is increasingly recognised not as a niche consideration but as a foundational pillar of senior tourism strategy. Older travellers encounter multifaceted barriers ranging from physical and sensory limitations to digital exclusion that constrain participation (Fan *et al.* 2024). Emerging technologies such as virtual and augmented reality offer promising alternatives, allowing seniors with limited mobility to engage in immersive "virtual travel" experiences that yield measurable psychological and social benefits (Oppert *et al.* 2023; Muslu *et al.* 2025). In the Australasian context, where geographic dispersion and uneven infrastructure present additional obstacles, investments in accessible transport, universal design standards, and digital literacy programs are imperative. Integrating hybrid tourism models by combining physical and virtual engagement can extend inclusivity while mitigating environmental and logistical constraints. Failing to prioritise accessibility risks excluding one of the fastest growing and most loyal consumer bases in the tourism economy.

5.4 Policy and Industry Alignment

Effective responses to demographic transformation require coherent governance that bridges the traditional silos between tourism, health, transport, and social policy. While the industry has begun innovating through age-friendly services, technology-driven platforms, and personalised offerings (Costa *et al.* 2025), efforts remain fragmented and largely market-driven. A more strategic policy alignment is needed where tourism planning intersects with aged care strategies, regional transport networks, and digital inclusion agendas. Cross-sectoral partnerships between tourism boards, healthcare providers, and community organisations could institutionalise tourism as a formal component of active ageing frameworks, positioning travel as a legitimate contributor to physical and mental wellbeing. Such alignment would also strengthen regional resilience by stimulating demand across both urban and rural destinations.

5.5 Towards Inclusive and Sustainable Growth

Taken together, the framework underscores that addressing the ageing demographic is not merely a market adaptation exercise, it is an opportunity to redefine tourism as a lever for social sustainability. By integrating wellness, accessibility, and policy alignment, the Australasian tourism sector can evolve into a system that supports healthier, more inclusive, and resilient communities. The “senior tourism” thus becomes a vehicle for shared value creation where economic returns are coupled with improved wellbeing and social cohesion. Future strategies should move beyond short-term profitability metrics to embrace a holistic vision of tourism as a catalyst for longevity, dignity, and intergenerational equity.

6. Conclusions and Further Research

6.1 Conclusion

Australasia’s rapidly ageing population is reshaping the region’s tourism landscape. By conceptualising “senior tourism” through the integration of demographic change, wellness and accessible tourism, and policy alignment, this paper provides a multidimensional framework that addresses a critical gap in current scholarship. Unlike studies that focus on single dimensions (example: market demand or accessibility), the framework highlights the interdependence of demographic, business, and policy factors in shaping tourism for older adults. The analysis demonstrates that tourism can play a transformative role in supporting healthy ageing, enhancing social inclusion, and contributing to sustainable economic growth. However, achieving these outcomes requires systemic approaches that align industry innovation with policy frameworks and ensure inclusivity across diverse ageing cohorts.

6.2 Theoretical Implications

This paper makes several theoretical contributions to the study of ageing and tourism. First, it advances existing scholarship by proposing a holistic conceptual framework that integrates demographic change, wellness and accessible tourism, and policy alignment, thereby moving beyond fragmented approaches that treat these elements in isolation (Alén *et al.* 2016). Second, it bridges interdisciplinary perspectives including tourism studies, gerontology, digital innovation, and policy research, highlighting the value of cross-field integration in addressing complex demographic challenges (Balderas Cejudo, 2024). Third, by reframing tourism not merely as an economic response to ageing populations but as a social intervention that supports health, inclusion, and well-being, the paper challenges dominant market-centric narratives of the silver economy (Papcunová & Levický, 2023). Fourth, it highlights the need to conceptualise tourism as part of broader sustainability and resilience frameworks, where ageing populations are understood as active contributors to, rather than passive beneficiaries of, social and economic systems (Taloş *et al.* 2021). Finally, the framework offers fertile ground for future empirical testing and theoretical refinement where researchers could, for example, apply it in comparative regional studies and explore its adaptability to other ageing societies beyond Australasia, or interrogate how digital transformation reshapes traditional models of wellness and accessible tourism (Yao & He, 2025). Collectively, these contributions position the study as a conceptual springboard for advancing theory at the intersection of tourism, ageing, and social sustainability.

6.3 Practical Implications

This study also generates significant practical implications for both industry and policy stakeholders. For tourism businesses, the framework underscores the need to design inclusive and affordable wellness tourism products that cater to diverse senior cohorts, moving beyond luxury-oriented models that risk excluding less affluent older adults.

Integrating accessible tourism principles through age-friendly infrastructure, barrier-free transport, and user-friendly digital tools can expand participation and strengthen brand positioning within the competitive Australasian market (Gillovic & McIntosh, 2020; Gonda, 2024; Patterson & Balderas-Cejudo, 2023). For policymakers, the findings point to the importance of embedding tourism within broader active ageing and public health strategies, recognising its role in preventive healthcare and social inclusion. Policies that incentivise investment in accessible infrastructure (example: transport subsidies, universal design standards) and digital inclusion initiatives (example: senior-focused training programs, subsidised technology access) could significantly enhance seniors' ability to engage in tourism. The interdisciplinary model of healthy aging through tourism developed by Hu *et al.* (2023) highlights that cross-sectoral frameworks linking tourism boards, health systems, and aged-care services can amplify both social and economic benefits (Hu *et al.* 2023; Patterson & Balderas-Cejudo, 2023). Taken together, these implications suggest that "senior tourism" in the context of Australasian tourism is best advanced through inclusive innovation in the private sector and enabling support from public policy and infrastructure investment.

6.4 Future Research Directions

As this is a conceptual paper, further empirical research is essential to validate and refine the proposed framework. One critical step is to examine its applicability across diverse Australasian contexts. Ageing populations are not homogenous, and experiences differ between urban and rural environments as well as between domestic and international travel markets. For example, seniors in metropolitan areas may have better access to infrastructure and digital tools than those in regional destinations, while international senior tourists may bring different expectations for accessibility and cultural engagement compared to local travellers. Comparative case study research and cross-sectional surveys across these contexts would provide important insights into the flexibility and limits of the framework, ensuring its relevance to a wide spectrum of ageing cohorts.

Another avenue for research involves investigating the long-term impacts of wellness and accessible tourism on older adults' health and well-being outcomes. While existing studies suggest that travel can support physical vitality, cognitive stimulation, and social engagement, few have evaluated these effects longitudinally. Empirical research using longitudinal surveys, mixed-method designs, and health outcome tracking could establish stronger causal links between tourism experiences and healthy ageing. Such evidence would not only enrich academic understanding but also support the integration of tourism into public health and active ageing strategies, positioning it as more than a leisure activity but also as a contributor to preventive healthcare.

Finally, digital adoption among seniors represents a rapidly evolving research frontier with significant implications for inclusive tourism. Although older adults increasingly use online booking platforms, mobile applications, and virtual tours. However, gaps still remain in digital literacy and confidence that can act as barriers to participation. Future research should employ qualitative interviews, digital ethnography, and usability testing to explore how seniors engage with technology at different life stages, and how design choices can reduce exclusion while enhancing accessibility. Insights from such work would guide both policymakers and industry in developing digital tools tailored to senior needs, ensuring that technology serves as an enabler rather than a divider in senior tourism. Collectively, these research directions highlight the importance of methodological diversity and empirical grounding to build a resilient, inclusive, and evidence-based foundation for the future of senior tourism.

Declarations

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Digital Tourism Behaviour and Platform Usage in the Post-COVID-19 Era



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Abstract: This study examines digital tourism behaviour in the post-COVID-19 era, focusing on changes in the use of online tourism platforms from a user perspective.

The study applies the Uses and Gratifications Theory to understand motivations influencing engagement with digital tourism services. A quantitative survey design was used, with data collected from 204 respondents. The study compares pre-pandemic and post-pandemic patterns of digital platform use for tourism-related activities. Descriptive analysis and correlation tests were used to examine the relationship between user gratifications and engagement with digital tourism platforms.

The findings indicate that the COVID-19 pandemic substantially increased reliance on digital platforms for tourism search and planning. Informational, emotional, social, and tension-release gratifications were found to be positively associated with the use of digital tourism platforms in the post-pandemic period. The results also show a shift in user perceptions toward greater acceptance of digital tools for travel-related decision-making. The study concludes that digital tourism platforms have become an important component of post-pandemic travel behaviour, and understanding user motivation provides useful insights for improving digital tourism services and enhancing user experience in the evolving tourism industry.

This study extends the application of Uses and Gratifications Theory to the post-COVID-19 tourism context by comparing digital tourism behaviour before and after the pandemic. It provides empirical evidence on the motivations driving engagement with digital tourism platforms and offers insights that can help tourism stakeholders improve digital services and enhance user experiences.

Keywords: tourism; digital platforms; user behaviour; U&G theory; post-COVID-19.

JEL Classification: Z31; Z33; Z32.

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Introduction

The tourist sector is essential for the economy and contributes to the GDP of countries (Shrestha *et al.* 2021). The pandemic and global travel restrictions have had a significant impact on the tourism industry (Akhtar *et al.* 2021; Li *et al.* 2021; Santoso *et al.* 2021; Shrestha *et al.* 2021; Škare *et al.* 2021; Toubes *et al.* 2021; Wachyuni & Kusumaningrum 2020). International tourism and travel was down 80% in 2021 compared to the same time in 2019,

a pre-pandemic year, according to the World Tourism Organization (UNWTO 2021). The COVID-19 pandemic has impacted the global economy. The physical nature of tourism has caused many businesses to close or struggle to survive (Sigala 2020). The impossibility of travelling has posed a challenge for the survival of tourism industry businesses (Toubes *et al.* 2021). Compared to the pre-pandemic period, tourism consumer patterns are changing (Orîndaru *et al.* 2021; Toubes *et al.* 2021). The post-COVID pandemic is reshaping how users behave, influencing how they interact with technology and digital platforms for tourism purposes, changing their motivations to use such platforms (Chavez *et al.* 2020; De' *et al.* 2020; Gössling 2020; Jarratt 2021).

1. Research Background

1.1 Tourism-Related Digital Platforms

The rapid growth of digital technologies has impacted the tourism industry (van Nuenen & Scarles 2021). For tourism industry, digital platforms make information more accessible to customers, facilitate information sharing, and present tools to make travel-related decisions (Ho & Gebsumbut 2019; Mathew & Soliman 2021; Stare & Križaj 2018).

Tourism companies use online travel agents (OTAs) and booking platforms to generate revenue (Schuckert *et al.* 2015). Additionally, the Internet and digital platforms are used to share experiences and communicate about tourism destinations (Stare & Križaj 2018). Multiple online travel review (OTR) sites and apps such as Google Reviews, TripAdvisor, Booking.com, among others, present user-generated content (UGC) reviews of destinations and services. The information is at one click of distance and has become highly relevant in influencing travellers' decision-making (Mendes-Filho *et al.* 2015; Schuckert *et al.* 2015). The peer-to-peer service platforms as part of the "shared economy" in the tourism sector have changed the use of digital platforms for tourism-related purposes (Minoia & Jokela 2021; Romero 2018). Digital platforms such as Airbnb create mediation between users, in this case, a service provider and a customer looking for the service. The latter creates a completely new digital economy effect that empowers individuals and establishes new business models (Romero 2018). Websites and social media platforms are also used in the tourism industry for online media sharing. Users can experience a place by interacting with multimedia sites and watching tourism videos, which lead to the construction of a destination image (DI) in their minds (Molinillo *et al.* 2018). Platforms such as YouTube have become the trend for video sharing. People share their experiences with platform visitors without the interference of service providers, converting them into content creators, acting as a space to express original ideas, and an effective place for tourism promotion and marketing (Kumar *et al.* 2020). Another use of digital platforms for tourism is for product or service promotion.

Digital platforms are used for marketing purposes, to build customer relationships, generate brand awareness and trust. Digital content marketing (DCM) for tourism effectively influences customers' decisions and behaviour (Mathew & Soliman 2021; Toubes *et al.* 2021). In the context of your research paper the literature review should be a critical synthesis of previous research in the subject field.

1.2 Customer Behaviour Tourism after the COVID-19 Pandemic

Since the global pandemic, customers' travel priorities have changed (Toubes *et al.* 2021) and, for some people, the idea of travel causes feelings of fear (Orîndaru *et al.* 2021). The importance of health measures and tourism quality has increased, affecting users' consideration to planning a trip (Santoso *et al.* 2021). However, tourism customer behaviours and interest in travel are starting to change to a more open perspective presenting opportunities for the industry. People have motives and purposes when using a service or platform to fulfil their needs (Santoso *et al.*, 2021). The global pandemic is affecting how users interact with digital platforms, their behaviour, motivations and the purposes of using them (De' *et al.* 2020). It creates the need for different digital experiences to engage with new user demands. The pandemic has made people more conscious about their well-being (Li *et al.* 2021; Rokni 2021), directly evidenced by how users interact with digital platforms. Studies affirm that the global pandemic has exacerbated sentiments of isolation and loneliness (Gössling 2020; Novotný *et al.* 2020), and that the use of digital tourism platforms can provide an escape from reality, evoking happy emotions and memorable times from sharing experiences online (Toubes *et al.* 2021).

1.3 Industry Challenges and Recovery Scenarios

Due to COVID-19, tourism is migrating to an innovative digital path that creates more digitalised strategies for tourism recovery (Akhtar *et al.* 2021; Jarratt 2021; Santoso *et al.* 2021; Toubes *et al.* 2021). The industry may need to re-think the concepts and strategies to create innovative solutions to build long-term strategies for survival (Mizrachi & Gretzel 2020; Pocinho *et al.* 2021). In May 2020, the UNWTO released "Global guidelines to start tourism", a report highlighting the importance of innovation, sustainability and digital transformation in the industry.

Mobile devices and enhanced technology are key to promoting safe, seamless and touchless travel (Santoso *et al.* 2021; UNWTO 2020). New concepts such as e-tourism (Gretzel *et al.* 2020), smart tourism (Ho & Gebbsombut 2019; Yoo *et al.* 2017) and digital tourism (Akhtar *et al.* 2021) have been introduced to refer to the use of digital technologies and information technology advances in the tourism industry.

Many tourism companies have started to adapt their digital strategies to survive in the market, using digital platforms in new, creative ways to engage with customers, looking for future recovery. Tourism industry businesses have focused on retaining customers and increasing interest after the COVID-19 pandemic. Companies are making efforts based on factors such as online service quality, time of delivery, user satisfaction, and ease of use to retain and attract customers to use digital platforms (Toubes *et al.* 2021). From service to product innovation, organisations have started their journey to digital transformation. COVID-19 is accelerating this transformation into a new era of digital innovation (Santoso *et al.* 2021). The use of emerging technologies such as cloud computing, artificial intelligence (AI), Internet of Things (IoT), blockchain and virtual reality (VR), among others, will take an important role in the digital transformation of many industries in a post-COVID-19 future (De' *et al.* 2020; van Nuenen & Scarles 2021). In this new world, technology is likely to play an active role, including robots and automation technologies for tourism with the automation of routine tasks, for instance, with virtual tours (Ivanov & Webster 2020; Kim *et al.* 2020; Lin & Chen 2017).

The tourism industry's response to the COVID-19 outbreak has been extensively researched. However, the changes this has caused in the use of digital technologies for tourism are unknown. Technology and innovation are playing an essential role in developing the tourism industry, looking towards the post-pandemic scenario and industry recovery. In the post-pandemic world, perceptions of travelling have been changing, impacting on the use of digital platforms for tourism. Therefore, it is crucial to understand how user behaviour towards using digital platforms for tourism has been affected due to the COVID-19 pandemic by analysing the pre-pandemic status, usage after the global pandemic, and new user expectations for tourism companies to generate an effective response and creative alternative solutions for the industry recovery. To fill the gap in research, the following research questions have been formulated:

1.4 Research Questions

RQ1: How is the use of digital platforms for tourism affected by the COVID-19 pandemic?

RQ2: For what purposes are digital tourism platforms used after the COVID-19 pandemic?

RQ3: What are users' perspectives about digital travel experiences in a post-pandemic scenario?

1.5 Literature Review and Hypothesis Formulation

The theory of uses and gratifications (U&G) is utilized as a theoretical framework to help understand a variety of factors about why individuals use media in diverse contexts, and the gratifications users search for when consuming online content. This theory helps understand why individuals could use certain media such as tourism websites and social platforms to satisfy their needs before and after the COVID-19 pandemic. On this foundation, numerous hypotheses are developed to address the study's research questions and objectives.

1.5.1 COVID-19 Pandemic and Use of Digital Platforms for Tourism

The time consumers spend on online travel platforms is a consequence of psychological drivers such as the desire to share information, social bonding, learning and discovery (Chavez *et al.* 2020). It is demonstrated that the COVID-19 pandemic affects consumer patterns (Orindaru *et al.* 2021; Toubes *et al.* 2021), time users spend online, how users interact with digital platforms, and the motivations behind their actions (Chavez *et al.* 2020; De' *et al.* 2020; Jarratt 2021). User behaviour towards digital platforms has been affected by the COVID-19 pandemic, where exacerbated feelings of loneliness and isolation produced by the pandemic (Gössling 2020; Novotný *et al.* 2020) have led users to search more for well-being online (Jarratt 2021; Li *et al.* 2021; Rokni 2021), looking to escape from reality, evoke happy emotions and memorable times (Toubes *et al.* 2021). The motives and purposes of people when using a digital platform to fulfil their needs (Santoso *et al.* 2021) have changed compared to the pre-pandemic period. Based on the literature mentioned, the following hypothesis is proposed.

H1: There is a significant difference in the use of digital platforms for tourism after the COVID-19 pandemic compared to a pre-pandemic period.

1.5.1.1 Informational

In terms of the tourism industry, digital platforms are facilitators of information access for potential customers. Tourism websites are used to share information, helping travellers to make travel-related decisions (Ho & Gebsoombut 2019; Mathew & Soliman 2021; Shrestha *et al.* 2021). Company brand websites are presented as an information source about the company and services, often presenting transactional options such as an online store or reservation systems. Other tourism websites that are information sources include blogs, booking engines, ranking and recommendations, among others (Ho & Gebsoombut 2019; Shrestha *et al.* 2021), in addition to using online reviews from other consumers to find the best information to make travel-related choices (Chavez *et al.* 2020; Mendes-Filho *et al.* 2015). Online travel agencies, tourism search engines and peer-to-peer booking systems such as Booking.com, Trivago and Airbnb have been on the rise as information sources for tourism users (van Nuenen & Scarles 2021).

Before the COVID-19 pandemic, the main use of digital platforms for tourism-related purposes was to obtain information to make travel-related decisions (Ho & Gebsoombut 2019; Mathew & Soliman 2021; Shrestha *et al.* 2021). When the pandemic started, the idea of physical travel created feelings of fear, and economic priorities changed compared to the pre-pandemic period (Orîndaru *et al.* 2021). However, two years after the pandemic started, the idea of local travel seems more appealing to customers who have shifted preferences (Pocinho *et al.* 2021). The use of digital platforms to gather information has been an essential tool for users after the pandemic. It is proposed that information gratification maintains its predominance from pre-pandemic to post COVID-19 pandemic times. As a result, the following hypothesis is proposed:

H2: The use of digital platforms for tourism after the COVID-19 pandemic has a positive relationship with informational purposes.

1.5.1.2 Emotional

The COVID-19 pandemic has affected collective emotional well-being (Gössling 2020). After pandemic times, users migrate to digital platforms searching for pleasurable and enjoyable experiences to overcome the pandemic effect (Canale *et al.* 2021). Jarratt (2021) finds that using digital platforms for tourism-related activities after the global pandemic generates feelings of freedom, connection and nostalgia associated with subjective well-being (Jarratt, 2021). Additionally, it has been studied that people enjoy returning to the idea of travelling and getting back vacation memories (Pocinho *et al.* 2021). Based on the literature and U&G theory, the following hypothesis is proposed:

H3: The use of digital platforms for tourism after the COVID-19 pandemic has a positive relationship with filling the emotional needs of the user.

1.5.1.3 Social

Social media platforms are generally used to generate communication spaces and create more personalised engagement with the tourism industry user (Florenthal 2019). The U&G theory is applicable to social media platforms and corroborates that users search for diverse gratifications including social interaction, connection bonding, and a sense of belonging when using this type of media (Florenthal 2019; Ho & Gebsoombut 2019; Ho & See-To 2018; Hossain 2019; Papacharissi & Rubin 2000). The desire to socialise and connect with others is one of the main travel motivators after the COVID-19 pandemic (Aebli *et al.* 2021). Social network sites such as fan pages also present a space for socialising and have a significant impact on user attitudes towards tourism attraction pages (Ho & Gebsoombut 2019; Ho & See-To 2018).

Social media platforms such as Facebook, Instagram, YouTube and TikTok have gained popularity in the tourism industry. Many companies and individuals started using the platform to create creative travel content by sharing travel experiences on video and in written blog format. More studies demonstrate the socialising, social presence and self-presentation aspects of U&G theory when using social media (Ho & Gebsoombut 2019; Ho & See-To 2018; Hossain 2019; Papacharissi & Rubin 2000). The COVID-19 pandemic has impacted people's social dimension, changing how users interact with digital platforms for this purpose. The lockdowns and travel restrictions around the globe have exacerbated loneliness and isolation feelings (Novotný *et al.* 2020), resulting in users looking for more social interaction on digital platforms to overcome the pandemic effects (Canale *et al.* 2021; Gabbiadini *et al.* 2020). Therefore, the following hypothesis is presented:

H4: The use of digital platforms for tourism after the COVID-19 pandemic has a positive relationship with social purposes.

1.5.1.4 Escapism and Tension Release

The COVID-19 pandemic has influenced tourists' perception of psychological well-being, changing travel behaviour, intentions and motivation. The global outbreak has produced uncertainties, increasing fear, anxiety and depression (Rokni 2021). It is recognised that tourism activities enhance subjective well-being and promote stress reduction (Buckley & Westaway 2020). However, to create desire and motivation for travelling after the COVID-19 pandemic, hygiene factors and perceived safety must be addressed; otherwise, motivation decreases (Aebli *et al.* 2021).

After the global pandemic, digital platforms have been used to compensate for the lack of physical tourism-related activities. The use of technologies such as virtual reality (Kim *et al.* 2020) and virtual tours are proposed as a substitute to promote people's subjective well-being (Li *et al.* 2021; Rokni 2021). Less sophisticated technologies such as webcam travel can also promote well-being while in isolation (Jarratt 2021). People use digital platforms for tourism to escape from the reality of the current situation, evoke happy emotions, and recall memorable times (Toubes *et al.* 2021). The latter evidenced the use of digital platforms for tourism-related activities with the intention to relieve stress and release tension produced by the global pandemic. Therefore, the following hypothesis is proposed:

H5: The use of digital platforms for tourism after the COVID-19 pandemic has a positive relationship with users' search for escapism and tension release.

1.5.2 Digital Technologies Development in the Tourism

The pandemic outbreak will lead to alternative solutions for the tourism industry's survival. The increase in the use of information technology (IT) developments such as virtual reality (VR) (Ball *et al.* 2021; Kim *et al.* 2020; Li *et al.* 2021; Schiopu *et al.* 2021) and augmented reality (AR) (Lin & Chen 2017), among other technologies, are possible solutions in development for the industry's survival (Akhtar *et al.* 2021; De' *et al.* 2020; Santoso *et al.* 2021).

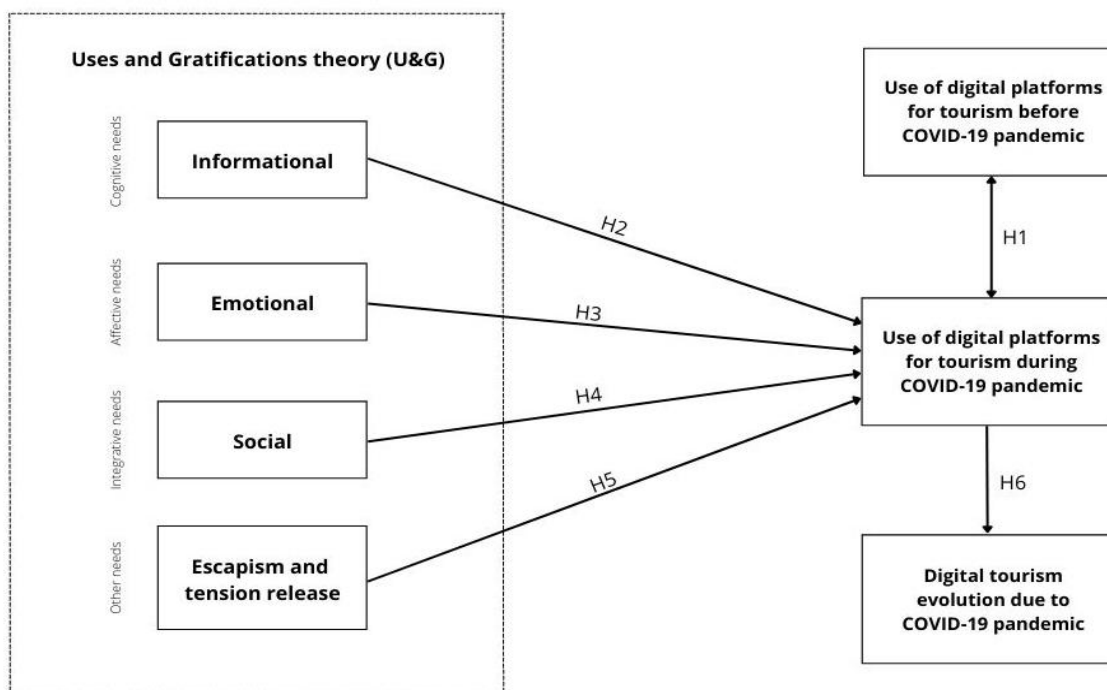
Smart tourism technologies can change user behaviour by providing unique experiences. It has been studied that users search for gratifications related to well-being and have an authentic experience when looking for tourism virtual reality tours (Kim *et al.* 2020). VR and AR technologies could improve people's mental health by allowing safe connections between people and places (Ball *et al.* 2021). Therefore, companies can adapt their communication strategies and use new technology to attract new consumers (Ho & Gebsumbut 2019). The tourism industry presents different levels of digitalisation, affecting the adaptation to a digital economy and possibilities of creating better digital experiences. It is recommended to consider time consumption and cost factors before investing in more sophisticated digital experiences (Pocinho *et al.* 2021). It is possible to use less sophisticated technologies such as webcams to create new travel experiences, proposing a more affordable, widely available, and unedited experience. The creative use of technology can be a good strategy and produce improved results for the business (Jarratt 2021). The efficiency and quality of the technologies and platforms are essential factors to meet the needs of users. Among the factors are the features, ease of access, website design, innovation and the usefulness of health protocols (Kim *et al.* 2020; Lin & Chen 2017; Santoso *et al.* 2021; Schiopu *et al.* 2021; Toubes *et al.* 2021). Therefore, the following hypothesis is proposed:

H6: Users' interest in using digital travel experiences has a positive relationship with the quality of digital travel technology.

1.5.3 Conceptual Model

A conceptual model for this study is shown in Figure 1 to illustrate the relationship between the purposes for using digital platforms and the proposed hypothesis based on the literature review and U&G theory, in order to understand the COVID-19 pandemic effect on the use of digital platforms for tourism pre-pandemic and post-pandemic overview to address the research objectives and answer the study's research questions.

Figure 1. Conceptual model, based on the theory of U & G.



Source: Authors

2. Materials and Methods

This research is based on a mono-method, a quantitative study using a survey strategy and questionnaire tool designed to collect primary data. An online questionnaire is designed using Google Forms (an online survey tool) to conduct the research. In total, 204 valid responses were collected. A total of 27 statements are developed in the questionnaire with their corresponding responses using dichotomous, single-option variables, multi-option and five Likert scale responses for the survey respondents to select the level of agreement with the statements.

Table 1. Questionnaire Variable Items Definition

Definition	U&G dimension	Variable items	H
Use of digital platforms purposes	Informational	To gather information	H2
		To compare prices and discounts	
		To read reviews	
	Emotional	To get entertained	H3
		To evoke memories	
		To get inspired	
	Social	To share experiences	H4
		To talk with others	
		To find more travellers	
	Escapism & tension release	To escape reality	H5
		To release tension	
		To pass the time	

Cronbach's Alpha test was used to determine the scales' reliability, measuring the study variables: informational, emotional, social, escapism and tension release purposes. As displayed in Table 2, all the results show values higher than 0.7, which indicates that the scales used are highly reliable in the study context. The values of Cronbach's Alpha are 0.861 for informational purposes, 0.743 for emotional purposes, 0.843 for social purposes, 0.816 for escapism & tension release purposes in a pre-pandemic period, and 0.874 for information purposes, 0.858 for emotional purposes, 0.943 for social purposes, and 0.901 for escapism & tension release purposes in a post- pandemic period. Additionally, pre-testing with ten users is used to corroborate the validity of the questionnaire statements.

Table 2. Cronbach's Alpha Test for Scale Reliability

Period	Dimension	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
Pre- pandemic	For information purposes	.861	.862	3
	For emotional purposes	.743	.744	3
	For social purposes	.843	.843	3
	For escapism and tension release purposes	.816	.815	3
Post- pandemic	For information purposes	.874	.876	3
	For emotional purposes	.858	.859	3
	For social purposes	.943	.943	3
	For escapism and tension release purposes	.901	.900	3

3. Findings and Discussion

The outcomes of the data collected from the online questionnaire are described and discussed in this section.

3.1 Demographics

Demographic measures in this study include gender, age group, and general digital platforms' frequency of use for the 204 valid responses, as illustrated in Table 3.

Table 3. Demographics Frequency Results

		N	%
Gender	Female	109	53.4
	Male	93	45.6
	Prefer not to say	2	1.0
Age group	18-24 years old	23	11.3
	25-34 years old	109	53.4
	35-44 years old	59	28.9
	45-54 years old	11	5.4
	55+ years old	2	1.0
	Several times a day	135	66.2
Digital platforms' frequency of use	Daily	59	28.9
	Twice a week	6	2.9
	Fortnightly	1	.5
	Once a month	3	1.5

In terms of gender, slightly more than half were women, with 53.4% of the total 204 respondents, 45.5% were men, and only 1.0% of respondents preferred not to mention their gender as displayed in Table 3 above. The frequency of use of digital platforms reflect that the respondents were highly active, with 66.2% using digital platforms several times a day, followed by 28.9% of respondents using digital platforms daily, and only 4.9% using digital platforms less than twice a week as shown above. The majority of respondents were between 25-34-years-old, representing 53.4% of the total responses, people aged between 35-44-years-old were 28.9%, followed by the 18-24-year-old group with 11.3%. People aged between 45-54 and over 55 were only 5.4% and 1%, respectively. This result is aligned with statistics on the average age for internet users worldwide as of 2019, where 32% of users worldwide are between 25-34-years-old (Johnson, 2022). Therefore, it is inferred that respondents are active users of digital platforms.

An independent T-test was conducted to explore if gender variances had an influence on digital platform use for this study, as illustrated in Table 4. The results of Levene's Test indicate a ($p = .793$), which is greater than 0.05 and indicates variances are not significant; it is then inferred that both genders, female and male, are equal. The results of the T-test indicate ($p = .504$), which is greater than 0.05 and indicates means are not significantly different.

Table 4. Independent Samples t-test for Gender Difference

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
Digital platform use	Equal variances assumed	.069	.793	.669	200	.252	.504	.068	.101	-.132	.268
	Equal variances not assumed			.674	198.903	.251	.501	.068	.101	-.131	.266

3.2 Use of Digital Platforms for Tourism Pre and Post COVID-19 Analysis

The descriptive results are presented in a comparative overview of a pre-pandemic and post-pandemic period for a better understanding of the COVID-19 pandemic influence on user behaviour. Additionally, inferential analysis was used to test hypothesis 1. Therefore, the intention is to answer the study's first research question.

3.2.1 Use of Digital Platforms for Tourism

From the 204 valid responses, it was found that 96.1% of the respondents searched tourism content online before the COVID-19 pandemic, and only 3.9% of respondents answered no to using digital platforms for tourism before the pandemic, as shown in Table 5. These numbers indicate that from the total of 204 valid responses, there were 196 responses valid for the deeper analysis of digital platforms before COVID-19. This result indicates that a high number of the total respondents were active users of tourism platforms after the pandemic.

Table 5. Use of Digital Platforms for Tourism Before the COVID-19 Pandemic

Use of Digital Platform	N	%
Yes	196	96.1%
No	8	3.9%

Table 6. Use of Digital Platform for Tourism After the COVID-19 Pandemic.

Use of Digital Platform	N	%
Yes	173	84.8%
No	31	15.2%

Table 6 above shows that 84.8% of respondents continued using digital platforms for tourism after the COVID-19 pandemic. Due to lockdowns and travel restrictions, physical tourism activities were reduced. However, when talking about digital activities, the results indicate that users continued searching for tourism online after the global pandemic, which is consistent with the study of Vargo *et al.* (2021) related to the increasing use of digital technologies during the pandemic. Additionally, only valid responses were included in further analysis of each period. Table 7 illustrates the number of valid responses included and the number excluded from the analysis of the following sections.

Table 7. Valid responses for Further Analysis

	Valid		Missing		Total	
	N	%	N	%	N	%
Before pandemic	196	96.1%	8	3.9%	204	100.0%
After pandemic	173	84.8%	31	15.2%	204	100.0%

3.2.2 Tourism Digital Platforms' Frequency of Use

The results in terms of how frequently users searched for tourism content on digital platforms are presented in a comparative overview displayed in Table 8 and Table 9, indicating that the pandemic brought a significant change in the frequency of use of digital platforms for tourism.

Table 8. Digital Platform Frequency of Use Before the Pandemic

Frequency	N	%
Once a year	18	8.8%
Every six months	53	26.0%
Once a month	73	35.8%
Once a week	34	16.7%
Daily	18	8.8%
Missing System	8	3.9%

Table 9. Digital Platform Frequency of Use After the Pandemic

Frequency	N	%
Once a year	9	4.4%
Every six months	15	7.4%
Once a month	41	20.1%
Once a week	55	27.0%
Daily	53	26.0%
Missing System	31	15.2%

As shown in Table 8, before the pandemic, most respondents searched for tourism content once a month, being 35.8% of the total, followed by every six months, with 26% as the second position. On the other hand, after the COVID-19 pandemic, the distribution of the results changed, with 27% of respondents using digital platforms for tourism once a week, followed closely by 26% of respondents who affirmed they used digital platforms to search for tourism daily, as displayed in Table 9. The results indicate that active users of digital platforms searched more frequently for tourism after the pandemic.

3.2.3 Types of Searches in Digital Platforms for Tourism

Findings from the previous section in Table 9 indicate that users searched more often for tourism-related content online after the global pandemic. Therefore, it is relevant to explore when people searched. Table 10 and Table 11 provide a comparison of results related to when users searched for tourism on digital platforms.

Table 10. Users Search before the Pandemic

When searched?	N	%
Only when is the holiday season	15	7.4%
Only when I am planning a trip	65	31.9%
Sometimes when I see a promotion	17	8.3%
Occasionally when I want to get travel ideas	77	37.7%
All the time	22	10.8%
Other	0	0.0%

Table 11. Users Search After the Pandemic

When searched?	N	%
Only when is the holiday season	4	2.0%
Only when I am planning a trip	28	13.7%
Sometimes when I see a promotion	9	4.4%
Occasionally when I want to get travel ideas	62	30.4%
All the time	69	33.8%
Other	1	0.5%

According to the results, before the pandemic, most people searched for tourism on digital platforms occasionally when they wanted to get travel ideas, representing 37.7% of the total, and 31.9% searched only when they were planning a trip. However, after the pandemic, 33.8% of respondents searched all the time, and 30.4% occasionally when they wanted to get travel ideas. The latter aligns with the findings of De' *et al.* (2020) and Rokni (2021) studies related to the changes in behaviour after the COVID-19 pandemic.

3.2.4 Type of Platforms

This study analysed two types of digital platforms: websites and social media platforms used for tourism before and after the pandemic. In the research instrument, five types of websites were included: tourism company providers' sites, review sites, reservation sites, blog sites and local travel agency sites. On the other hand, social media included Facebook, Instagram, YouTube, TikTok and Pinterest.

3.2.4.1 Websites

Table 12 and Table 13 describe how frequently respondents used the websites before and after the pandemic, respectively. Before the COVID-19 pandemic, the most used types of websites were reservation sites such as Booking.com or Airbnb, with 29.3% of total respondents, closely followed by review sites such as Tripadvisor.com or Google Reviews, with 28.5%, continuing with tourism service providers' sites, blog sites and local travel agencies.

Table 12. Tourism Website Use Before the Pandemic.

Tourism Websites	Responses		% Cases
	N	%	
Tourism company provider sites	86	18.4%	43.9%
Review sites	133	28.5%	67.9%
Reservation sites	137	29.3%	69.9%
Blog sites	68	14.6%	34.7%
Local travel agency sites	38	8.1%	19.4%
Others	5	1.1%	2.6%
Total	467	100.0%	238.3%

a. Dichotomy group tabulated at value 1 = selected.

Table 13. Tourism Website Use After the Pandemic.

Tourism Websites	Responses		% Cases
	N	%	
Tourism company provider sites	95	17.7%	54.9%
Review sites	152	28.3%	87.9%
Reservation sites	141	26.3%	81.5%
Blog sites	98	18.2%	56.6%
Local travel agency sites	47	8.8%	27.2%
Others	4	0.7%	2.3%
Total	537	100.0%	310.4%

a. Dichotomy group tabulated at value 1 = selected.

As shown in Table 13, all types of websites are more used in the post-pandemic era. The higher increase was in review sites present in 87.9% of the cases, followed by reservation sites in 81.5% of the cases, blog sites were present in 56.6% of the cases, and tourism company providers' sites were found in 54.9% of the cases. Reviews became more important than reservations for users after the pandemic, which aligns with conclusions by Orindaru *et al.* (2021) and Tourbes *et al.* (2021) about economic and travel priority changes during the pandemic. Another interesting finding is that blog websites had an increased presence in 34% of the cases before the pandemic, rising to 56% after the pandemic – the highest increase from one period to the other.

3.2.4.2 Social Media Platforms

Table 14 presents the social platforms people used for tourism before the pandemic. The results indicate that 35.6% used Facebook, being the platform more used for tourism before the COVID-19 pandemic, followed by Instagram with 30.4%, and YouTube with 23.6%, respectively.

Table 14. Tourism Social Media Use Before Pandemic.

Social Media Platform	Responses		% Cases
	N	%	
Facebook	130	35.6%	66.3%
Instagram	111	30.4%	56.6%
YouTube	86	23.6%	43.9%
Tiktok	9	2.5%	4.6%
Pinterest	14	3.8%	7.1%
Others	15	4.1%	7.7%
Total	365	100.0%	186.2%

a. Dichotomy group tabulated at value 1.

Table 15. Tourism Social Media Use After Pandemic

Social Media Platform	Responses		% Cases
	N	%	
Facebook	119	28.6%	68.8%
Instagram	143	34.4%	82.7%
YouTube	113	27.2%	65.3%
Tiktok	21	5.0%	12.1%
Pinterest	12	2.9%	6.9%
Others	8	1.9%	4.6%
Total	416	100.0%	240.5%

a. Dichotomy group tabulated at value 1.

On the other hand, after the pandemic, people chose Instagram with 34.4% as the most used platform for tourism, followed by Facebook with 28.6%, and YouTube with 27.2%, as displayed in Table 15 above. In this result, the three main social apps maintain their place with slight differences in the type of platforms users select when searching for tourism content online.

The findings are aligned with the study of Chavez *et al.* (2020) about the use of social media in the search for tourism content online. However, after the pandemic, there was a significant increase in usage for all platforms. Instagram was present in 82.7% of the cases after the pandemic. It is interesting to mention that even though TikTok was present in only 12.1% of the cases after the pandemic, it was double the pre-pandemic period, in accordance with the trends observed for this platform, indicating a possible evolution of this social media platform.

3.2.5 Type of Content

This dimension searches to understand what type of content users search for when using digital platforms for tourism. For this purpose, seven types of tourism content were included: service information, prices, reviews, social networks, images, videos and travel blogs. The results of the multiple response analysis are illustrated in a comparative overview of the pre-pandemic Table 16 and after pandemic Table 17, respectively.

Table 16. Type of Content Searched Before the Pandemic.

Type of content	Responses		%Cases
	N	%	
Services information	134	17.2%	68.4%
Prices	178	22.9%	90.8%
Reviews	148	19.0%	75.5%
Social network	44	5.7%	22.4%
Images	139	117.9%	70.9%
Videos	80	10.3%	40.8%
Travel blog	55	7.1%	28.1%
Others	0	0.0%	0.0%
Total	778	100.0%	396.9%

a. Dichotomy group tabulated at value 1.

Table 17. Type of Content Searched Before the Pandemic.

Type of content	Responses		%Cases
	N	%	
Services information	133	15.6%	76.9%
Prices	154	18.0%	89.0%
Reviews	145	17.0%	83.8%
Social network	76	8.9%	43.9%
Images	140	16.4%	80.9%
Videos	121	14.2%	69.9%
Travel blog	83	9.7%	48.0%
Others	3	0.4%	1.7%
Total	855	100.0%	494.2%

a. Dichotomy group tabulated at value 1.

Before the COVID-19 pandemic, users were most interested in looking for prices, at 22.9% of the total and representing the main type of tourism content chosen. In second place, with 19.0%, were reviews, followed by images with 17.9%, services information with 17.2%, and videos with 10.3%.

There is a similar behaviour presented after the pandemic as shown in Table 17, where the main interest continued to be prices, with 18% in the first position, followed closely by reviews with 17%, 16.4% for images, 15.6% for services information and 14.2% for videos. An interesting finding is that all content types were more searched after the pandemic, in alignment with all previous discoveries. Another important finding is that where most types maintained a similar number of selections in both periods, videos had a major increase, being present in 40.8% of the cases before the pandemic and rising to 69.9% of the cases after the pandemic.

3.2.6 The Pandemic Effect on The Use of Digital Tourism Platforms

The results from the descriptive analysis conducted in the previous section indicate a significant increase in the usage of digital platforms for tourism after the pandemic compared to the pre-pandemic period. To test the following hypotheses, a paired sample t-test was used to compare the means for frequency of usage before and after COVID.

H1: There is a significant difference in the use of digital platforms for tourism between the pre- and post-COVID-19.

The t-test results displayed in Table 18 show a level of significance of $p = <.001$, which relates to a p-value lower than 0.05, indicating that the difference between the scores is statistically significant. Then, the null hypothesis is rejected and, therefore, H1 is accepted, confirming that there is a difference in the use of digital platforms for tourism in the post-pandemic compared to a pre-pandemic period.

Table 18. Paired Samples t-test for Period Comparison.

	Mean	Std. Dev.	Std. Error Mean	Paired Differences		t	df	Significance	
				95% Confidence Interval of the Difference				One-Sided p	Two-Sided p
				Lower	Upper				
Digital platforms' frequency of use before pandemic - Digital platforms' frequency of use after pandemic	-.760	1.340	.102	-.962	-.558	-7.420	170	<.001	<.001

3.3 Purposes for Using Digital Platforms for Tourism After the COVID-19 Pandemic

This section provides the results of the descriptive and inferential analysis conducted to answer the second research question and test the hypothesis related to the purposes for which users search digital tourism platforms after the COVID-19 pandemic.

3.3.1 Informational

To examine the statistical relationship between the digital platform uses for informational purposes and the COVID-19 pandemic.

Table 19. Spearman's Correlation Analysis – Informational.

		Total use for informational purposes after the pandemic	Frequency of use of digital platforms after the pandemic
Spearman's rho	Total use for information purposes after the pandemic	Correlation Coefficient Sig. (2-tailed) N	1.000 . 173
			.300** <.001 173
	Frequency of use of digital platforms after the pandemic	Correlation Coefficient Sig. (2-tailed) N	.300** <.001 173
			1.000 . 173
	**. Correlation is significant at the 0.01 level (2-tailed).		

The results of the correlation test shown in Table 19 above indicate a positive association between the variables, where the correlation coefficient is 0.300, which demonstrates a positive correlation. Additionally, the level of significance is lower than 0.01, which affirms that there is a statistically significant relationship between the variables. Therefore, the hypothesis is accepted, concluding that the use of digital platforms for tourism after the COVID-19 pandemic has a positive relationship with informational purposes.

3.3.2 Emotional

Spearman's correlation test was conducted to measure the statistical relationship between the digital platform frequency of use after the COVID-19 pandemic and the emotional purposes to test the hypothesis.

The results of the correlation analysis shown in Table 20 indicate a positive correlation between the variables, where the correlation coefficient is 0.337, which demonstrates a positive association. Additionally, the level of significance is lower than 0.01, which affirms the existence of a significant relationship between the variables. Therefore, it is possible to accept the hypothesis and conclude that the frequency of use of digital platforms for tourism after the COVID-19 pandemic has a positive relationship with filling the emotional needs of the user.

Table 20. Spearman's Correlation Analysis – Emotional Purposes

		Frequency of use of digital platforms after the pandemic	Total use for emotional purposes after the pandemic
Spearman's rho	Correlation Coefficient	1.000	.337**
	Sig. (2-tailed)	.	<.001
	N	173	173
	Correlation Coefficient	.337**	1.000
	Sig. (2-tailed)	<.001	.
	N	173	173

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

3.3.3 Social

The third U&G dimension relates to integrative needs such as social gratifications included in the proposed conceptual model. The results of the correlation test shown in Table 21 illustrate a positive correlation between the variables, where the correlation coefficient is 0.454, demonstrating a moderate positive association. Additionally, the level of significance is lower than 0.05, which affirms the existence of a significant relationship between the variables. Therefore, it is possible to accept the hypothesis and conclude that the use of digital platforms for tourism after the COVID-19 pandemic has a positive relationship with social purposes. The latter demonstrates that interpersonal and social interaction were part of users' motivations to use digital platforms, as studied by Chavez *et al.* (2020).

Table 21. Spearman's Correlation Analysis – Social Purposes

		Frequency of use of digital platforms after the pandemic	Total use for social purposes after the pandemic
Spearman's rho	Correlation Coefficient	1.000	.454**
	Sig. (2-tailed)	.	<.001
	N	173	173
	Correlation Coefficient	.454**	1.000
	Sig. (2-tailed)	<.001	.
	N	173	173

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

3.3.4 Escapism and Tension Release

The results of the correlation test shown in Table 22 indicate a positive association between the variables, where the correlation coefficient is 0.364, which demonstrates a moderate positive correlation. Additionally, the level of significance is lower than 0.01, which corroborates that a significant relationship between the variables exists. Therefore, the hypothesis is accepted, and it is concluded that the frequency of digital platforms used for tourism after the COVID-19 pandemic has a positive relationship with the users' search for escapism and tension release. After the COVID-19 pandemic, most of the respondents agreed they used digital tourism platforms to escape reality, release tension and pass the time, showing a significant change compared to the pre-pandemic period, in accordance with Toubes *et al.* (2021), Li *et al.* (2021) and Rokni (2021) studies.

Table 22. Spearmann's Correlation Analysis – Escapism Purposes

			Frequency of use of digital platforms after the pandemic	Total use for escapism & tension release after the pandemic
Spearman's rho	Frequency of use of digital platforms after the pandemic	Correlation Coefficient	1.000	.364**
		Sig. (2-tailed)	.	<.001
		N	173	173
	Total use for escapism & tension release purposes after the pandemic	Correlation Coefficient	.364**	1.000
		Sig. (2-tailed)	<.001	.
		N	173	173
**. Correlation is significant at the 0.01 level (2-tailed).				

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

3.4 Perception of Digital Tourism in a Post-Pandemic Scenario

When asked about the evolution of tourism, the great majority of respondents answered that they think tourism evolved into a more digitalised experience after the COVID-19 pandemic, with 72.5% agreement; 20.6% think it evolved to some extent; and only 6.9% think it will not evolve to digital, as shown in Table 23. The latter is consistent with the studies of Akhtar *et al.* (2021), De' *et al.* (2020), and Santoso *et al.* (2021) about how digital technologies play an essential role in future possibilities for the tourism industry.

Table 23. Post Pandemic Tourism Evolution

Has tourism evolved into a more digitalised experience after the COVID-19 pandemic?	N	%
Yes	148	72.5%
To some extent	42	20.6%
No	14	6.9%

3.4.1 Knowledge of Virtual Tourism & Travel Concept

The results displayed in Table 24 indicate that 48% of respondents claim not to know what virtual tourism and travel is, 32.4% know about the concept, and 19.6% to some extent. These findings suggest that users do not have a strong knowledge of the new concept, which affects their perception.

Table 24. Virtual Tourism Knowledge

Do you know about virtual tourism?	N	%
Yes	66	32.4%
To some extent	40	19.6%
No	98	48.0%

3.4.2 Users' Perception of Digital Tourism

In relation to users' perception of virtual tourism and travel, the results displayed in Table 25 indicate that there are divided opinions. In the first place, 36.3% of respondents find digital tourism interesting, followed by 23.5%, who find it futuristic. The two majorities are aligned with how unknown the concept is, as previously shown in Table 25. Additionally, some respondents answered that they have never heard of it in the open statement "Other." The third place is for 19.6% of respondents who think virtual travel is not real. This vision is also represented in other answers, such as "I think it is interesting but no substitute for the real thing."

Table 25. User Perception of "Virtual Tourism & Travel."

User Perception	N	%
A unique experience	17	8.3%
Futuristic	48	23.5%
Interesting	74	36.3%
Not real	40	19.6%
Safe travel	16	7.8%
Other	9	4.4%

3.4.3 Technologies for Digital Tourism

The results displayed in Table 26 indicate that 75% of respondents would like to see virtual reality tours developed more for tourism. The second is technologies to secure physical travel, which more than half of respondents want to see developed for tourism.

Table 26. Type of Technologies for Digital Tourism.

		Responses		% of Cases
		N	%	
Type of technology	Virtual reality tour	153	32.4%	75.0%
	Webcam travel	65	13.8%	31.9%
	Internet of things - IoT	47	10.0%	23.0%
	Artificial intelligence / Virtual assistant	94	19.9%	46.1%
	Technologies to ensure secure physical travel	111	23.5%	54.4%
	Others	2	0.4%	1.0%
Total		472	100.0%	231.4%

a. Dichotomy group tabulated at value 1 = selected.

3.4.4 Relationship Between Users' Interest in Digital Travel and Technology Quality

The results of the correlation test shown in Table 27 indicate a positive correlation between the variables, where the correlation coefficient is 0.409, which demonstrates a medium positive correlation. Additionally, the level of significance is lower than 0.05, which corroborates that a relationship between the variables exists. Therefore, it is possible to accept the hypothesis and conclude that users' interest in digital travel experiences has a positive relationship with the quality of digital travel technology.

Table 27. Spearman's Correlation for Digital Travel Relationship.

		Digital travel interest	Technology quality importance
Spearman's rho	Correlation Coefficient	1.000	.409**
	Digital travel interest		
	Sig. (2-tailed)	.	<.001
	N	204	204
	Correlation Coefficient	.409**	1.000
	Technology quality importance		
	Sig. (2-tailed)	<.001	.
	N	204	204

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

4. Conclusions and Recommendations

4.1 The COVID-19 Pandemic Effect on the Use of Digital Platforms for Tourism

In nutshell, the increase in the use of online platforms for tourism can be attributed to changes in user needs such as getting travel ideas and supplying other unfulfilled needs. Additionally, there is a switch in the types of tourism content preferences, migrating from a focus on reservations and prices before the pandemic to an interest focused on reviews, social networks, and multimedia content. Social media for tourism after the COVID-19 pandemic highlights the use of Instagram, YouTube, and TikTok as opportunities for businesses. It is concluded that users continue using the platforms but with different needs and expectations. This is consistent with other studies about changes in consumer patterns and behaviour (De' *et al.* 2020; Orîndaru *et al.* 2021; Rokni 2021; Toubes *et al.* 2021).

In this study, when a post-pandemic scenario was presented, most respondents agreed that tourism would evolve into a more digitalised experience. However, from the findings, it is concluded that users do not fully understand this concept; lack of knowledge and technologies might be affecting the disposition to migrate to these experiences. There is a present interest in how this will evolve, with virtual tours as the most expected technology. Findings corroborate that the quality of the development will affect its success. Nevertheless, in the present perspective, most respondents prefer physical travel, even if it involves health risks. Respondents would also like to see more development in other technologies that will make physical travel safer. Therefore, it is concluded that users are looking forward to returning to physical travel activities with enhanced technologies and looking to digital tourism as a future interest where technology quality and innovation will play an essential role.

4.2 Theoretical Implications

The impact of the COVID-19 pandemic on tourism and travel has been widely studied in the literature (Li *et al.* 2021; Orîndaru *et al.* 2021; Pocinho *et al.* 2021; Wachyuni & Kusumaningrum 2020). However, this research provides a different overview, creating more knowledge about digital platforms used in the tourism industry, in addition to examining the changes when users search for tourism content online in the context of the pandemic. The study provides a comparison between pre-pandemic and post-pandemic scenarios from a user perspective. Additionally, this research tests the applicability of the U&G theory to explain what gratifications users search for after this unprecedented pandemic, filling a gap in the literature about behavioural changes in the use of digital platforms in tourism industry research.

4.3 Managerial Implications and Recommendations

The findings from this study provide relevant insights to help companies and tourism industry businesses to understand users of digital platforms, decide to invest in new technologies and create more effective digital strategies to face the pandemic effects. Firstly, it has been demonstrated that users continue searching for tourism online in the post-COVID-19 era. Therefore, it is recommended to invest in developing new strategies for digital tourism platforms through creative and enhanced content, adapting content to users' preferences. Another recommendation is to explore other platforms where users have been migrating after the pandemic. It is important to provide real and relevant information as users are more focused on reviews and getting relevant information to

plan and get travel ideas, rather than making reservations directly as before. In terms of digital tourism in a post-pandemic scenario, an important part of the predisposition users have towards this concept is related to how much they know about it. Thus, it is recommended to generate informative campaigns and awareness of new developments and ideas. If the business is interested in working with new technologies, virtual tours including technologies such as VR and AR are among users' favourites, in addition to technologies to ensure secure physical travel and artificial intelligence for virtual assistance.

4.4 Limitations of the Study

This study has several limitations that should be acknowledged. First, the relatively small sample size ($n = 204$) may limit the statistical power and robustness of the findings. Second, the use of a non-probability sampling approach restricts the representativeness of the sample and may introduce selection bias. As a result, the findings should be interpreted with caution and cannot be generalised to the broader population of tourism consumers. Third, the study relies on self-reported data, which may be subject to response bias. Future research could address these limitations by employing larger, probability-based samples and incorporating longitudinal or mixed-method approaches to validate and extend the findings.

Declarations

Credit Authorship Contribution Statement

Zarqa Shaheen: Conceptualization, Investigation, Methodology, Project administration, Supervision, Data curation, Validation, review and editing, Visualization.

Danitza Baeza: Conceptualization, Investigation, Methodology, Software, Formal analysis, Writing – original draft, Data curation, Validation, Writing.

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From Winston Churchill's Easel to the Stock-Image Archive: Moroccan Fauna as Destination Image Formation



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Abstract: This article investigates how a limited repertoire of animal imagery has shaped the Western visual representation of Morocco across different media for more than eighty years. It argues that donkeys, camels, and goats function as recurring visual codes that construct Morocco as timeless, exotic, and culturally distinct, thereby influencing its international destination image. The study examines paintings by Winston Churchill, *The Sheltering Sky* (1990), the guidebooks *National Geographic Traveler Morocco* (2011) and *Insight Guides Explore Marrakesh* (2019), as well as images from digital platforms, considered as an intermedial corpus. It draws on Gillian Rose's critical visual methodology, postcolonial ecocriticism, theories of exoticism, and intermediality.

The same animal figures recur across painting, film, travel guides, and digital media, constructing an image of Morocco presented as timeless, picturesque, and exotic. This iconography shapes tourist expectations while marginalizing species emblematic of Morocco's biodiversity, such as the Barbary macaque and the bald ibis.

The article proposes incorporating ethical principles into destination branding and promoting wildlife tourism based on conservation rather than the spectacle of animals.

The study shows that it is also animal-related signifiers - and not just narratives or landscapes - that are transmitted from one medium to another, establishing a novel link between postcolonial ecocriticism, intermediality, and tourism management.

Keywords: destination image; exoticism; postcolonial ecocriticism; visual methodology; wildlife tourism; intermediality; Morocco; Winston Churchill; ecotourism management.

JEL Classification: Z32; Z33; L82; Q57; M31; Z11.

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Introduction

What does it mean when a travel guide measures the width of a city's streets in "donkey widths"? Alternatively, when a political leader commissions a painting of a donkey and a camel while proclaiming his admiration for Morocco? What does it reveal that a search for "donkeys Marrakech" on a commercial photography platform returns 222 images available for licensing? In addition, what effect do these modes of representation have on the tourist

image of a country whose tourism sector contributes significantly to its gross domestic product and employment? (Aderkaoui 2026).

The Western visual archive of Morocco is densely populated with animals whose documentary function is often difficult to justify, but whose semiotic function is unequivocal. They serve to designate the place as an elsewhere: a foreign space in a precise and seductive way. Camels stand out against the desert dunes or occupy the foreground of rural souks. Donkeys crowd the narrow alleyways, carrying people and goods; sheep disrupt traffic; mules climb mountain paths; and storks nest atop palace ruins. These animals convey a set of meanings that is both limited and remarkably consistent. They signal a place perceived as strange, picturesque, pre-modern, and therefore worthy of being photographed. In this sense, the animals perform a role similar to that which Edward Said identified in the recurring figures of the veiled woman, the bazaar merchant, and other stock images of the Orient (Said 1978). They function as signs of authenticity, visual shorthand for “the real Morocco.” Their significance lies less in what they do within any single text than in what they do within the tourism economy: they are, in the vocabulary of destination-image research, organic image agents - media-borne representations that form visitor expectations long before any marketing organization intervenes (Beeton 2016; Valeri 2024). For example, one only needs to open the *National Geographic Traveler: Morocco* at “the Rif Mountains” chapter, to see the photographic apparatus perform its work before a single itinerary is consulted. A caption beneath a harvest scene assures the reader that “farming is still a very traditional activity in the Rif Mountains” (French 2011). Still. The adverb does the othering. A few pages earlier, an alley in Ouezzane is captioned as “just wide enough for a loaded donkey” (French 2011); the town’s spatial fabric is conveyed to the reader in donkey-widths, the way one might describe a doorway in shoulder-widths. Charming? Certainly. The charm depends on the assumption that the reader’s own streets are measured otherwise; in car-widths, say. The caption flatters the reader’s modernity while offering the town’s premodernity as spectacle. Eleven words. Considerable work.

The *National Geographic Traveler* describes itself as the fantasy it serves. Morocco’s visitors, the guide’s opening pages explain, are “drawn here by the handful of exotic tableaux for which the country is famed - the chaotic bustle of the medina, the great sweeps of Lawrence of Arabia-esque sand dunes” (French 2011). Exotic tableaux are indeed the guide’s own and describe the guide’s own photographic practice with an accuracy its editors perhaps did not intend. Noteworthy, the same guide concedes the historical mechanism this article traces. In its capsule history of Moroccan cinema, it records that “foreign directors concentrated on showcasing the country’s exoticism” while ‘Moroccan filmmakers focused more on contemporary social issues’ (French 2011). The admission is remarkable. The guidebook diagnoses, in a sidebar, the very representational economy in which its own captions participate. Moreover, the question is would Morocco still feel sufficiently exotic to justify the journey? If donkeys, goats, and camels were not showcased in this way. The journey of Port and Kit in *The Sheltering Sky*, the journey of Winston Churchill to Marrakech, or the journey of the reader who closes the guidebook and opens a booking platform. The question is not merely academic. Film-induced tourism research consistently finds that audiences retain visually memorable locations more reliably than narrative content, and that such retained images convert into travel intention (Beeton 2016; Valeri 2024). If the animal sign is what audiences retain, then the animal sign is what Morocco’s destination image is made of.

This study makes a threefold contribution. First, it offers an in-depth case study within the framework of postcolonial ecocriticism, demonstrating how animals participate in mechanisms of other in tourism media. Second, it contributes to studies of adaptation and intermediality by demonstrating that what is transferred from one medium to another is not limited to plot, characters, or aesthetic style, but also includes specific animal signifiers whose semiotic function is preserved in the receiving medium. Third - and this is its contribution to the field of tourism management - it translates this intermedial analysis into operational recommendations. It thus proposes approaches that enable Moroccan destination *marketing* organizations to identify, rethink, and ethically promote the animal imagery that a century of foreign media representations has associated with Morocco.

1. Literature Review

1.1 Exoticism and the Spectacle of the Other

Exoticism is “an inherently relational term that presupposes an awareness of Otherness” (Kapferer and Theodossopoulos 2016). The word’s Greek root, *exo*, means “outside” and marks its operation. The exotic is what arrives from elsewhere; it carries with it “a pervasive dualism between the Self and the Other, in which ethnocentric values provide the measure for evaluating difference” (Kapferer and Theodossopoulos 2016). Exoticism is, therefore, a relational structure that requires a self in order for the Other to be perceived. In this account, the animal shown in the frame is not an animal merely observed but an animal positioned to confirm the viewer’s outsideness

and the place's elsewhere. For destination image research, this relational structure matters because the tourist's anticipated "elsewhere" is precisely what the destination sells; exoticism, in short, is a marketing asset with a colonial genealogy. In his work published in 2002, Victor Segalen would likely not have fully identified with the positions of Kapferer and Theodossopoulos. While he defines "the Other" as a source of both fear and fascination, he challenges prevailing conceptions of exoticism and redefines it not as a product of colonialism, mass tourism, or mere geographical displacement, but as an "aesthetic of diversity" (Segalan 2002). Similarly, Deborah Root examines how Western artistic and commercial practices are appropriate and commodify so-called 'native' experiences, reducing them to cultural products intended for consumption. She also questions the assumptions underlying tourism, consumer practices, and cultural hierarchies through which notions of authenticity and value are constructed (Root 1996; see also Huggan 2001).

Stuart Hall explores this idea further in his analysis of the "spectacle of the Other." According to him, representation operates through binary oppositions that are at once powerful - laden with emotion and anxiety - and deeply reductive, since they reduce the complexity of differences between individuals to a simple, stark binary opposition (Hall 1997). From Stuart Hall's perspective, stereotypes reduce, essentialize, naturalize, and freeze difference in place, while erecting a symbolic boundary between the normal and the deviant, between insiders and outsiders, between "Us" and "Them" (Hall 1997). The images of wildlife that populate Western visual archives of Morocco are precisely part of this binary reduction. The goat is portrayed there as an exotic and picturesque spectacle, rather than as a domestic animal integral to Morocco's pastoral economies. Similarly, the donkey becomes a symbol of otherness presented as a charming backwardness, while the camel is reduced to an emblematic prop in tourist photography. Exoticism is not a fixed content but rather a moving of the world around; a continual redeployment of difference prepared for consumption by the metropolitan reader (Célestin 1995). The theoretical framework proposed by Célestin thus permits us to interpret the recurring animal compositions in the corpus not as innovations, but as legacies: signs whose form remains remarkably stable across the centuries, even as the medium changes. Daniela Berghahn extends this line of thought to the field of contemporary visual culture. According to her, exoticism in transnational cinema operates through what she calls the "spectacle of cultural difference" (Berghahn 2024). The exotic thus constitutes a mode of representation that stages foreign spaces as objects of visual pleasure intended for the metropolitan gaze or the potential tourist - a distinction that Paul Bowles specifically seeks to establish between the traveler and the tourist (Bowles, 1949). Berghahn further emphasizes that cinematic exoticism adopts the tourist's point of view: the camera shows what the tourist wants to see, thereby giving rise to what Sue Beeton refers to as "film-induced tourism" (Beeton, 2016). This convergence between the tourist gaze and the cinematic gaze is precisely the mechanism through which media representations are transformed into images of a destination. It is also this mechanism that we will highlight throughout this article.

1.2 Media-Induced Tourism

The film-induced tourism literature establishes that screen exposure shapes destination awareness, image, and visitation intention (Beeton 2016), and recent case-study work confirms that visually memorable locations frequently outweigh narrative elements in what audiences retain and act upon (Valeri 2024). Morocco is a paradigmatic case (Taibi, Hanbali, and Iflahen 2024). The country's film servicing economy, administered through the Centre Cinématographique Marocain (CCM) hosts dozens of foreign productions annually; in 2017 alone, foreign companies shot twenty-seven feature films, nine television series, and fifty-six documentaries in the country, investing close to 500 million MAD (Higbee, Bahmad, and Martin 2020). Each production is simultaneously an export of images, that is to say, an unpaid and unmanaged advertisement whose content the destination does not control. When those images repeat the same faunal inventory. The destination image hardens around camels, donkeys, mules, goats, and tourist expectation arrives at the border already formed and photographed.

1.3 Postcolonial Ecocriticism and the Animal Other

Postcolonial ecocriticism examines "the relationships between humans, animals, and the environment in postcolonial literary texts" (Huggan and Tiffin 2010). Its key contribution to the present argument is that the colonial and tourist gaze do not merely look at human Others and represent them; they construct a continuous spectrum across which animals and human Others are positioned and symmetrized together, sometimes even blending together (see Figure 8). The Western definition of humanity, Huggan and Tiffin write, drawing on Val Plumwood, 'depended - and still depends - on the presence of the "not-human": the uncivilized, the animal and animalistic' (Huggan and Tiffin 2010). Consequently, exoticizing an animal in a Moroccan context is not a separate act from the exoticization of Moroccans; both are part of the same system of representation. The mule on a mountain trail and the anonymous villager leading it are part of the same scenographic framework: neither appears as a subject

endowed with a narrative inner life or a distinct socioeconomic and environmental reality, but rather as mere visual markers of the place. From the perspective of wildlife tourism management, this logic has very concrete consequences. Representations that reduce animals to mere props help legitimize tourism practices that treat them in the same way: paid photo opportunities with animals, animals restrained or exploited for photo ops and artificially staged encounters. These practices have documented effects on animal welfare as well as on biodiversity conservation.

In *A History of Tourism in Africa* (2021), Todd Cleveland provides the historical grounding for comprehending how African fauna came to function as an exotic spectacle to be consumed and photographed. He contends that "Africa's dramatic wildlife and distinctive cultures, constitutive elements of this perceived exoticness," have for centuries stimulated people's imagination worldwide (Cleveland 2021). The African safari established a representational template in which animals are staged for an arriving Western gaze; a staged, prepared authenticity to be enjoyed, as MacCannell would have stated it (MacCannell 1973; see also Rafik and Ouchoud 2025). The Moroccan fauna inventory is a domesticated version of the same template. Cleveland also documents the Moroccan chapter of this history: Edith Wharton's *in Morocco* (1920), written to support the French protectorate, promoted the country as "a land of the Middle Ages ... an Arabian Night fantasy world," a characterization 'that would prove highly durable' (Cleveland 2021). In other words, the Orientalist fantasy has, from the very beginning, served as a strategy for attracting visitors. This article seeks to assess the extent to which this strategy continues to rely on animal imagery today.

1.4 How Signs Travel Across Media

Film is "an art form between media" (Bruhn and Gjelsvik, 2018), a space of "in-betweenness," to use Judit Pieldner's (2020) term. It is an art form that continually absorbs the conventions of the media that preceded it in order to rework them. Based on this conception, Jørgen Bruhn, Anne Gjelsvik, and Judit Pieldner develop a methodological vocabulary for studying how forms of representation circulate between painting, photography, the novel, cinema, and digital media (Bruhn and Gjelsvik 2018; Pieldner 2020). Within the framework of this study, this approach allows for a shift from an analysis centered on a single medium to an analysis of representational units that circulate from one medium to another while retaining their semiotic function. In other words, the aim is to examine how animal signifiers migrate across different media while preserving their semiotic role and, from the perspective of tourism studies, how this circulation gradually contributes to the formation of the destination's organic image - an image with which tourism marketing strategies must subsequently contend, whether they seek to reinforce or transform it.

1.5 Tourism Texts and the Multimodal Construction of Place

Sabrina Francesconi conceives of tourism text as a multimodal device whose function is to construct a tourist destination on the visual, verbal, and textual levels for an audience that has not yet embarked on its journey - a tourist or a traveler, a fundamental distinction in Paul Bowles's famous reflection (1949). The primary mission of tourism promotion is thus to represent the place through both images and text (Francesconi 2014). This representational framework is not, however, neutral: it is structured by broader cultural hierarchies that determine what becomes visible, meaningful, and desirable in the eyes of the visitor. In *The Tourist Gaze 3.0*, John Urry and Jonas Larsen show that perception, like language, is mediated by social and cultural contexts that produce different ways of seeing. The tourist gaze is thus shaped by culturally acquired values, knowledge, expectations, and aspirations (Urry and Larsen 2011). As John Berger (1972) has shown, individuals perceive not only the objects themselves but also the relationship they have with these objects. Within this multimodal framework, the animal sign is one element among many. Alongside urban landscapes, images of cuisine, architectural details, and costumes, its specific function is to stage the place's difference and strangeness. A quest for exoticism, precisely.

1.6 Moroccan Cinema and the Foreign Gaze

Kevin Dwyer and M. A. Tazi's *Beyond Casablanca* documents how Morocco has long served as a setting for the production of otherness. "In many countries - Morocco is one of them - foreign films being shot locally often push aside the nation's own filmmakers" (Dwyer 2004). Tazi contends:

Up to a certain point this was a very enriching experience for me. But it couldn't continue unless you wanted to spend the rest of your life in that kind of mercenary activity. Also, it started to get monotonous: when people think 'shooting in Morocco' they think of the south, tents, camels, folklore - again, it's that Orientalist vision. (Tazi qtd. in Dwyer 2004)

Higbee, Bahmad, and Martin, in *Moroccan Cinema Uncut*, extend this argument by observing that foreign films "offer little meaningful engagement with Moroccan culture, often using the country as an exotic backdrop for

Western-centred narratives and protagonists" (Higbee, Bahmad, and Martin 2020). The literature gap that this article addresses is now clear. Studies on exoticism analyze representations without examining their implications for tourism management. Conversely, research on media-induced tourism measures the effects of these representations on visitor flows without considering the centuries-old iconographic legacy that underlies them. Finally, neither of these two fields has yet applied a systematic visual methodology to representations of Moroccan wildlife. The objective of this study is precisely to bridge these three perspectives.

2. Method

2.1 Critical Visual Methodology: Rose's Four Sites and Three Modalities

The analysis is operationalized through Gillian Rose's critical visual methodology. 'By "critical",' Rose writes, "I mean an approach that thinks about the visual in terms of the cultural significance, social practices and power relations in which it is embedded; and this means thinking about the power relations that produce, are articulated through, and can be challenged by ways of seeing and imaging" (Rose 2023). The definition matters for tourism research more than is usually acknowledged. Destination images are precisely "ways of seeing and imaging" embedded in power relations - colonial, commercial, and curatorial - and a destination-image study that inventories image content without asking who produced the image, where it travels, and who consumes it is, in Rose's terms, uncritical.

Rose's framework holds that "there are four sites at which the meanings of an image are made: the site(s) of the production of an image, the site of the image itself, the site(s) of its circulation, and the site where it encounters its spectators or users' - its audiencing" (Rose 2023). The fourth and fifth editions added circulation to what had been a three-site framework precisely "to assess how different methods address the mobility of digital images across many kinds of social media and image-sharing platforms and devices" (Rose 2023) - an addition without which the stock-photography node of the present corpus could hardly be analyzed at all. At each site, Rose distinguishes three modalities: the technological (the apparatus that makes, carries, or displays the image), the compositional (the formal strategies of the image itself), and the social (the institutions, economies, and practices surrounding it) - and she notes "all three modalities are found at all four sites" (Rose 2023). For the circulation site in particular, Rose supplies the questions this study asks of every image: "What technologies are used to make an image move? Does that movement change the compositional qualities of an image? What social, economic or political processes are shaping that movement?" (Rose 2023).

Note worthily, Rose's framework is not a neutral grid onto which any content may be poured; it requires a theory of what the images are doing. Stuart Hall supplies that theory here. Rose herself anchors the interpretative stance of the entire methodology in Hall's dictum that "there is no single or 'correct' answer to the question, 'What does this image mean?' ... work in this area is bound to be interpretative - a debate between, not who is 'right' and who is 'wrong', but between equally plausible, though sometimes competing and contesting, meanings and interpretations" (Hall, qtd. in Rose 2023). And Hall's account of culture as "not so much a set of things ... as a process, a set of practices' concerned with 'the production and exchange of meanings" (Hall, qtd. in Rose 2023) explains why a donkey can be a working animal in one practice of meaning-exchange and a sign of timeless Morocco in another. The present study, then, pairs the two: Rose supplies the sites and modalities - the where of meaning-making; Hall supplies the spectacle of the Other - the what that is made at each site. At the production site, we ask who authored the image and within which genre and economy. At the site of the image, we perform compositional interpretation: framing, scale, angle, color, and what Rose, following Pollock, calls "the spatial organization of looks" (Rose 2023) who looks at whom, and who is looked at. At the site of circulation, we track the image's movement across platforms, markets, and borders. And at the site of audience, we reconstruct the viewing position the image proposes - the implied spectator it seats - while acknowledging, with Rose and Hall alike, that actual audiences negotiate and contest.

2.2 Corpus and Its Faunal Categories and Analytical Protocol

This article reads four nodes of the Western visual archive of Morocco as a single intermedial corpus, along a trajectory that runs from engraving and painting, through the novel, to photography, to film, to circulating digital images. The corpus comprises: (1) Winston Churchill's Marrakech paintings, above all *A Town Gate at Marrakech with a Man on a Donkey* and *A Road at Marrakech, with a Man Leading a Camel* (Art UK, n.d.), read alongside *Tower of the Koutoubia Mosque* (1943); (2) Bernardo Bertolucci's *The Sheltering Sky* (1990), adapted from Paul Bowles's 1949 novel, with particular attention to its desert sequences and its recurring depictions of camels and goats; (3) two guidebooks - the *National Geographic Traveler Morocco* (French 2011), whose photographic apparatus and caption system are analyzed page by page, and *Insight Guides Explore Marrakesh* (Insight Guides

2019), whose history pages recirculate a nineteenth-century engraving of the city; and (4) the circulating images and photographs of marrakech-riad.co.uk, artuk.org, gettyimages.com, distant-horizons.com, onlineonly.christies.com, smithsonianmag.com, telegraph.co.uk, and theguardian.com - the editorial, commercial, and social-media afterlife through which the corpus's animal signs now move.

Each corpus is analyzed using the same set of recurring faunal categories to enable a systematic comparison: the camel in relation to the desert, the souk, and the beach; the goat in connection with rural landscapes and interactions with humans; the donkey and the mule in the spaces of the medina, the road, and mountain trails; the sheep in pastoral and agricultural contexts; and finally, the stork as a recurring emblematic figure in Morocco's built and natural landscapes. For each of these categories, the analysis addresses the same questions, organized according to the four sites defined by Gillian Rose. What is the animal doing within the image, and how is the composition organized (site of the image)? Who produced the image, for which institution, and in what media genre (site of production)? Through which media, platforms, and markets do the image circulate (site of circulation)? Finally, what viewing position does it offer the viewer, and what tourist expectations - as well as what wildlife tourism practices on the ground - does it help to legitimize (site of the audience)? By systematically applying this analytical framework to painting, literature, photography, film, and digital platforms, this article highlights both representational patterns and significant transformations in the visual construction of Morocco.

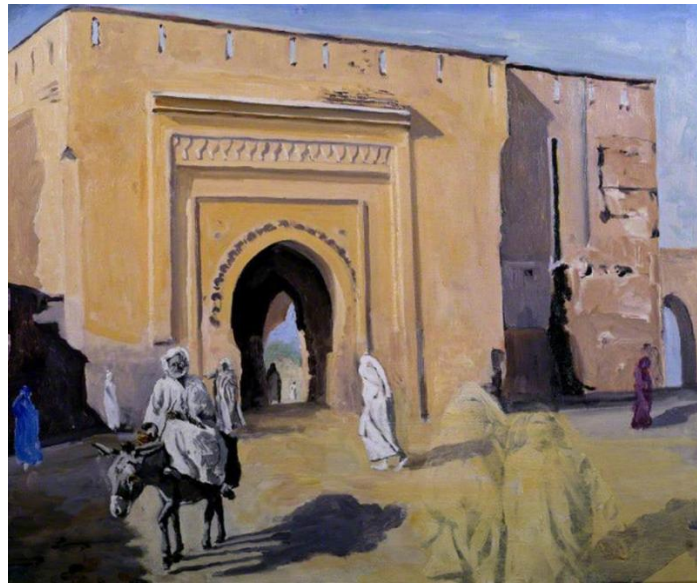
Ten figures anchor the analysis, one per corpus platform, so that the reproduction of visual material remains at the minimum indispensable to the scholarly argument. That is, one Churchill canvas (Figure 1); one photograph-and-caption unit from the *National Geographic Traveler* (Figure 2), with the guide's remaining fauna pages analyzed in the text without reproduction; one page from *Insight Guides Explore Marrakesh* reproducing an 1836 engraving of the city (Figure 3); one frame from *The Sheltering Sky* (Figure 4); and six documents of circulation, one per platform. The analysis included a press photograph from telegraph.co.uk, the Smithsonian donkey feature, the Distant Horizons tour page, the Christie's William Klein lot, the Guardian's Instagram travel gallery, and a screenshot of the gettyimages.com results page for 'donkeys Marrakech' (Figures 5–10). All reproduced images are fully attributed to their respective copyright holders, and their inclusion is intended solely for the purposes of criticism, review, and academic commentary, consistent with applicable copyright exceptions, including the United Kingdom's fair dealing provisions under the Copyright, Designs and Patents Act 1988 and the United States' fair use doctrine under Section 107 of the U.S. Copyright Act. Each image is discussed directly within the accompanying critical argument.

3. Research Results

3.1 Painting: Churchill in Marrakech and the Painted Origin the of Animal Sign

When Winston Churchill set up his easel in front of the ramparts of the old medina, his brushstrokes did much more than capture the North African light: they established a pictorial point of origin for the "animal sign" within the Western imperial imagination. In *A Town Gate at Marrakech with a Man on a Donkey* (Figure 1), ochre walls fill most of the frame; a keyhole arch opens onto shadow; white-robed figures drift across the middle distance; and in the left foreground, unmistakable, a turbaned man rides a small dark donkey toward the viewer. When we apply the compositional questions proposed by Gillian Rose, the visual economy of the painting becomes immediately apparent. The city gate appears to be the main subject of the work - Churchill defined himself first and foremost as a painter of light on architecture. Yet the viewer's gaze inevitably returns to the lower left corner, where the donkey and its rider form the only truly striking diagonal in the composition. The animal is small, dark against a light background, secondary in terms of composition but indispensable in terms of semiotics. If it were removed from the scene, the image could just as easily depict southern Spain or serve as a simple studio backdrop. It is the donkey that anchors the scene in a specific geographical space. It confirms to the viewer that they are in North Africa, amidst a population whose mode of transportation seems, according to the image's implicit codes, to belong to another era.

Figure 1. Winston Churchill, *A Town Gate at Marrakech with a Man on a Donkey*, oil on canvas. The mounted donkey rider forms the composition's only strong diagonal, lower-left foreground.



Source: © The Churchill Heritage Ltd; image via Art UK (artuk.org). Reproduced under fair dealing for criticism and review.

The companion painting, *A Road at Marrakech, with a Man Leading a Camel* (Art UK, n.d.), accomplishes the same effect with the second pack animal in the series. In both works, the animal is detached from its material reality and transformed into a powerful signifier: a semiotic anchor that codes the Maghreb as a timeless, premodern, and exoticized space. While Churchill sought above all the vibrant terracotta and cobalt blue hues of Morocco as a psychological refuge from the pressures of political life, his Impressionist eye nonetheless helped reinforce an already well-established visual narrative. By reducing the local horseman and his workhorse to a single pastoral motif set against the imposing ochre ramparts of Marrakesh, the painting romanticizes a living, dynamic reality, transforming it into a frozen image. From the perspective of “the site of production,” according to Gillian Rose’s methodology, the contextual elements are unequivocal: a British statesman painting in his spare time in a French protectorate, within a fully established Orientalist genre, whose conventions - architecture elevated to the status of a monument, light as the true subject of the painting, and human and animal figures reduced to the role of mere elements of animation (staffage) - had been established a century earlier by Delacroix.

The animal sign thus functions as an epistemic origin point, creating a persistent colonial taxonomy that frames the Global South not as a dynamic site of historical change, but as an aestheticized backdrop designed for the Western eye - and, in tourism terms, as a destination image awaiting its market. Noteworthy, the tourism industry has since folded the painter himself into the attraction: La Mamounia hotel maintains “Le Bar Churchill, named after La Mamounia’s most famous patron, Britain’s wartime prime minister, keen amateur painter and ardent Moroccophile Winston Churchill, who visited on several occasions during his retirement in order to capture the city on canvas” (Insight Guides 2019). The gaze has become a heritage product; the easel, an amenity.

3.2 The Novel: Bowles, the Tourist, and the Traveler

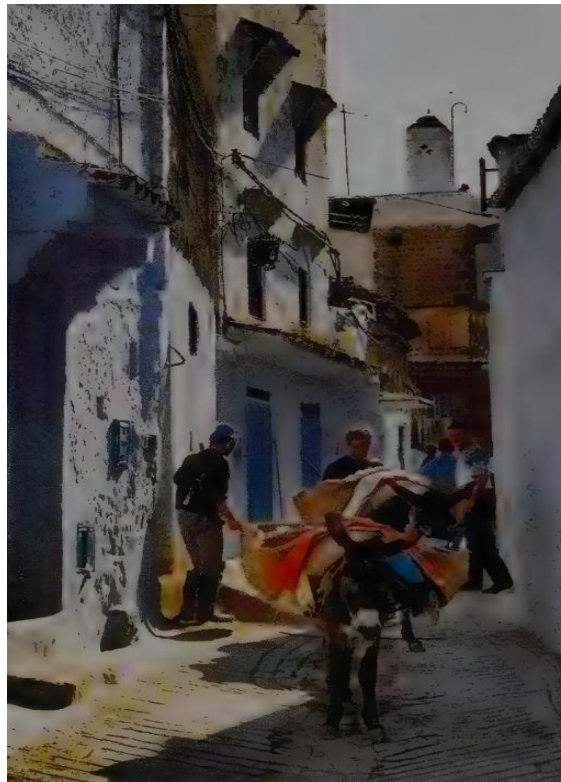
Between the painted donkey and the photographed donkey lies a novel. *With The Sheltering Sky* (1949), Paul Bowles did not so much enrich the visual archives with a new image as he proposed a genuine ideology of the gaze: the famous distinction between the “tourist,” who “accepts his own civilization without ever questioning it,” and the “traveler,” who confronts it with other cultures and rejects what he deems unsatisfactory (Bowles 1949). This distinction subtly flatters every reader by inviting them to identify with the second category, and the tourism industry has continually capitalized on this symbolic validation. As Sabrina Francesconi points out, tourism texts systematically address their readers as “travelers” rather than tourists,” precisely because this term is more appealing and more effective from a commercial standpoint (Francesconi 2014).

Port and Kit’s journey into the desert is presented as a quest for self-dissolution. Yet the visual culture that has appropriated their story - as the following sections will show - has transformed this existential quest into a mere backdrop. From this perspective, the novel occupies a pivotal position within the corpus: it bridges the gap between painting and photography by providing the narrative of an “authentic elsewhere” that photographic images would strive, over the next seven decades, to illustrate through.

3.3 Photography: The National Geographic Traveler and the Captioned Animal

Guidebook photography differs from painting in one decisive respect: its images arrive captioned. The caption instructs. It tells the reader what the image shows and, more quietly, how to feel about what it shows - and, in the language of destination marketing, it converts an image into an itinerary item. The *National Geographic Traveler Morocco* (French 2011) supplies five photograph-and-caption units that, read through Rose's site of the image, disclose the guide's entire faunal grammar; one is reproduced here (Figure 2) and the remaining four are analyzed in the text. At the site of production, it bears remembering what institution stands behind them: National Geographic has functioned, for over a century, as perhaps the most influential single apparatus through which Western audiences have received images of the non-Western world, its house style - saturated color, traditional dress, technically brilliant wildlife - so codified that whatever appears inside its frame arrives, so to speak, pre-trusted (Lutz and Collins 1993).

Figure 2. National Geographic Traveler: Morocco — “An Ouezzane alley: just wide enough for a loaded donkey.” The animal as unit of measurement.



Source: French 2011; © National Geographic Society. Reproduced under fair dealing for criticism and review.

Figure 2 may be the guide's most quietly revealing item, and it has already served as this article's opening exhibit. A narrow-whitewashed alley in Ouezzane; a loaded donkey at its centre; figures pressed to the walls. The caption: “An Ouezzane alley: just wide enough for a loaded donkey” (French 2011). Consider what has happened grammatically. The donkey has become a unit of measurement. The charm depends on the assumption that the reader's own streets are measured otherwise, and the caption flatters the reader's modernity while offering the town's premodernity as spectacle. Moreover, the guide's remaining fauna pages extend the grammar. At a camel souk near Goulimine, robed men and camels interlock edge to edge in a crowded, warm-toned, almost frieze-like composition; the caption - “Bargaining at a camel souk near Goulimine” - adds a verb, and the surrounding text supplies a mythology: the fair is attended by Tuareg traders, “known as the ‘blue men of the desert’ because of their traditional blue djellabas,” and Goulimine itself is “sometimes called the ‘gateway to the Sahara’” (French 2011). Whether any reader could subsequently look at the photograph and see simply livestock exchange - prices, lineages, veterinary condition - seems doubtful. The frame arrives pre-narrated. Elsewhere, “a Berber villager and his mule ascend into the High Atlas Mountains”: the massif dominates, the rider and animal occupy a sliver of trail, and the composition descends directly from the Romantic mountain picture in which a small human figure gives the sublime its measure - Churchill's man-leading-a-camel transposed from oil to Kodachrome, seventy years on. The mule's contribution is temporal: a mounted figure on a mountain trail could belong to almost any century. In the Rif

chapter, a harvest scene is captioned “Farming is still a very traditional activity in the Rif Mountains” - still; the adverb does the othering - while the adjacent text formats the corpus’s one endangered animal as a lottery prize: “If you are lucky, you may see a troop of Barbary macaques” (French 2011). Luck. The macaque’s endangerment goes unmentioned on the spread; the animal enters the sighting economy alongside the boars and the eagles, fauna as encounter, encounter as reward. And on the Marrakech palaces spread, “a white stork nests on the early 17th-century ruins of El Badi Palace”: bird, nest, and ruin fused into one picturesque vertical totem, printed beside Clive Carpenter’s boxed reflection that “a trip to the Bahia Palace is a fascinating reminder of how far into the modern world the country’s old ways survived” (Carpenter, in French 2011). Morocco’s “old ways” have “survived” - persisted, like the stork’s nesting habits, like a species - “into the modern world,” which belongs, by grammatical implication, to the reader. Fabian (1983) gave this maneuver a name decades ago: the denial of coevalness. The guidebook page performs it with a bird, a ruin, and a tip. In a similar vein, another caption offers “Shopping at a souk in Marrakech’s timeless medina” (French 2011); timeless is the operative fantasy, and the fauna are its most efficient carriers.

3.4 The Guidebook’s Deep Archive: Insight Guides and the 1836 Engraving

While *National Geographic Traveler* illustrates how the zodiac sign is used in contemporary travel guide photography, *Insight Guides Explore Marrakesh* reveals an even rarer phenomenon, a guidebook that explicitly references the very origins of this iconographic tradition. In the section titled “History: Key Dates”, the book reproduces an “engraving of Marrakesh dating from 1836,” attributed to the *Mary Evans Picture Library* (Insight Guides, 2019) and presented here as Figure 3. An examination of its composition is revealing. The city occupies the middle ground, with its ramparts, palm groves, and minarets, while the Atlas Mountains rise in the background. In the foreground, on the path that guides the viewer’s gaze toward the city, a loaded pack animal and its handler appear. The year is 1836. More than a century before Winston Churchill set up his easel in Marrakech, the compositional model was already fully established: Marrakech presents itself as a panorama, the Atlas Mountains serve as a backdrop, and the pair formed by the animal and its driver occupies the foreground as the visual sign that immediately authenticates the landscape as that of Morocco.

Figure 3. Insight Guides Explore Marrakesh, “History: Key Date” page, reproducing “An 1836 engraving of Marrakech” (Mary Evans Picture Library). City and Atlas in the distance; a laden beast of burden and its driver on the foreground path.



Source: Insight Guides 2019; engraving © Mary Evans Picture Library. Reproduced under fair dealing for criticism and review.

The page, read through Rose’s four sites, is a small marvel of compression. At the site of production: a nineteenth-century European engraving made for European print audiences in the decades when the Maghreb was being converted into pictures. At the site of the image: the template this article has been tracing, already complete. At the site of circulation: the engraving survives into the present through a commercial picture library - Mary Evans

licenses historical imagery much as Getty licenses contemporary photographs - and is purchased back into a twenty-first-century guidebook to illustrate "History." And at the site of audiencing: today's visitor, planning a city break, absorbs an 1836 way of seeing as historical garnish, its conventions unmarked and therefore intact. The guidebook's epigraph on the same spread notes that "Marrakech's fortunes have depended upon the tastes of the ruling dynasties" (Insight Guides 2019); its own pages demonstrate that the city's image has depended, for nearly two centuries, upon the tastes of its pictures. Elsewhere the guide records, without apparent irony, that Souk Semmarine "used to be the souk of the blacksmiths who dealt specifically with horses and donkeys but is now a vivid corridor of consumerism" (Insight Guides 2019) - the working animal's infrastructure converted into retail—and directs diners to a rooftop terrace with "excellent views ... of the neighboring storks' nests" (Insight Guides 2019). The stork has become table dressing. The 1836 engraving, the Churchill bar, the storks'-nest terrace: the guidebook does not merely inherit the archive; it retails it.

3.5 Film: Bertolucci's *the Sheltering Sky* - the Camel as Vehicle, the Goat as Tableau

What does a camel carry when it carries a Western protagonist into the desert?

Bernardo Bertolucci's 1990 adaptation of Bowles's novel translates the archive into motion. Where Churchill's donkeys are ornamental, Bertolucci's camels are existential. The film stages an extended desert sequence in which Kit travels with a Tuareg caravan, and Figure 4a reproduces its characteristic image: white camels in strict profile crossing a flat, hazed desert, the horizon low, the light a golden monochrome that dissolves detail into silhouette. Kit rides among the indigo-veiled Tuareg, her pale jacket and bare ankles the only Western notes in the frame. The animal here is doing two things simultaneously. First, it performs the desert; a sand sea without a camel is merely a beach; with a camel, it becomes the Sahara, the Orient, Africa. Second, it performs the protagonist's Western alterity: the camel is the vehicle by which Kit can ride into otherness, her body carried in file with the caravan, processed through an animal apparatus that does not belong to her. The camel is, in semiotic terms, the threshold animal - and, in tourism terms, the prototype of the sunset camel trek that now anchors the excursion economy from Merzouga to Agafay. An adaptation of a novel that despises tourism became, in its visual afterlife, an engine of film-induced tourism (Beeton 2016); a staged authenticity, as MacCannell would have stated it (MacCannell 1973). One image, two economies.

Figure 4. Bernardo Bertolucci, *The Sheltering Sky* (1990). (a) Kit rides with the Tuareg caravan: white camels in profile against a golden desert haze. (b) Interior of a desert settlement: a herd of black-and-white goats crowds the straw-covered foreground while their herders sit and stand behind and among them — one man's face wrapped, another's emerging between the animals, a third seated at right, arms around his knees, looking sideways at the camera.



Source: © Warner Bros. / Recorded Picture Company. Screenshots reproduced under fair dealing for criticism and review.

Yet the film's most revealing animal is not the camel at all. Consider the stable interior reproduced in Figure 4b. The scene belongs to the film's final movement, during Kit's passage through the desert settlements, and its composition rewards slow looking. Directional light enters from a doorway to the right and rakes across earthen walls the color of the landscape outside; the floor is straw. A herd of young goats - black-bodied, white-faced, tether ropes visible at their legs - occupies the entire foreground plane. The men are behind them. A figure on the left, face wrapped in a white turban to the eyes, is half-screened by a dark goat pressed against his chest. A younger face surfaces at the center between the animals' backs, at exactly their height. A third man stands in the shadowed doorway. And at the right, a herder in a pale turban and rough woollen djellaba sits with his arms wrapped around his knees, looking sideways at the camera - the frame's one direct human address.

What is this frame doing? Nearly everything this article has been arguing, all at once. Begin with the plane of the composition: the goats stand in front, the men behind. The hierarchy of visibility has been inverted - the

animals screen the humans, and the human faces that do appear emerge between and behind goat bodies, at goat height. Huggan and Tiffin's continuous spectrum, on which animals and human Others are positioned and symmetrized together, is here rendered not as metaphor but as blocking: the frame literally interleaves herder and herd until the two read as one warm-toned mass of bodies (Huggan and Tiffin 2010). The lighting completes the operation. The raking chiaroscuro, the straw, the stable setting, the kids at the center of the composition summon the iconography of European genre painting - even, unmistakably, of the nativity. That is to say, Bertolucci's camera does not merely film a Moroccan interior; it repaints one, closing the intermedial loop that began at Churchill's easel - or rather, as Figure 3 has shown, at the engraver's bench a century earlier. Compare Figure 4b with Figure 1: the same earthen palette, the same subordination of individual identity to picturesque arrangement, the same animal admitted into the composition as a warm body among warm bodies. The painted Orient returns as cinematography - and compare Figure 4b with the National Geographic camel souk described above, which performs the same binding of men and animals into a single ethnographic unit.

Noteworthy, the humans in this frame do look back. The seated herder's sidelong gaze meets the lens directly; the young man's eyes find it between the goats' backs. Rose's "spatial organisation of looks" (Rose 2023) is precisely the analytic that catches what happens next: the returned gaze changes little, because the tableau format has already converted looking into posing. The frame receives their gaze the way a painting receives a viewer's: as confirmation of the spectacle, not as interruption of it. And notice what the returned gaze cannot undo - the tethers at the goats' legs, the men's position behind their animals, the composition's insistence that herder and herd belong to one another and to the scene. Nothing in the image, from the straw to the turbans to the raking light, permits the viewer to assign it a century. The scene floats in the timeless ethnographic present that the travel archive requires Morocco to inhabit; Fabian (1983) named this operation the denial of coevalness, and Figure 4b performs it with a herd of goats.

3.6 Circulating Images: Press, Magazine, Operator, Auction, Instagram, and 222 Donkeys

The analysis now shifts to the "site of circulation," as defined by Gillian Rose, and the fourth corpus demonstrates precisely why this dimension plays a central role in her methodological framework. Six platforms are examined, each through a representative image, to demonstrate how the animal symbol circulates across all the channels through which "Morocco" is currently presented to potential visitors: the press, magazines, tour operators, auction houses, image galleries on social media, and commercial stock photo libraries.

In September 2023, a few days after the Al Haouz earthquake, *The Telegraph* published an opinion piece titled "Tourism can help Morocco back on its feet" (Duddridge 2023; Figure 5). This headline alone sums up the central issue of this article: a destination's image is a national economic asset, and in times of crisis, it can become a key driver of recovery. However, an examination of the visual economy of this media coverage reveals a deeper phenomenon. Even as the country is struck by a disaster - with entire villages having collapsed in the High Atlas, precisely the region where engravings and photographs of mules in tourist guidebooks have romanticized for nearly two centuries - the press once again draws on the familiar iconographic repertoire

Figure 5. The Telegraph, "Tourism can help Morocco back on its feet," 17 September 2023. Press photograph accompanying the post-earthquake feature; the recovery appeal is visualized through the established destination iconography.



Source: telegraph.co.uk, 2023. Reproduced under fair dealing for criticism and review.

Smithsonian Magazine's feature on Morocco's donkeys (Figure 6) narrates the animal as an "astonishing commingling of past and present," reading even mules trotting over a new highway as "claiming the image as Morocco" (Smithsonian Magazine 2009). The formulation deserves a pause. A mule on a modern highway could equally "claim the image" as evidence of a working economy adapting to infrastructure; the writer instead reads the animal as the past intruding photogenically upon the present. The magazine performs, in prose, exactly what Carpenter's "old ways survived" tip performs in the guidebook: Fabian's denial of coevalness, applied at highway speed.

Figure 6. Smithsonian Magazine, "Morocco's Extraordinary Donkeys" (2009). The load-bearing donkey narrated as an 'astonishing commingling of past and present.'



Source: smithsonianmag.com. Reproduced under fair dealing for criticism and review.

Distant Horizons' "Morocco: Beyond Marrakech and Fez" page (Figure 7) calls the donkey "the soul of Morocco" and frets that development might cost the country that soul, a modern well standing "conspicuously ugly" beside the timeless valley (Moore 2020). Here the commercial function of the animal sign is fully explicit: the operator is selling itineraries, the donkey is the certificate of authenticity, and modernity - the well that presumably delivers clean water to the valley's residents - is an aesthetic liability. The Marrakech Riad blog completes the instruction, closing its donkey feature by inviting the tourist to photograph the next donkey they pass (Marrakech Riad 2018). Pity, admiration, and the camera shutter, all trained on the same animal.

Figure 7. Distant Horizons, "Morocco: Beyond Marrakech and Fez." Tour-operator page in which the donkey is narrated as "the soul of Morocco."



Source: distant-horizons.com. Reproduced under fair dealing for criticism and review.

At onlineonly.christies.com, William Klein's Moroccan fashion photography circulates through the online auction market (Figure 8): Western models staged against camels, the exotic marker transposed from the easel to the fashion image and priced accordingly (Klein 1958). The auction platform is where the animal sign's asset character becomes literal - and the Churchill canvases travel the same channel. A press photograph from 2012 shows a Churchill Marrakech painting gilt-framed under gallery lighting while a visitor leans in to look; when one such canvas, famously owned by a Hollywood actress, sold at auction in 2021, the donkey's painted siblings made global headlines. Ask Rose's circulation questions of this trajectory. What technologies moved the image? Auction logistics, press photography, wire distribution, database ingestion. Did the movement change its compositional qualities? Benjamin would say the aura drained away in reproduction; one might counter that a second aura accreted - provenance, a statesman's hand, the hammer price. What social and economic processes shaped the movement? A market in which Churchill's Moroccan pictures command premiums precisely because Marrakech, and its picturesque inventory, retain their glamour for the buying class; the painted animal has become an asset class.

Figure 8. Christie's online sale, "William Klein (1928–2022)": Moroccan fashion photography in which Western models are staged against camels; the exotic marker priced for the auction market.



Source: onlineonly.christies.com. Reproduced under fair dealing for criticism and review.

In 2017, the Guardian published a travel gallery of one photographer's Instagram snapshots of Morocco - the blue houses of Chefchaouen, market scenes, the Rif valley (Austin 2017; Figure 9). The item matters methodologically more than any single image within it, because it documents Rose's circuit closing. Audience has become production: the tourist, trained by the archive this article has traced, photographs the Morocco the archive promised, posts it to Instagram, and legacy media then republishes the tourist's production as travel inspiration for the next cohort. The gallery format canonizes the tourist gaze itself; Urry and Larsen's hermeneutic circle - the photograph already half-taken before the camera leaves the bag - is here completed in public, at editorial scale (Urry and Larsen 2011). No DMO commissioned any of it. That is precisely the point.

Finally, it is worth examining the very economics of keywords. At the time of writing this study, a search for the phrase "donkeys Marrakech" on *Getty Images* returned 222 images available under license (Figure 10). The results page can be read as a document in its own right. The first row already presents the donkey in four distinct ways: standing still next to a pink wall with its cart; harnessed in front of a blue door, its load carefully balanced; photographed in profile against a solid pink background, in a setting reminiscent of a studio portrait; and finally, tiny at the far end of an alley framed by a horseshoe-shaped arch. The following rows repeat the same motifs: traffic in the medina, mountain trails, and the souk.

The diversity of the images is real; their underlying homogeneity is even more so. All of them isolate the animal as a visual event. None of them truly document the donkey's role in the economy: the loads they carry, their owners, municipal debates on the use of animals in the medina, or even the veterinary associations working to protect them.

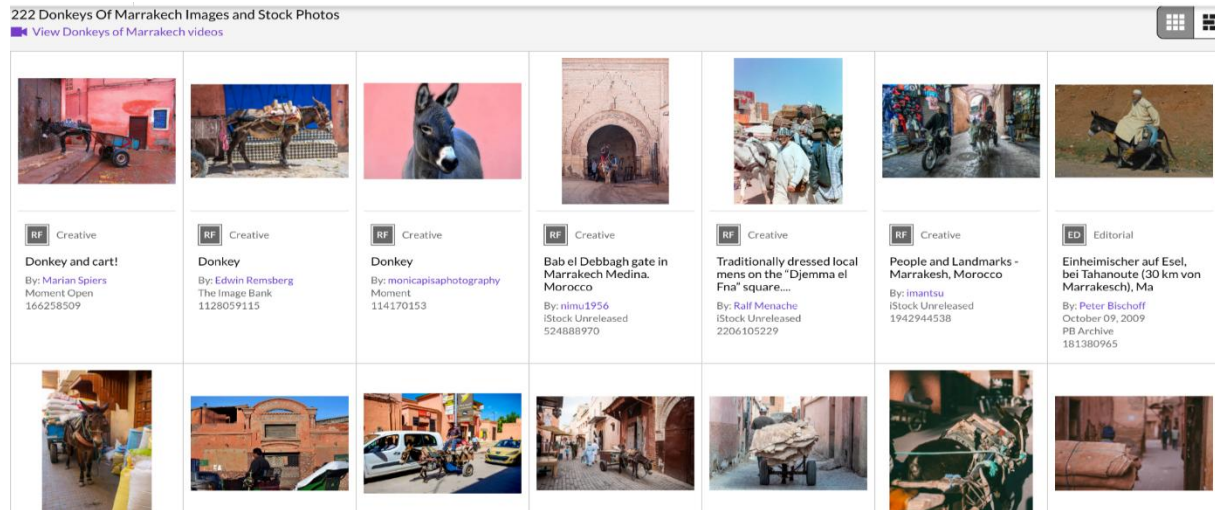
Figure 9. The Guardian, "Morocco: blue houses, Chefchaouen market, Rif valley - Instagram snapshots" (2017). A reader-photographer's Instagram travel imagery republished by legacy media: audiencing become production.



Source: theguardian.com, 2017. Reproduced under fair dealing for criticism and review.

The logic of keywords favors what is immediately identifiable, and this legibility rests precisely on what is already familiar to the eye. As Gillian Rose (2023) points out, technologies of circulation, themselves, influence the production of meaning in images.

Figure 10. Screenshot of gettyimages.com search results: "222 Donkeys Marrakech Images and Stock Photos." The animal sign as commercial inventory.



Source: gettyimages.com. Screenshot reproduced under fair dealing for criticism and review.

Across all these platforms the same structure recurs: each is a Western-authored framing of Morocco; in each, the emblem that carries "Morocco" is an animal rather than a person; the beast is consistently coded as timeless and authentic, set against a modernity it is imagined to resist; the animal is simultaneously an object of pity, of admiration, and – crucially – of photography; and all are, at bottom, selling something – tours, subscriptions, licenses, paintings, page views – so the exotic-authentic animal doubles as a marketing sign that certifies Morocco as elsewhere, premodern, and worth the journey. Art UK aggregates the Churchill canvases for a global audience (Art UK, n.d.); Mary Evans licenses the 1836 engraving back into the guidebooks; Getty licenses the donkeys forward into whatever needs a Morocco. Here, then, is the central result stated in tourism-management terms: the organic component of Morocco's destination image has been animal-borne for nearly two centuries, it was assembled entirely outside the country's control, and it is now algorithmically self-reproducing.

3.7 Which Animals Travel: a Counter-Inventory and Its Conservation Cost

A counter-inventory serves to highlight this representational logic even more clearly. The Barbary macaque - an endangered species of great ecological importance, at the heart of active conservation programs, and itself exploited as a photographic prop in Marrakech's Jemaa el-Fna Square - appears in *National Geographic Traveler* only as a chance encounter reserved for the attentive hiker. It is completely absent from Churchill's paintings, Bertolucci's images, and, just as significantly, from the first pages of commercial stock photo libraries. The same is true of the bald ibis, whose largest wild colonies are found in Souss-Massa National Park and whose partial recovery is, nevertheless, one of the major successes of conservation policies in North Africa. The animals that appear across all four corpora - the donkey, the camel, the mule, the goat, and the stork - share two common characteristics: their proximity to human activities and their immediate recognizability as visual symbols. Conversely, the species that remain absent from the shared iconographic repertoire possess the opposite characteristics: they are less integrated into everyday spaces and less immediately recognizable as emblems of the tourist imagination.

Why is that? Because endangered species do not perform exoticism efficiently. They require explanation, and explanation is friction. Knowledge, as Todorov reminds us through Berghahn, is incompatible with exoticism (Berghahn 2024). The macaque is interesting only if you know what a macaque is; the donkey in the alley is immediately legible to any viewer, anywhere, as a sign that Morocco is somewhere strange and somewhere worth photographing. The intermedial corpus selects for legibility. Ecological significance travels badly. Charm travels light. The conservation cost of this selection is direct: destination awareness is a precondition of ecotourism demand, and species that never enter the circulating image repertoire generate neither visitation revenue nor the public constituency that funds their protection. Morocco's flagship biodiversity assets are, in effect, locked out of the country's own destination image by a century of animal signs that were never chosen with conservation in mind.

4. Discussions

What does this analysis change? Two key contributions can be identified, in order of increasing significance, each with direct implications for tourism management.

First, regarding studies on exoticism and destination image. The corpus confirms the fundamental paradox that Daniela Berghahn borrows from Tzvetan Todorov: exoticism thrives on the surface of things, because in-depth knowledge tends to dispel it. This study, however, refines this observation by showing that the animal sign may be the most effective surface for producing this effect. A donkey in an alleyway immediately catches the eye without requiring dialogue, raises no particular controversy, needs no actors, and becomes outdated less quickly than costumes or linguistic codes. It also effortlessly crosses all the boundaries imposed by image-sharing platforms. While the stereotyping of people - as analyzed by Stuart Hall - is now facing growing ethical and commercial resistance, the stereotyping of animals continues almost unchallenged. In other words, otherness has been transferred to animals. Critics have paid little attention to this shift, as has the management of tourist destinations. Consequently, an assessment of Morocco's organic image that catalogs monuments and landscapes without considering animal iconography evaluates a heritage that is representative of Morocco's organic destination image that inventories monuments and landscapes, but not animal iconography is measuring the wrong asset register.

Second, for Morocco. Every foreign image-maker who reaches for the donkey reinforces a visual economy in which Moroccan cultural producers must work against their own country's image inventory - an inventory compiled elsewhere, for other audiences, over a century. Tazi's weariness is instructive here; the "mercenary activity" of servicing foreign shoots grew "monotonous" precisely because the foreign imagination kept ordering the same Morocco: "the south, tents, camels, folklore" (Tazi qtd. in Dwyer 2004). Even the *National Geographic Traveler* concedes the asymmetry: "foreign directors concentrated on showcasing the country's exoticism," while 'Moroccan filmmakers focused more on contemporary social issues' (French 2011). The observation of Higbee, Bahmad, and Martin that foreign productions offer "little meaningful engagement with Moroccan culture" (Higbee, Bahmad, and Martin 2020) describes a structural condition rather than a lapse of individual taste. The corollary is the subject of the conclusions: the condition is structural, but structures can be managed, and Morocco holds more leverage over its image supply chain than it currently exercises.

Conclusions and Further Research

A loaded pack animal crosses the foreground of an 1836 engraving (Figure 3). A man riding a donkey passes through a doorway in a painting by Churchill (Figure 1). An alley is described in terms of "donkey-widths," while a macaque appears only during a pleasant hike, and a stork perches atop the ruins of a palace next to a caption celebrating the survival of traditions (Figure 2). A man holds a goat in his arms in soft light, while a Western traveler

passes through his world (Figure 4). A newspaper uses picturesque imagery to call for the revival of tourism after an earthquake (Figure 5); a magazine interprets a mule on a road as the return of the past to the present (Figure 6); a tour operator presents the donkey as “the soul of the country” (Figure 7); models pose in front of camels in an auction house catalog (Figure 8); a tourist’s Instagram photo becomes inspiration for the next traveler (Figure 9); and two hundred twenty-two photographs of donkeys await licensing in a stock photo database under the keyword “Marrakech” (Figure 10). A single archive. Four collections. Nearly two centuries. At the center of each of these images, the animal tirelessly fulfills the same discreet function: to authenticate the “elsewhere,” to reassure the viewer of their own modernity, to evoke just enough wonder to keep knowledge at a distance, and, in doing so, to help construct the destination image on which Morocco’s inbound tourism now runs.

If we were to remove the donkey from this alley, would Morocco still seem exotic enough to justify the trip? The answer is, in all likelihood, no. This is precisely where the challenge lies, but it is also the point at which the question of management becomes an ethical one. Dean MacCannell, whose concept of “staged authenticity” has informed the discussion throughout this article, revisits this issue in a later work, asserting that tourism falls within the realm of ethics: every gaze cast by a tourist establishes an ethical relationship with what is being observed, whether or not it was intentionally conceived (MacCannell 2011). A destination whose organic image is based on animal symbols it did not choose itself may certainly decide to manage this iconography as a strategic asset. Nevertheless, it may also reflect on the effects this iconography has on the human beings and animals it represents. The two recommendations set forth below, addressed to the Moroccan National Tourist Office (ONMT), the Moroccan Cinematographic Center (CCM), and the national park management authorities, prioritize this second perspective by outlining the contours of a genuine ethics of the tourist gaze.

First, “co-temporality” should be adopted as the guiding principle of an ethics of the image. The results of this study all point to the same conclusion: for nearly two centuries, international representations of Morocco have deprived their subjects - both human and animal - of their contemporaneity. The shepherd is frozen in a timeless pastoral scene; the mule is presented as a relic of a bygone era; agriculture is described as “still” traditional; “ancient customs” are said to have “survived.” Specifically, the ONMT and the CCM could adopt an ethical charter for visual imagery, inspired by the codes of dignity that have profoundly transformed the portrayal of humanitarian work. This charter would provide a framework for national communication campaigns and would serve as a requirement for audiovisual productions to receive institutional support. Its evaluation criteria would not focus on the number of camels or donkeys appearing on screen, but rather on how they are portrayed. The person photographed or filmed should be identified or at least depicted as part of a living present; the working animal should appear in the context of its owner and their livelihood; captions should avoid a timeless tone, eschewing expressions such as “unchanged,” “the soul of...,” or any other phrasing that traps Morocco in a suspended state of time. It is important to clarify that this approach does not condemn either the beauty of the landscapes or their picturesque nature. What is at issue is not aesthetics, but the temporal exile imposed on the people depicted. An image adheres to this principle when it does not assume that a Moroccan must belong to another century in order to meet the viewer’s visual expectations. While Stuart Hall has shown that stereotypes freeze difference in place, a framework based on co-temporality is precisely the tool that can break this freeze by intervening at the very site of production, where this process originates.

The bald ibis colonies of Souss-Massa, along with interpretive guidance capable of providing precisely what exoticism cannot tolerate - knowledge. The guide identifies the shepherd, explains how the argan economy works, and describes the species’ conservation status. Todorov’s paradox, drawn upon throughout this article, is thus reversed: when knowledge replaces mere spectacle, exoticism fades and gives way to a more fruitful relationship - that of an encounter between contemporaries. It should be emphasized that this approach is in no way a matter of commercial naivety. An ethical encounter now constitutes a recognizable tourism offering, one that is reputable and increasingly valued by the market. However, it is important to clearly state the priority: the primary justification is not profitability. Certain realities should not be commodified, even when they sell: the exhausted animal turned into a photographic prop or the human being reduced to a mere folk costume. Tourists will, in any case, continue to photograph Morocco. The real question - one over which Moroccan stakeholders have the power to act - is whether their camera lens will capture mere scenery or a living reality.

Declarations

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Credit Authorship Contribution Statement:

Mohammed Ajrinija: Conceptualization, Investigation, Methodology, Formal analysis, Writing – original draft, Writing – review and editing.

Kamal El Fouadi: Supervision and Reviewing.

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Understanding the Attitude-Behaviour Gap in Pro-Environmental Actions: The Influence of Knowledge and Norms



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Abstract: To determine how the relationship between pro-environmental attitudes of consumers representing Generation Z and their pro-environmental behaviours is moderated by two selected predictor variables: (a) knowledge, (b) social norms, and legal norms.

Survey research using the CAWI method was conducted in Poland on a sample of 492 respondents - representatives of Generation Z.

Neither knowledge nor social and legal norms moderate the relationship between pro-environmental attitudes and behaviours of consumers representing Generation Z. Therefore, they cannot be attributed with responsibility for reducing the gap between these two elements. However, the two predictor variables mentioned above directly strengthen pro-environmental behaviours. The significance of these variables in explaining the size of the attitude-behaviour gap is moderate; however, the achieved research results allow for drawing essential conclusions of an application nature.

Knowledge, social norms, and legal norms are significant determinants that can shape consumer attitudes and behaviours, but they are not important enough in minimising the gap between these two elements concerning Generation Z consumers and in the context of environmental protection and well-being. We conclude that their direct impact on the pro-environmental behaviour of consumers may be only short-term.

Keywords: behaviour gap; pro-environmental attitude; pro-environmental behaviour; social and legal norms, pro-environmental knowledge.

JEL Classification: M14; M31; D12; Q01.

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Introduction

Scientists have been trying to understand for many years how the gap between consumer attitudes and behaviours is shaped, identifying factors that reduce it and subjecting it to in-depth cause-and-effect analyses. These considerations are usually based on Ajzen's theory of planned behaviour (Ajzen, 1991). Various variables and their direct or moderate impact on the attitudes and behaviours of the individuals studied have been studied many times (Tofighi and Jacson, 2022; Wys *et al.* 2022; Liu 2010). Although some of the researchers' findings are contradictory, most are complementary, thanks to which the current state of knowledge on this subject can be considered satisfactory. However, it is certainly not sufficient, because, for example, intergenerational differences are currently

so significant that the widespread knowledge about the attitudes or behaviours of representatives of Generation X or Y cannot be generalised to younger consumers from Generation Z. This intergenerational difference, both in attitudes and behaviours, is so large that it has never been recorded before. For this reason, it is justified to conduct research that could identify determinants shaping the attitudes and behaviours of young people and determine variables that can moderate them. A crucial, current and interesting area of this research is the gap between pro-ecological attitudes and behaviours of consumers representing Generation Z. Concern for well-being and the natural environment is of particular interest to this generation, and it is also part of the general, global discourse on the need to care for our planet. The article aims to determine how the relationship between pro-ecological attitudes of consumers representing Generation Z and their pro-ecological behaviours is moderated by two selected predictor variables: knowledge, social and legal norms. The choice of such predictors resulted from a review of the literature devoted to the analysis of determinants conditioning consumer attitudes and behaviours in the area of ecology and environmental protection (Kukkonen *et al.* 2018; Wang *et al.* 2018; Kaiser and Fuhrer 2003; Gurbuz and Pzkan, 2019). The conclusions from the studies conducted so far did not lead the researchers to a clear position or were based on too little in-depth research, which is why the authors of this article decided to adopt the variables as mentioned above.

The following research questions were prepared for the purpose formulated in this way:

Q1: To what extent does knowledge directly shape the pro-ecological behaviour of Generation Z consumers?

Q2: To what extent do social and legal norms directly shape the pro-ecological behaviour of Generation Z consumers?

Q3: How strong is the moderation of knowledge, social and legal norms on the relationship between attitudes and pro-ecological behaviour of Generation Z consumers?

1. Research Background

Attitude-Behaviour Gap

The gap between consumers' attitudes and their actual behaviour toward specific products or phenomena is widely reported in the literature. This gap is often referred to as the "attitude-behaviour gap". When considering the impact of attitudes on consumer behaviour, it is usually observed that a positive attitude toward a particular product does not necessarily match consumers' actual behaviour. This is because mediating variables effectively weaken the relationship between consumers' attitudes and behaviour. In the literature, economic constraints, situational factors, social norms, subjective norms, etc., are often cited among the intervening factors. The "attitude-behaviour gap" is also clearly emphasised in situations associated with "green" choice (Zaikauskaitė *et al.* 2022). This gap highlights the inconsistency where individuals' positive attitudes toward the environment do not always translate into proper behaviours. In the literature, we find various factors that determine the gap between consumer attitudes and behaviours.

Many authors emphasise the importance of socioeconomic and demographic factors (*i.e.*, Tofighi and Jackson, 2022; Sheasby and Smith, 2023), personal norms, and environmental responsibility. However, these factors significantly influence behavioural intentions rather than directly influencing behaviours (Liu, 2010). Research indicates that pro-environmental attitudes correlate more with behaviour when personal costs are low and environmental benefits are high. When pro-environmental actions are associated with higher costs or lower benefits, these attitudes are less likely to be translated into specific behaviours (Wyss *et al.* 2022). In a study conducted by Liu (2010), most respondents considered environmental elements from the standpoint of their health and safety rather than actual concern for the environment. They prioritised those pro-environmental behaviours (PEBs) that could bring economic benefits. Interesting studies indicate the moderating role of cultural values and their influence on pro-environmental consumer behaviour (Chwialkowska *et al.* 2020). In their study, the authors showed how cultural values could influence the relationship between environmental concern and pro-environmental behaviour, thereby moderating the gap between intentions and behaviour.. A Hu *et al.* (2025) study examined the impact of climate change perception (CCP) on PEBs. It determined the role of climate knowledge (CL) in bridging the gap between attitude and pro-environmental behaviour. These studies showed that individuals often have excellent intentions to behave more pro-environmentally but rarely transform them into actual behaviour. Also important is the role of environmental education, which frequently promotes pro-environmental attitudes but does not encourage appropriate behaviour (Redondo and Puelles, 2017). Policies that provide economic incentives and support for pro-environmental activities enable individuals to act following their positive attitudes. It is the fact that individuals perceive tangible benefits that can narrow the gap between attitude and behaviour (Luh *et al.* 2023; Recio-Roman *et al.* 2024). Researchers also emphasise the role of psychological factors in moderating the gap

between pro-environmental attitudes and behaviour. Individuals often act under the influence of convenience, social norms, routine, or emotion, which can override their statements (Gifford, 2011). In addition, research indicates that people with higher self-control are more likely to take pro-environmental actions, even if they are not immediately beneficial.

Pro-Environmental Knowledge

Pro-environmental knowledge is an interdisciplinary concept that covers diverse areas such as nature, environmental ecology, social sciences, and human ecology (Kukkonen *et al.*, 2018). Pagiaslis and Krontalis (2014) define environmental knowledge as the ability to understand concepts, facts, and relationships about the environment. Therefore, pro-environmental knowledge might be determined as awareness and understanding of environmental problems and possible ways to address them (Zsóka *et al.* 2013). Environmental knowledge may generally be defined as any information that affects people's environmental attitudes and their participation in pro-environmental behaviours (Kollmuss and Agyeman, 2002). Knowledge about the environment is a key element needed to undertake pro-ecological actions. It is difficult to make informed decisions and implement solutions that are beneficial to nature when we lack the appropriate information or when our knowledge is incomplete (Levine and Strube, 2012).

Consumers' environmental knowledge encompasses a variety of issues related to the environment, relevant relationships and influences, and the capabilities of the environmental system (Težak Damijanić *et al.* 2023; Wang *et al.* 2018). Research on this knowledge distinguishes between its two types: objective and subjective (Tassiello and Tillotson, 2020; Casalo *et al.* 2019), as well as general and contextual knowledge (Taufique *et al.* 2017). Subjective knowledge refers to what consumers consider to be their knowledge, while objective knowledge refers to the actual state of knowledge on a given topic (Taufique *et al.* 2019). Furthermore, consumers may have general knowledge on specific issues, which fits into the definition of consumers' contextual environmental knowledge (Težak Damijanić *et al.* 2023). Moreover, researchers such as Liefänder and Bogner (2018), Kaiser and Fuhrer (2003), and Nahavandian *et al.* (2022) have identified several types of pro-environmental knowledge. They distinguish systematic knowledge, action-related knowledge, and effective or affective knowledge. Previous research has yielded mixed results regarding the direct and indirect relationships between knowledge and attitude and between knowledge and behaviour in the pro-environmental sphere (*i.e.* Kaiser and Fuhrer, 2003; Ajapas and MbLellan, 2015). Some researchers indicated that environmental knowledge had a positive effect on pro-environmental attitudes (*i.e.* Gurbuz and Ozkan, 2019; Varoglu *et al.* 2018) and pro-environmental behaviour (*i.e.* Levine and Strube, 2012; Pothitou *et al.* 2016). However, Erhabor and Don (2016) found a negative relationship between knowledge and pro-environmental attitude. In contrast, Paço and Lavrador (2017) found no relationship between pro-environmental knowledge and attitude, nor between knowledge and behaviour. Their study also indicated weak relationship between attitude and behaviour (Nahavandian *et al.* 2022).

In the existing literature on pro-environmental behaviour, we observed a vital role of the analysis of the impact of pro-environmental knowledge (EC) on the attitudes and actions of individuals. Many empirical studies focus on assessing the actual relationship between the level of knowledge and the willingness to take action to protect the environment (*e.g.* Bamberg and Möser, 2007; Kaiser and Fuhrer, 2003). However, researchers note that knowledge alone is not always sufficient to induce a change in behaviour. Its impact is sometimes mediated by other factors, such as social and legal norms, personal values, or a sense of agency (Kollmuss and Agyeman, 2002; Steg and Vlek, 2009). A positive environmental attitude does not necessarily translate into pro-environmental behaviour, as various barriers may intervene between attitudes and actions. From this perspective, perceiving knowledge as an important resource for identifying and implementing appropriate pro-environmental actions may strengthen the translation of positive attitudes into actual behaviour. This might suggest that the perceived motivational role of knowledge may influence the strength of the attitude–behaviour relationship, which warrants empirical examination. Although the impact of knowledge on pro-environmental behaviour has been widely studied in the literature, little attention has been paid to how respondents perceive the potential impact of their knowledge on their attitudes and actions. Previous studies only marginally address this aspect, usually in the form of declarations that lack of knowledge is a barrier to action (*e.g.* Heimlich and Ardoin, 2008), rarely treating this issue as a topic for deeper analysis. Thus, a significant research gap can be indicated: the lack of in-depth knowledge about whether and to what extent respondents perceive environmental education as a potentially effective way of motivating them to pro-environmental actions. Importantly, the concept of knowledge examined in the present study differs from the objective or subjective level of environmental knowledge typically assessed in previous research. Rather than measuring respondents' actual or perceived level of environmental knowledge, this study focuses on how respondents perceive knowledge as a factor that may motivate pro-environmental behaviour.

Social and Legal Norms

Ajzen's Theory of Planned Behaviour (TPB) (Ajzen, 1991) emphasises that social norms play a key role in shaping behavioural intentions. These norms can be divided into two categories: descriptive norms, which refer to what people usually do, and injunctive norms, which indicate what behaviours are perceived as socially acceptable. Numerous studies have demonstrated the significant influence of social contexts on shaping pro-environmental behaviours, especially through the influence of peer groups and community involvement. It is well documented that the way individuals perceive others' support for environmental values has a significant influence on their own pro-environmental attitudes and behaviour (Saracevic *et al.* 2021; Zhang and Cao, 2025). Making people aware of how important environmental protection is to others significantly motivates them to take positive action to protect the planet (Bouman *et al.* 2021; Croes and Bartels, 2021). Some researchers, especially those representing cognitive-behavioural approaches, emphasise the significant influence of social norms – both descriptive and injunctive – on shaping action intentions (e.g., Cialdini, 1990). That is especially visible in situations characterised by uncertainty or little knowledge. However, according to Zhang *et al.* (2023), the moderating effect of social norms on the relationship between environmental group identification and pro-environmental behaviour in the private sphere was found to be insignificant. The study found that social norms have a positive effect on the relationship between group identification and behaviour in the public sphere, but they do not translate into actions in the private sphere. This finding enriches the previous research of Fritzsche *et al.* (2018). Zhang *et al.* (2023) suggest that behaviour in the public sphere is often expressed collectively, making social norms play a more significant role in this context, in line with the social identity theory of pro-environmental behaviour. Another possible reason for this phenomenon is the intimate nature of private behaviours, which are not easily visible to other group members, even when these behaviours are contrary to the norms prevailing in the community. Moreover, Schultz *et al.* (2007) indicate that social norms have a limited influence in the case of people guided by internal values, especially in the context of behaviours requiring commitment or sacrifice. In these models, personal norms and moral beliefs play a greater role than peer pressure. If the social environment supports pro-environmental behavior, norms can facilitate the translation of positive attitudes into actual action. However, when the environment does not support such behavior, positive attitudes may remain at the declarative level. In this way, social norms can influence not only the behavior itself but also the strength of the relationship between attitude and behavior.

In view of this theoretical discrepancy, our study opted for an empirical approach that focused on how respondents perceived the influence of social norms on their pro-environmental attitudes and behaviours. Analysing this subjective perspective allows for understanding not only the presence of these norms in an individual's social environment, but also their willingness to respond to them.

In his theoretical considerations, Sunstein (2000) points out that legal norms not only regulate behaviour, but also influence the shaping of social norms and cultural signals. Some scientific studies analyse the influence of legal norms, such as laws and regulations, on individuals' ecological attitudes and behaviours. However, it should be noted that they are much fewer in number and theoretically and empirically less developed compared to studies on the influence of social norms. For example, studies on waste separation in Denmark have shown that introducing a legal obligation leads to greater compliance with the rules. However, this internal recognition of the rules as correct only occurs over time (Thøgersen, 2023). Dietz *et al.* (1998) showed that legal interventions can influence behaviours, but not necessarily attitudes. As a result, once they are over, the effects may tend to regress. Regulations might facilitate the implementation of pro-environmental attitudes by creating obligations, restrictions, or conditions conducive to action; or conversely, a lack of regulation might prevent positive attitudes from being translated into behaviour. This indicates that legal norms may directly influence pro-environmental behaviour while also shaping the extent to which pro-environmental attitudes translate into behaviour.

Based on the literature review, we noticed that the perceived impact of future regulations on pro-environmental behaviour of individuals seems to be under-researched. Some studies focus on analysing the effects of already implemented policies, while rarely considering how expectations regarding future regulations may affect pro-environmental intentions and behaviour. A significant research gap exists in understanding how individuals' expectations regarding future legal regulations may affect pro-environmental attitudes and behaviours.

2. Materials and Methods

The research group consisted of Polish students representing different universities. Participation in the study was completely voluntary, and participants' personal data security was fully ensured. Information was collected using the CAWI (Computer-Assisted Web Interviewing) method. The online survey included data on the socio-demographic characteristics of the respondents and research elements taken from the literature. The survey was targeted at one group - Generation Z. The sample consisted of 492 participants; a slight majority were women

(58,3%). The age of the subjects was $M = 21.84$ ($SD=4.50$). The largest proportion of respondents lived in large cities with a population of more than 500,000 (56.5%), while 21.5% lived in rural areas. The remainder lived in cities of varying sizes. The vast majority of respondents had secondary education (81.5%), followed by higher education (15.7%). In contrast, 3.8% of respondents had primary or vocational education. Respondents assessed their material living conditions positively - 48.6% of respondents described their situation as good, 29.5% as satisfactory and 19.5% considered their situation as very good. Only 2.4% of respondents described it as unsatisfactory.

Consistent with the previous section's description, the following constructs were used for the study: Pro-environmental attitudes, Pro-environmental behaviours, Knowledge, and Social and Legal Norms.

Pro-environmental attitudes were assessed using five items, measured on a five-point Likert scale. An example item is: "Excessive consumption of goods by humans contributes to environmental and climate-related problems." The reliability of this scale, measured by Cronbach's alpha, was 0.834, indicating a good level of internal consistency.

Pro-environmental behaviours were examined using five items, which assessed the extent to which individuals engage in environmentally friendly actions such as saving electricity and water, reducing food waste, and recycling waste. The reliability analysis demonstrated that the construct had an acceptable level of internal consistency, with Cronbach's alpha = 0.778.

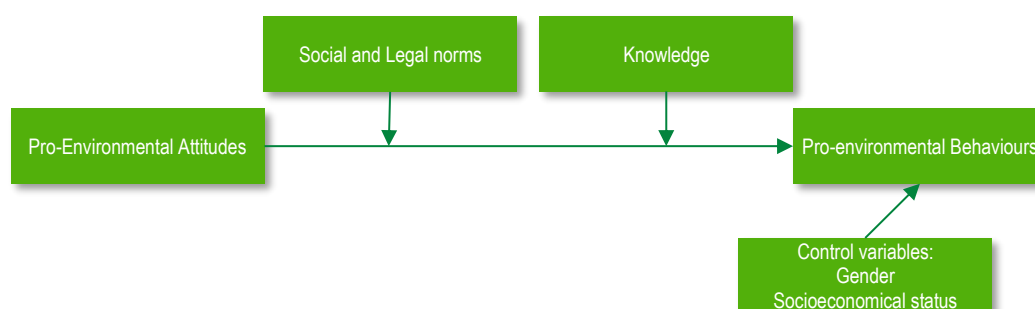
Social and Legal Norms reflect beliefs about the motivational role of the potential impact of social and legal norms on an individual's behaviour. Social norms were assessed using four items, measured on a five-point Likert scale (where 1 = Strongly Disagree and 5 = Strongly Agree). An example item measuring social norms was: "The pro-environmental and sustainable behaviours of people in my surroundings would encourage me to care more about the environment." An illustrative item related to legal norms was: "The introduction of financial regulations, such as an environmental tax for the lack of pro-environmental behaviour, would motivate me to act more sustainably." The reliability analysis indicated that the scale had an acceptable level of internal consistency, with Cronbach's alpha = 0.771.

Knowledge reflects beliefs about the motivational role of knowledge rather than an individual's actual level of knowledge. Knowledge construct was assessed using three items, measured on a five-point Likert scale (where 1 = Strongly Disagree and 5 = Strongly Agree). The items focused on factors encouraging socially responsible behaviours, such as "Greater knowledge about the impact of my lifestyle on the natural environment motivates me to act more responsibly." The reliability analysis indicated a good level of internal consistency, with Cronbach's alpha = 0.847.

3. Research Methodology

The analysis aimed to examine whether the perceived motivational role of knowledge and social and legal norms moderate the relationship between pro-environmental attitudes and pro-environmental behaviours. Gender and socioeconomic status were included as control variables. The structure of the analysed model is presented in Figure 1.

Figure 1. Research model



Source: own elaboration.

The analysis was conducted using the PROCESS macro (version 4.2) for SPSS (version 29). A standard bootstrapping procedure with 5,000 resamples was applied to ensure robust estimations. Since a key objective of the study was to examine the moderating effect of selected variables, all predictors were mean-centered prior to analysis. This decision was driven by the need to reduce multicollinearity and enhance the interpretability of interaction effects. Without centering, the main effect of the independent variable would be interpreted at a moderator value of zero, which in many cases may not be a realistic reference point (Hayes, 2017).

4. Research Results

The correlation coefficients between the variables are presented in Table 1.

Table 1. Correlation coefficients between variables

	Pro-Environmental Attitudes	Pro-environmental Behaviours	Knowledge	Social and Legal Norms
Pro-Environmental Attitudes	1	.350**	.203**	.200**
Pro-environmental Behaviours	.350**	1	.335**	.311**
Knowledge	.203**	.335**	1	.674**
Social and Legal Norms	.200**	.311**	.674**	1

**Significant correlation at the 0.01 level (two-tailed). N=492

Source: own elaboration.

The correlation between pro-environmental attitudes and pro-environmental behaviours is at most moderate. This suggests the presence of an attitude-behaviour gap, indicating that pro-environmental attitudes do not always translate directly into corresponding behaviours.

Correlation coefficients provide only preliminary insights into the relationships between variables and do not account for interaction effects. Therefore, a model, as depicted in Figure 1, was tested.

The model was statistically significant ($F = 16.02$, $p < 0.001$) and explained approximately 21% of the variance in pro-environmental behaviours ($R^2 = 21.38$), what corresponds to Cohen f^2 of approximately .272. This value indicates a moderate-to-large overall effect. This level of explained variance can be considered moderate, given that R-squared values in social sciences are often relatively low (Ozili, 2023). Notably, published studies report models explaining as little as 4.3% of the variance in the criterion variable (e.g. Jacobson and Gruz, 2020).

The analysis results are presented in three sections. The first section presents the main effects of the predictors. The second section reports the main effects of the control variables. The third section focuses on the interaction effects.

Main effects. The influence of independent variables on pro-environmental behaviours is summarised in Table 2.

Table 2. Main effects of the research model

Variable	B	SE	t-value	p-value	Lower LLCI	Upper ULCI
Pro-Environmental Attitudes	0.2784	0.0405	6.869	<0.001	0.1988	0.3580
Knowledge	0.1677	0.0470	3.568	0.0004	0.0754	0.2601
Social and Legal Norms	0.11071	0.0481	2.301	0.0218	0.0162	0.2052

Source: own elaboration.

The findings indicate that all three predictor variables significantly impacted the criterion variable. Pro-environmental attitudes had a significant and positive effect on pro-environmental behaviours ($B = 0.2784$, $t = 6.869$, $p < 0.001$). This suggests that individuals with stronger pro-environmental attitudes are more likely to engage in environmentally friendly behaviours. Knowledge also exhibited a significant and positive effect ($B = 0.1677$, $t = 3.568$, $p < 0.001$), indicating that individuals with greater beliefs in the motivational role of knowledge tend to adopt more sustainable practices. The path coefficient for social norms was also statistically significant ($B = 0.1107$, $t = 2.301$, $p < 0.05$). This result suggests that individuals who perceive stronger social pressure to act sustainably are more likely to engage in pro-environmental behaviours.

Table 3. Impact of control variables on pro-environmental behaviour

Variable	B	SE	t-value	p-value	Lower LLCI	Upper ULCI
Gender	-0.0137	0.0673	-0.204	0.8383	-0.1460	0.1185
Socioeconomic status	0.0659	0.0419	1.570	0.1170	-0.0166	0.1483

Source: own elaboration.

Effects of Control Variables. Table 3 presents the influence of control variables on pro-environmental behaviours. The results indicate that none of the control variables - gender or socioeconomic status - significantly impacted pro-environmental behaviours. In all cases, the confidence interval included zero, suggesting that these factors do not play a meaningful role in shaping pro-environmental behaviour within the analysed model.

Interaction Effects. The final section of the analysis presents the interaction effects between pro-environmental attitudes and knowledge, as well as pro-environmental attitudes and social norms on pro-environmental behaviours. The results, summarised in Table 4, indicate that both interactions were statistically non-significant.

Table 4. Impact of interactions effects on pro-environmental behaviour

Variables	B	SE	t-value	p-value	Lower LLCI	Upper ULCI
Pro-Environmental Attitudes x Knowledge	-0.0299	0.0590	-0.5070	0.6124	-0.1458	0.0860
Pro-Environmental Attitudes x Social and Legal Norms	0.0505	0.0511	0.9883	0.3235	-0.0499	0.1510

Source: own elaboration.

The interaction between environmental knowledge and pro-environmental attitudes was not significant (R^2 -change = 0.0004, $p = 0.6124$). This suggests that beliefs in the motivational role of knowledge neither strengthens nor weakens the relationship between pro-environmental attitudes and behaviours. It is important to emphasise that these findings refer specifically to interaction effects. The previously reported main effect of knowledge (presented in Table 2) confirms its direct influence on pro-environmental behaviours, but the lack of interaction implies that knowledge operates independently from attitudes in shaping behaviours.

Similarly, the interaction between social norms and pro-environmental attitudes was non-significant (R^2 -change = 0.0016, $p = 0.3235$). This means that social norms do not moderate the relationship between attitudes and pro-environmental behaviours. However, as observed in the case of knowledge, social and legal norms exhibited a direct effect on pro-environmental behaviours, as previously reported.

Taken together, both interaction terms accounted for an additional $\Delta R^2 = .0016$ (approximately 0.16% of the variance). The consequent incremental effect size was $f^2 \approx .002$, representing a negligible moderation effect. Thus, the absence of statistically significant interactions was supplemented by very small effect sizes.

These findings suggest that while knowledge and social norms directly shape pro-environmental behaviours, they do not interact with pro-environmental attitudes to enhance or diminish their influence. This highlights the independent contribution of these factors in explaining pro-environmental behaviour.

5. Discussions

As we have shown earlier, numerous scientific studies have proven that the direct relationship between attitudes and behaviours of individuals in the pro-ecological sphere is not always strong. Based on a literature review, the search for factors moderating this relationship led us to choose perceived knowledge and social and legal norms, which we made predictors in our study. It turned out that both perceived knowledge and social and legal norms directly strengthen pro-ecological behaviours of consumers, but do not strengthen the attitude-behaviour relationship. We believe that the expected and desired pro-environmental behaviour of an individual will be permanent when its source is the correct, previously adopted attitude. As our research has shown, neither knowledge nor social and legal norms strengthen the analysed attitude-behaviour relationship. This may suggest that pro-ecological behaviours shaped in this way are not or do not have to be permanent. They can only become visible when the analysed predictors are essential for consumers. However, they do not strengthen pro-ecological attitudes, which are more important from the view of sustainability, or the relationship between attitude and behaviour, which would be more beneficial and could result in long-term effects. Another explanation for the results of our research may be that knowledge and social and legal norms may influence pro-ecological attitudes and thus precede the formation of attitudes, but are not a moderating factor. This is typical for models based on the theory of reasoned action.

Conclusions and Further Research

The research we conducted allowed us to achieve our goal and obtain answers to the research questions. The results of our research support and supplement the state of current knowledge on the attitude-knowledge relationship and the determinants that stimulate it.

Regardless of the form it takes, knowledge shapes consumer awareness, although, as has been proven many times, it does not have to translate into a change in attitude, or even more so, behaviour. Social norms developed and established in interpersonal relations encourage consumers only to behave according to their duties, *i.e.*, to act according to what others expect. These behaviours may be contrary to internal beliefs, which is why they are impermanent and insufficient, also in the context of the generally understood problem of protecting the natural environment. On the other hand, legal norms, if respected, lead to acting according to the letter of the law, but not necessarily under one's own beliefs. This effect is also insufficient when we consider the concern for the condition of our natural environment.

Without denying the importance of knowledge, social norms, and legal norms, it is worth emphasising that institutions or companies responsible for shaping pro-ecological behaviours of Generation Z consumers should look for other means and tools of influence. Identification of further factors that may determine the relationship between pro-ecological attitudes and behaviours and their in-depth analysis may lead to the identification of variables that will become more important tools for shaping lasting, pro-ecological attitudes of consumers. For this reason, further research in this area is most desirable.

This also stems from the limitations of our study, which fall into two categories: substantive and technical. Our research did not account for the sources of knowledge that shape consumer awareness. We hypothesize that such sources may influence the subsequent formation of beliefs regarding pro-environmental behaviors; therefore, incorporating this element into future studies could reveal further interesting relationships. Another avenue for further exploration is how the people in a consumer's social circle relate to legal regulations. While familiarity with legal regulations was part of our study, we did not examine how the compliance - or non-compliance - of those close to them with these regulations affects the behavior of Generation Z consumers. This also appears to be an interesting angle for further investigation of the topic. Regarding the technical limitations to consider when interpreting the results, these include: the composition of the study sample (respondents were exclusively members of Generation Z), the use of a custom-designed questionnaire, the scope of the study (limited to a single country), and the purposive sampling method.

Declarations

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Credit Authorship Contribution Statement:

Anna Jasiulewicz: Conceptualization, Investigation, Methodology, Writing – original draft, Supervision, Writing, review and editing, Visualisation

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Tomasz Wanat: Writing, Data curation, Validation

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From Sacred Symbol to Circular Consumption: Bulus Symbolism and Thrifting Behavior Among Coastal Muslim Youth in Java



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Abstract: This paper examines the relationship between local cultural symbolism, eco-spiritual awareness, and sustainable consumption behavior through the case of thrifting practices among coastal Muslim youth in Java. While previous studies on second-hand fashion primarily focus on economic motivation, youth identity, and circular economy, limited research explores how local religious-cultural symbols influence ecological behavior. This study proposes that the reinterpretation of the bulus symbol associated with the heritage of Demak can function as an eco-spiritual narrative encouraging circular consumption and anti-waste ethics. Using a mixed-methods approach, this research combines semiotic interpretation, discourse analysis, participant observation, and survey data from young thrift consumers in Central Java. The findings reveal that thrifting is not merely an economic activity but also a moral and symbolic practice linked to modesty, anti-excess consumption, environmental care, and ethical reuse. The paper argues that cultural symbols rooted in Islamic-Javanese heritage can become important instruments for sustainability communication and ecological behavior transformation. The study contributes to the growing discourse on sustainable fashion, circular economy, environmental communication, and eco-spirituality by introducing the concept of eco-spiritual circular behavior. It also demonstrates how local cultural heritage can be mobilized as a practical sustainability framework in contemporary youth culture.

Keywords: bulus symbolism; thrifting; circular fashion; eco-spirituality; sustainable consumption; coastal Java; environmental communication.

JEL Classification: Q01; Q53; D12; Z12; Z13.

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Introduction

The global fashion industry has emerged as one of the most environmentally intensive sectors, generating substantial carbon emissions, water pollution, textile waste, and excessive resource consumption. The rapid expansion of fast fashion has accelerated production and consumption cycles by encouraging consumers to purchase inexpensive garments that are frequently discarded after only a short period of use. This linear "take–make–dispose" model has intensified ecological degradation and contributed significantly to the global sustainability crisis. Consequently, the transition toward more sustainable patterns of production and consumption has become a central concern in contemporary environmental discourse.

In response to these challenges, circular fashion has gained increasing attention as an alternative approach that extends product lifecycles through practices such as reuse, repair, resale, upcycling, and second-hand

consumption. Among these practices, thrifting has evolved beyond its traditional association with economic necessity into a widely accepted lifestyle among younger generations. Previous studies suggest that many young consumers now perceive second-hand fashion as an expression of ethical consumption, environmental responsibility, and opposition to the culture of overconsumption promoted by fast fashion. Through reducing textile waste and extending garment usability, thrifting has become an important component of circular economy strategies within the fashion sector.

Despite the growing body of research on sustainable fashion, existing scholarship has primarily examined thrifting from perspectives of consumer behavior, purchasing intention, economic motivation, fashion identity, and environmental awareness. While these studies have enhanced understanding of why consumers adopt second-hand fashion, they generally conceptualize sustainable consumption through economic, psychological, technological, or policy-oriented frameworks. Comparatively little attention has been devoted to the ways local cultural heritage, religious symbolism, and indigenous knowledge systems shape environmental values and sustainable consumption practices. As a result, the cultural and spiritual dimensions of circular fashion remain insufficiently explored, particularly within non-Western societies where sustainability is often embedded in collective traditions and moral worldviews.

This limitation is especially relevant in coastal Java, where Islamic heritage and local cultural symbols continue to influence social norms, community identity, and everyday ethical practices. One of the most distinctive cultural symbols is the *bulus* (softshell turtle), historically associated with the establishment of the Great Mosque of Demak through the Javanese *candra sengkala* tradition. Although the *bulus* has predominantly been interpreted as a historical and religious marker, its symbolic meanings also encompass values closely related to ecological harmony, humility, moderation, resilience, and respect for nature. These meanings provide opportunities to reinterpret the *bulus* as an eco-spiritual symbol capable of connecting cultural heritage with contemporary sustainability challenges.

Building upon this perspective, this study argues that the symbolic reinterpretation of the *bulus* offers an alternative cultural pathway for understanding circular fashion. Rather than viewing thrifting solely as an economically rational or environmentally conscious activity, this research proposes that second-hand fashion among coastal Muslim youth may also represent an eco-spiritual practice grounded in religious ethics, cultural identity, and moral responsibility. Within this perspective, sustainable consumption is expressed through principles of simplicity, anti-waste behavior, moderation, reuse, and collective stewardship toward both society and the environment.

Accordingly, this study introduces the concept of eco-spiritual circular behavior, referring to sustainable consumption practices motivated not only by environmental awareness but also by symbolic, cultural, and spiritual values embedded in local heritage. This concept extends existing discussions of circular fashion by integrating eco-spirituality and cultural sustainability into the analysis of consumer behavior, thereby offering a perspective that has received limited attention in previous studies.

The objectives of this research are fourfold: (1) to reinterpret the *bulus* symbol as an eco-cultural and ecological signifier; (2) to examine the meanings attached to thrifting practices among coastal Muslim youth; (3) to analyze how symbolic awareness influences sustainable consumption behavior; and (4) to develop an eco-spiritual framework for understanding circular fashion practices. By bridging cultural heritage, environmental communication, and sustainable fashion, this study contributes to broader debates on circular consumption and demonstrates how local symbolic traditions can become meaningful resources for ecological transformation in contemporary society.

1. Literature Review

1.1 Fast Fashion and Environmental Crisis

Fast fashion has fundamentally transformed global consumption patterns by accelerating production cycles, encouraging trend replication, and promoting mass consumption. Contemporary fashion systems prioritize speed, low-cost production, and continuous replacement of garments, which contribute to shortened clothing life cycles and increased textile waste generation (Piucco *et al.* 2022; Mitchell, 2023). Consumers are increasingly encouraged to purchase new styles frequently, resulting in excessive clothing disposal and the accumulation of unwanted garments within the global waste stream (Chen *et al.* 2021).

The environmental impacts of the textile industry are significant, as fashion production requires extensive consumption of water, energy, and chemical resources while generating substantial amounts of waste throughout the supply chain. Synthetic textile materials further contribute to environmental degradation through microplastic pollution, while discarded garments create persistent waste management challenges (Chen *et al.* 2021; Ramírez-

Escamilla *et al.* 2024). The increasing ecological footprint of fashion has highlighted the urgent need to reconsider conventional production and consumption systems.

This linear model of “produce–consume–dispose” has been widely criticized by sustainability scholars because it promotes resource depletion and waste accumulation. In response, circular economy frameworks have emerged as alternative approaches that emphasize waste reduction, material recovery, reuse, repair, recycling, upcycling, and the extension of product life cycles within textile systems (Chen *et al.* 2021; Das *et al.* 2025; Ramírez-Escamilla *et al.* 2024). Circular fashion approaches seek to transform garments from disposable commodities into valuable resources that remain within economic and ecological cycles for longer periods (Randhawa, 2025; Kumar, 2025).

Within this framework, thrifting represents an important form of circular consumption because it extends garment lifespans, facilitates redistribution of existing clothing, and reduces demand for newly produced apparel. By keeping textiles in use for longer periods, second-hand fashion practices contribute to waste reduction and support more sustainable consumption patterns within the fashion industry (Ramírez-Escamilla *et al.* 2024; Das *et al.* 2025).

1.2 Thrifting and Sustainable Consumption

Thrifting refers to the practice of purchasing and using second-hand clothing. Once primarily associated with economic necessity, it has evolved into a global lifestyle trend, particularly among younger generations who increasingly view second-hand fashion as a sustainable alternative to fast fashion (Sridhar, 2025; Sumathy & Kesawaraj, 2025). Beyond financial considerations, thrifting has become a cultural practice that reflects changing consumer values related to environmental responsibility, individuality, and ethical consumption.

Recent studies identify several motivations that encourage consumers to engage in thrifting. Affordability remains one of the strongest drivers, as second-hand clothing provides access to fashionable items at significantly lower prices than new products (Sumathy & Kesawaraj, 2025; Anisa & Afif, 2025). At the same time, many consumers are attracted by the uniqueness and vintage aesthetics of thrifted garments, which allow them to express personal identity while avoiding mass-produced fashion trends (Sridhar, 2025; Ramdan & Pertiwi, 2025). These motivations are especially evident among Generation Z, who often value authenticity and individuality in their fashion choices (Anisa & Afif, 2025).

Environmental concern has also become a major factor influencing thrifting behavior. By extending the lifespan of garments, thrifting contributes to reducing textile waste, conserving natural resources, and supporting more sustainable patterns of consumption (Aryaputra *et al.* 2023; Sumathy & Kesawaraj, 2025). In addition, many consumers perceive purchasing second-hand clothing as an ethical consumption practice because it reduces demand for resource-intensive fast fashion production and encourages a circular economy (Ramdan & Pertiwi, 2025). Consequently, thrifting has increasingly been framed as a practical strategy for minimizing the environmental impacts associated with excessive clothing production and disposal.

For many young consumers, thrifting also represents a symbolic form of resistance to the wasteful logic of fast fashion and consumer culture. Rather than continuously purchasing newly manufactured products, they reinterpret second-hand clothing as a meaningful expression of sustainability, creativity, and conscious consumption (Podkalicka & Potts, 2014; Haraldsson & Peric, 2017). Through this perspective, garments acquire extended social and environmental value beyond their original economic function.

Nevertheless, scholars caution that the rapid commercialization of thrifting presents important challenges. As second-hand fashion becomes increasingly popular, it risks being transformed into another trend-driven market in which excessive purchasing behavior is justified through the language of sustainability (Aryaputra *et al.* 2023; Sumathy & Kesawaraj, 2025). Rising demand, increasing resale prices, and the commodification of vintage fashion may weaken the environmental benefits traditionally associated with thrift shopping. Therefore, understanding thrifting requires not only examining its economic and environmental dimensions but also its moral, symbolic, and cultural meanings within contemporary sustainable consumption practices (Podkalicka & Potts, 2014; Ramdan & Pertiwi, 2025).

1.3 Eco-Spirituality and Environmental Ethics

Eco-spirituality refers to ecological awareness grounded in spiritual, ethical, and moral understandings of the relationship between humans and the natural environment. Rather than viewing environmental protection solely as a scientific or technical concern, eco-spirituality frames ecological responsibility as a moral and spiritual obligation that encourages harmonious coexistence between humans, other living beings, and the Earth (Encep *et al.* 2022;

Gada, 2024). This perspective has become increasingly relevant in sustainability discourse because it integrates environmental conservation with religious values, cultural traditions, and ethical behavior (Syihabuddin *et al.* 2023).

Within Islamic environmental ethics, humans are regarded as *khalifah* (stewards) entrusted with maintaining the balance of creation. Consequently, environmental responsibility encompasses principles such as moderation (*wasatiyyah*), avoiding wastefulness (*israf*), justice, stewardship, and maintaining ecological balance as expressions of obedience to God (Gada, 2024; *An Islamic Perspective on Ecology and Sustainability*, 2023; *An Analytical Study of Islamic Faith and Ethics in the Context of Environmental Sustainability*, 2025). These principles encourage sustainable lifestyles by emphasizing accountability toward both society and the natural environment rather than unrestricted consumption.

Eco-spiritual values are also deeply embedded in Javanese Islamic traditions, where local wisdom, cultural symbols, myths, rituals, and collective narratives function as moral media for transmitting environmental ethics across generations. Indigenous concepts such as *Hamemayu Hayuning Bawana* emphasize the human responsibility to preserve harmony between people, nature, and the divine, while sacred places and culturally significant landscapes reinforce ecological stewardship through shared spiritual meanings (Hutama, 2025; Rahmayani *et al.* 2025; Suwarno *et al.* 2025). In this context, cultural symbols serve not only as representations of historical identity but also as mechanisms for shaping environmental values, collective memory, and community behavior.

Building upon these perspectives, this study argues that sustainability practices become more socially meaningful and culturally legitimate when environmental messages are communicated through familiar spiritual and cultural narratives. Integrating Islamic environmental ethics with local cultural symbolism can strengthen environmental awareness, foster collective responsibility, and encourage sustainable behavior that resonates with the lived experiences of local communities (Bensaid, 2018; Syihabuddin *et al.* 2023; Suwarno *et al.* 2025).

1.4 Bulus Symbolism in Javanese Islamic Heritage

The *bulus* (softshell turtle) occupies an important place in Javanese cultural memory and Islamic heritage, particularly in Central Java. Within local traditions, the *bulus* appears in folklore, sacred legends, and ritual practices that have been transmitted across generations. Rather than functioning solely as an animal symbol, it represents a cultural sign through which communities express historical memory, moral values, and relationships between humans, nature, and the sacred (Wahyudi *et al.* 2023; Nasir, 2019; Zuhri, 2022).

Historical narratives surrounding the *bulus* demonstrate how pre-Islamic beliefs were gradually reinterpreted through Islamic cultural frameworks. In earlier Javanese cosmology, the *bulus* was associated with fertility, protection, and supernatural power. As Islam spread throughout Java, these meanings were not completely abandoned but were vernacularized into Islamic cultural narratives, allowing local symbols to coexist with religious teachings while acquiring new ethical and spiritual significance (Wahyudi *et al.* 2023; Zuhri, 2022; Maharsi, 2023). This process reflects the broader pattern of cultural accommodation that characterizes Javanese Islam, where local traditions continue to function as media for symbolic communication and religious values (Nasir, 2019; Ariyadi, 2025; Ubaidillah, n.d.).

The symbolic significance of the *bulus* is also reflected in ritual traditions and oral narratives. The annual Bulusan tradition in Kudus preserves collective memory through folklore and communal ceremonies, reinforcing social cohesion and cultural identity (Wahyudi *et al.* 2023). Similarly, the legend of Sendang Bulus in Ponorogo associates the *bulus* with the Javanese philosophical concept of *memayu hayuning bawana*, which emphasizes harmony between humans, nature, and the cosmos (Pramudiyanto & Sari, 2024). Contemporary cultural productions, including the film *Setan Jawa*, further illustrate how the *bulus* continues to serve as a powerful symbolic figure whose meanings evolve across different social and historical contexts (Pangestu *et al.* 2025).

Building upon these cultural and religious interpretations, this study proposes an ecological reinterpretation of the *bulus* symbol. Rather than viewing the *bulus* solely as a historical or mythical icon, it is conceptualized as a symbolic framework for sustainable living. The characteristics traditionally associated with the *bulus* can be interpreted through contemporary sustainability principles: its slow movement symbolizes moderation and resistance to excessive consumption; its protective shell represents resilience and environmental protection; its ability to inhabit both land and water reflects adaptation and coexistence with diverse ecosystems; and its longevity signifies intergenerational responsibility and the continuity of environmental stewardship. These ecological meanings are not presented as original historical interpretations but as a contemporary symbolic reading that bridges Javanese Islamic heritage with environmental ethics and sustainable consumption. Through this reinterpretation, the *bulus* becomes a cultural symbol that connects heritage identity, eco-spiritual values, and sustainability practices.

1.5 Sustainable Consumption and Symbolic Behavior

Consumption is no longer understood solely as an economic activity but also as a social and symbolic practice through which individuals construct and communicate their identities, values, and moral commitments (Costa *et al.* 2021; Sutanto *et al.* 2025). Purchasing decisions, including the choice to consume second-hand clothing, are influenced not only by functional needs but also by cultural meanings, environmental awareness, and social interactions that shape consumer behavior (Musa *et al.* 2025).

Within the context of sustainable consumption, environmental communication scholars argue that pro-environmental behavior is more likely to emerge when sustainability is communicated through culturally meaningful narratives and shared symbolic systems rather than through technical or scientific information alone (Promotion of Cultural Narratives and Practices That Inspire Environmental Consciousness, 2025). Cultural narratives help individuals connect environmental responsibility with personal beliefs, emotions, and collective identities, thereby strengthening long-term commitment to sustainable lifestyles (Cultural Narratives and Their Impact on Sustainable Business, 2025).

Thrifting illustrates this symbolic dimension of sustainable consumption. Beyond its economic benefits, second-hand fashion has become a means of expressing environmental concern, anti-consumerist values, uniqueness, and ethical responsibility (Devi *et al.* 2025; Widyaningsih *et al.* 2025). Previous studies also indicate that motivations for thrifting extend beyond affordability to include ecological consciousness, frugality, religious values, and social identity, demonstrating that second-hand consumption functions as both a practical and symbolic form of environmental engagement (Sridhar, 2025; Widyaningsih *et al.* 2025). Accordingly, this study positions thrifting not merely as a market behavior but as a symbolic environmental practice shaped by eco-spiritual narratives, cultural meanings, and moral values that encourage sustainable consumption.

2. Theoretical Framework

This study draws on four complementary theoretical perspectives to explain how thrifting can be understood as a form of sustainable consumption shaped by symbolic meaning, spiritual values, circular economic practices, and environmental communication.

2.1 Symbolic Interactionism

Symbolic interactionism explains that meaning is created through social interaction and interpretation. Rather than viewing social interaction as merely a setting for behavior, this perspective considers it the process through which human behavior is formed (Blumer, 1969). Individuals do not simply respond to external stimuli; they interpret situations based on shared symbols and ongoing social interactions (Blumer, 1969). As Blumer (1969) argues, people act toward things according to the meanings those things hold for them, and these meanings emerge and develop through interaction with others. From this perspective, thrifting is more than an economic activity. It is a socially constructed practice that carries symbolic meanings associated with responsibility, identity, and ethical consumption.

2.2 Eco-Spirituality

Eco-spirituality links environmental behavior with moral and spiritual awareness. It is an interdisciplinary field that explores the relationship between religion, spirituality, ecology, and environmentalism through intellectual, emotional, and practical engagement (Sponsel, 2024). Scholars argue that many environmental problems originate not only from technological or economic systems but also from underlying beliefs, values, and attitudes toward nature. Addressing challenges such as biodiversity loss, climate change, and excessive consumption therefore requires a renewed understanding of humanity's spiritual relationship with the Earth and its moral responsibility to protect it (Sponsel, 2024). Ecological responsibility is grounded in values such as simplicity, gratitude, balance, and stewardship, which are also central to nature-based spiritual traditions (Taylor, 2010). Within this framework, choosing second-hand clothing can be understood as an expression of ethical living that reflects both environmental concern and spiritual responsibility.

2.3 Circular Economy

Circular economy theory emphasizes reducing waste by extending the life cycle of products through reuse, repair, recycling, and resource circulation. Rather than following the traditional linear model of production and disposal, the circular economy seeks to redesign production and consumption systems according to a cradle-to-cradle approach, where materials and resources remain in use for as long as possible (Ghisellini *et al.* 2016). Reuse, in particular, refers to any operation in which products or their components are used again for the same purpose

without becoming waste (European Union, 2008, as cited in Ghisellini *et al.* 2016). Thrifting reflects these principles by extending the useful life of clothing and reducing demand for newly produced garments. It therefore represents a practical form of circular consumption that contributes to waste reduction and resource efficiency.

2.4 Environmental Communication

Environmental communication examines how language, narratives, and symbols shape public understanding of environmental issues. This perspective argues that communication does not simply describe nature; it also influences how people perceive, value, and respond to it (Cox, 2013). Cox (2013) introduces the concept of *condensation symbols* - words, images, or phrases that evoke strong emotional responses by connecting with deeply held cultural values. Such symbols can encourage public engagement with environmental concerns by making complex issues more meaningful and relatable. In this study, environmental communication provides a framework for understanding how symbolic narratives surrounding thrifting can promote sustainable consumption. Shared cultural meanings and ethical messages help transform everyday consumption practices into expressions of environmental responsibility.

3. Methodology

3.1 Research Design

This study employed an explanatory mixed-methods design integrating quantitative survey data with qualitative field observations and semi-structured interviews. The quantitative component examined general patterns of thrifting behavior and sustainable consumption among Muslim youth in coastal Central Java, while the qualitative component explored how participants interpreted second-hand clothing consumption in relation to environmental awareness, Islamic ethical values, and the cultural symbolism of the *Bulus*. The integration of both approaches enabled the study to examine not only behavioral tendencies but also the meanings and narratives underlying those behaviors.

3.2 Data Collection

Qualitative data were collected during a community-based low-cost clothing bazaar (*Pasar Murah*) held in Bungo Village, Wedung District, Demak Regency. The event served as a natural setting where participants actively engaged in selecting, examining, and discussing second-hand clothing. Forty participants were purposively involved in the qualitative component, consisting primarily of adolescents and children, together with teachers, students, local MSME actors, and visitors attending the bazaar. These participants represented various social backgrounds commonly found in coastal Muslim communities.

Semi-structured interviews were conducted informally while participants were selecting garments or browsing clothing displays. Rather than relying on formal interview sessions, conversations emerged naturally during the shopping process, allowing participants to express spontaneous opinions regarding clothing quality, purchasing considerations, environmental concerns, affordability, and personal meanings associated with wearing second-hand clothing. This naturalistic approach captured participants' everyday reflections within an authentic consumption setting.

Participant observation was conducted continuously from morning until midday throughout the bazaar activities. The researcher documented participants' interactions, purchasing behavior, non-verbal responses, spontaneous remarks, conversations among family members and peers, and observable decision-making processes during clothing selection. Field notes and visual documentation complemented the interview data by providing contextual information regarding the social dynamics surrounding thrifting practices.

The quantitative component consisted of a questionnaire survey involving 215 respondents from coastal communities in Central Java who were familiar with or had experience with thrifting activities. The survey measured ecological awareness, anti-fast fashion attitudes, symbolic attachment to local culture, sustainable consumption orientation, and self-reported thrifting behavior.

3.3 Data Analysis

Qualitative data were analyzed using reflexive thematic analysis following the six-phase procedure proposed by Braun and Clarke (2006). Interview transcripts, field notes, observation records, and participants' spontaneous remarks were first read repeatedly to achieve data familiarization. Initial open codes were then generated inductively from the data before being organized into broader categories reflecting recurring patterns.

The coding process focused on themes related to (1) environmental awareness, (2) Islamic ethical values concerning moderation (*anti-israf*) and responsible consumption, (3) economic motivations, (4) social meanings of

second-hand clothing, and (5) symbolic interpretations of the Bulus as a representation of ecological responsibility and modest living. These themes were subsequently reviewed, refined, and interpreted to develop an integrated understanding of eco-spiritual meanings associated with thrifting behavior.

Quantitative data were analyzed using descriptive statistics to identify general behavioral patterns among respondents. The findings from both datasets were integrated during the interpretation stage through triangulation, allowing qualitative evidence to explain and contextualize the broader quantitative patterns. Rather than establishing causal relationships, the integrated analysis was used to explore how ecological awareness, Islamic ethical values, and local cultural symbolism collectively contribute to participants' understanding of sustainable consumption within coastal Muslim communities.

4. Results and Discussions

The findings presented in this section are derived from the integration of two complementary datasets. The qualitative findings are based on a purposive subsample of 40 participants who took part in a community-based low-cost clothing bazaar (*Pasar Murah*) held in Bungo Village, Wedung District, Demak Regency. This qualitative subsample included adolescents, children, students, teachers, local MSME actors, and bazaar visitors who were interviewed and observed while selecting or browsing second-hand clothing. Their spontaneous conversations, observed behaviors, and field interactions provided contextual insights into the meanings attached to thrifting practices.

The quantitative findings are drawn from a separate survey involving 215 respondents from coastal Muslim communities in Central Java. The survey was designed to examine broader patterns of ecological awareness, attitudes toward fast fashion, symbolic attachment to local culture, and sustainable consumption orientation. The integration of these two datasets enables the findings to combine contextual interpretations from the qualitative inquiry with broader behavioral tendencies identified through the survey.

Together, these findings demonstrate how thrifting is understood not merely as an economic practice but as a socially and culturally embedded form of sustainable consumption shaped by environmental awareness, Islamic ethical values, and local ecological symbolism.

4.1 Thrifting as Ethical Consumption

This theme emerged consistently from the qualitative interviews and participant observations conducted during the *Pasar Murah*, and was further supported by the broader survey findings indicating positive attitudes toward clothing reuse.

The findings indicate that respondents perceive thrifting as a morally preferable alternative to fast fashion. Rather than viewing second-hand shopping merely as a means of saving money, participants described thrifting as a conscious lifestyle that reflects environmental responsibility and ethical consumption. Respondents repeatedly associated second-hand clothing with reducing textile waste, extending garment life, minimizing unnecessary consumption, and resisting the culture of excessive purchasing promoted by fast fashion. These perceptions are consistent with previous studies suggesting that contemporary thrifting has evolved into a form of sustainable consumption motivated by environmental awareness, ethical values, and anti-consumerist attitudes rather than purely economic necessity (Cervellon *et al.* 2012; Guiot & Roux, 2010; Park & Lin, 2020).

One participant explained:

"Buying second-hand clothes feels more responsible because we reuse what already exists instead of producing more waste."

This statement reflects the principles of circular consumption, in which products are kept in use for as long as possible to reduce resource extraction and environmental degradation (Joy *et al.* 2012; Niinimäki *et al.* 2020). By extending the lifespan of clothing, consumers contribute to reducing textile waste while challenging the linear model of production and disposal that characterizes the fast fashion industry (Ellen MacArthur Foundation, 2017).

Another respondent connected thrifting with Islamic teachings about avoiding excess (*isrāf*) and practicing moderation (*wasatiyyah*). According to the participant, purchasing second-hand clothing represents an effort to consume responsibly while remaining consistent with religious values emphasizing simplicity, gratitude, and stewardship of natural resources. This finding aligns with Islamic environmental ethics, which encourage moderation, prohibit wastefulness, and regard humans as *khalifah* entrusted with protecting the environment (Foltz *et al.* 2003; Izzi Dien, 2000; Nasr, 1996).

Overall, these findings demonstrate that thrifting behavior among young consumers is shaped not only by economic considerations but also by ethical consciousness. Participants interpreted second-hand consumption as

an environmentally responsible practice that simultaneously expresses personal morality and religious commitment. This supports previous research suggesting that sustainable consumption is influenced by symbolic meanings and moral values embedded within cultural and social contexts rather than by economic rationality alone (Jackson, 2005; McCracken, 1986; White *et al.* 2019). In this study, thrifting emerges as an ethical consumption practice through which environmental responsibility, personal identity, and Islamic moral values are integrated into everyday consumer behavior.

4.2 Eco-Spiritual Meanings of Reuse

This theme was identified primarily through qualitative thematic analysis of interviews, spontaneous participant remarks, and field observations conducted during the Pasar Murah in Bungo Village, while the survey findings provided complementary evidence regarding ecological awareness and symbolic attachment to local cultural values.

The qualitative findings indicate that many participants interpreted clothing reuse through moral and spiritual values rather than solely through economic or environmental considerations. During informal interviews conducted while participants browsed and selected second-hand clothing, respondents frequently described thrifting using expressions such as *living simply*, *being grateful for what is still usable*, *avoiding waste*, and *not being excessive in consumption*. These ideas emerged naturally in conversations and were reinforced by spontaneous remarks recorded during participant observation. Such findings suggest that sustainable consumption in coastal Muslim communities is embedded within everyday ethical reasoning rather than being driven exclusively by environmental knowledge. This interpretation is consistent with previous studies arguing that pro-environmental behavior is shaped not only by ecological awareness but also by cultural meanings, moral values, and spiritual worldviews (Kearins & Springett, 2003; White *et al.* 2019).

Many participants viewed reusing clothing as a way of respecting resources entrusted by God. Instead of treating garments as disposable commodities, they considered extending the life of clothing to be an expression of gratitude and responsibility. One secondary school teacher commented:

"Islam teaches us not to be wasteful. If clothes are still suitable to wear, there is no reason to throw them away simply to follow trends. Reusing them reflects gratitude for what God has provided."

Similarly, a university student explained:

"Buying second-hand clothes is not embarrassing. If something is still useful, it should continue to be used. Throwing away good clothes only creates more waste."

These statements resonate with Islamic environmental ethics, particularly the principles of avoiding *isrāf* (excessive consumption), practicing *wasatiyyah* (moderation), and fulfilling humanity's role as *khalifah* (steward) responsible for protecting creation (Nasr, 1996; Izzi Dien, 2000; Foltz *et al.* 2003).

Participant observations further supported these interpretations. Throughout the bazaar, visitors carefully examined garment quality before purchasing, exchanged recommendations with family members and friends, and frequently expressed satisfaction when finding durable clothing suitable for continued use. Spontaneous remarks such as *"it's still good, why throw it away?"* and *"someone else can benefit from this"* reflected practical expressions of anti-waste ethics and responsible consumption. These everyday interactions illustrate how environmental responsibility is negotiated through ordinary social practices rather than through formal environmental campaigns.

Although participants did not generally refer to the *Bulus* symbol spontaneously during shopping activities, many associated its ecological interpretation with the values they had already expressed once its meaning was briefly introduced during the conversation. Participants commonly interpreted the *Bulus* as representing patience, moderation, careful use of resources, and harmonious coexistence with nature. Rather than creating new consumption behaviors, the symbol functioned as a culturally meaningful narrative that reinforced ethical understandings already present within participants' religious and social values. In this sense, the *Bulus* served as a symbolic bridge connecting local cultural heritage with contemporary environmental responsibility, illustrating how traditional symbols can strengthen eco-spiritual interpretations of sustainable consumption.

The survey findings complement these qualitative insights by demonstrating generally positive attitudes toward clothing reuse and sustainable consumption among the broader sample of 215 respondents. When interpreted alongside the qualitative evidence, these results suggest that eco-spiritual values and local cultural narratives may contribute to strengthening favorable perceptions of thrifting as a socially responsible practice, although the present study does not establish a direct causal relationship between *Bulus* symbolism and individual consumption behavior.

Overall, these findings indicate that ecological behavior in coastal Muslim communities is culturally mediated through moral, religious, and symbolic narratives rather than solely through scientific environmental discourse. The

reinterpretation of the *Bulus* provides an eco-spiritual narrative that aligns Islamic ethical principles with sustainable consumption, transforming everyday practices such as thrifting and clothing reuse into meaningful expressions of environmental stewardship. These findings reinforce previous scholarship suggesting that sustainability initiatives become more effective when environmental messages are embedded within locally meaningful cultural symbols and community value systems (McCracken, 1986; Kearins & Springett, 2003; White *et al.* 2019).

4.3 Bulus as Symbolic Ecology

The proposed framework was developed through the integration of qualitative themes identified from interviews, spontaneous participant remarks, and field observations with broader quantitative patterns from the survey. It should therefore be understood as an empirically informed conceptual framework, rather than a statistically validated behavioral construct. The qualitative findings provide insight into how participants interpreted the *Bulus* symbol and connected it with ecological and moral values, while the quantitative findings provide complementary evidence regarding broader orientations toward sustainable consumption.

The findings indicate that not all participants were familiar with the academic or historical interpretations of the *Bulus* associated with the Great Mosque of Demak. However, when the cultural meaning and ecological interpretation of the symbol were introduced during informal conversations, the *Bulus* stimulated reflections on environmental responsibility, moderation, and sustainable living. This is an important distinction: the study does not assume that participants' existing thrifting practices were caused by their knowledge of the *Bulus*. Rather, the findings suggest that the *Bulus* can provide a culturally familiar symbolic vocabulary through which participants may articulate and reconsider values that are already present in their everyday lives. Such a process is consistent with Symbolic Interactionism, in which meanings are not regarded as fixed properties of objects but are constructed and reconstructed through social interaction and interpretation (Blumer, 1969).

During these conversations, participants associated the *Bulus* with qualities such as patience, balance, endurance, protection, and continuity. These interpretations were subsequently connected to ideas of moderation and more thoughtful consumption. For example, the slow movement of the *Bulus* was interpreted by some participants as a metaphor for not rushing to replace possessions simply because new products or fashion trends become available. The protective shell was associated with protection and resilience, while the animal's longevity was interpreted as a reminder of the importance of continuity and long-term care. These interpretations correspond with sustainability perspectives that emphasize sufficiency, durability, reduced consumption, and responsible resource use rather than continuous acquisition and disposal (Jackson, 2005; White *et al.* 2019; Niinimäki *et al.* 2020).

The ecological interpretation of the *Bulus* also intersected with participants' understanding of Islamic ethical principles. Some participants connected environmental responsibility with self-control, moderation, gratitude, and avoidance of unnecessary waste. These interpretations are compatible with Islamic environmental ethics emphasizing *wasatiyyah* (moderation), avoidance of *isrāf* (excess), the human role as *khalifah* (steward), and the maintenance of balance between human activities and the natural environment (Nasr, 1996; Izzi Dien, 2000; Foltz *et al.* 2003). Importantly, the findings do not suggest that participants uniformly possessed a formal understanding of Islamic environmental ethics. Rather, these principles emerged through participants' everyday moral language concerning waste, reuse, gratitude, and responsible use of resources.

The findings further demonstrate that the ecological meaning of the *Bulus* is socially constructed and contextually negotiated rather than inherently fixed. The same cultural symbol can carry historical, religious, architectural, and ecological meanings depending on the context in which it is discussed. Through conversations during the *Pasar Murah*, the *Bulus* was not simply presented as a historical feature associated with Demak's heritage; it became a point of reflection through which participants could relate local heritage to contemporary concerns about consumption and environmental degradation. This process is consistent with symbolic consumption theory, which emphasizes that cultural objects can acquire meanings related to identity, values, and social relationships beyond their material functions (McCracken, 1986).

This reinterpetive process is particularly relevant to the context of Demak, where cultural heritage and environmental vulnerability coexist. The *Bulus* can therefore be understood as a symbolic ecological mediator: not a direct determinant of thrifting behavior, but a cultural reference through which environmental responsibility, moderation, and local identity can be discussed together. In this sense, the ecological significance of the *Bulus* emerges through the interaction between heritage meaning and contemporary environmental concerns. This interpretation extends previous discussions of sustainability communication by suggesting that local cultural symbols may provide culturally resonant entry points for discussing sustainable consumption (Kearins & Springett, 2003; White *et al.* 2019).

Overall, the findings suggest that the reinterpretation of the *Bulus* may contribute to shaping environmentally responsible consumption values among coastal Muslim communities by connecting sustainability with locally meaningful cultural and religious narratives. However, the evidence does not establish that *Bulus* symbolism directly increases thrifting behavior or causes behavioral change. Instead, the findings indicate that the symbol may support, reinforce, or provide language for values such as moderation, reuse, resource stewardship, and ecological responsibility. This distinction is important because the present study captures participants' interpretations, attitudes, and observed practices rather than measuring behavioral change over time.

Accordingly, the *Bulus* is conceptualized in this study not as a behavioral intervention in itself, but as a symbolic ecological resource within an eco-spiritual approach to sustainable consumption. Its potential contribution lies in translating relatively abstract concepts of circularity, sufficiency, and environmental stewardship into a locally recognizable narrative grounded in Demak's cultural heritage. This provides a basis for the proposed Eco-Spiritual Circular Behavior Framework, while also indicating the need for future longitudinal or experimental research to examine whether exposure to such cultural-symbolic narratives is associated with measurable changes in sustainable consumption behavior.

4.4 Sustainable Identity Among Muslim Youth

The findings suggest that thrifting may function not only as a consumption practice but also as a form of identity expression among Muslim youth. Within the qualitative data collected during the *Pasar Murah*, participants frequently described second-hand clothing in terms of simplicity, practicality, environmental responsibility, and ethical consumption. For some participants, choosing reused clothing appeared to represent a way of expressing personal values concerning moderation, avoiding unnecessary waste, and responsible use of resources. These findings are consistent with previous research suggesting that consumption practices can function as symbolic expressions of identity and social values rather than merely satisfying material needs (McCracken, 1986; Jackson, 2005).

Several participants contrasted thrifting with highly consumption-oriented forms of fast fashion. New clothing purchased primarily to follow rapidly changing trends was sometimes associated with unnecessary consumption, whereas second-hand clothing was described using terms such as *simple*, *still useful*, *not wasteful*, and *good enough to wear*. Such interpretations suggest that participants may attach symbolic value to reuse as an alternative to excessive consumption. This observation is broadly consistent with research showing that second-hand consumption can be associated with authenticity, individuality, anti-consumption orientations, and resistance to conventional consumer culture (Guiot & Roux, 2010; Cervellon *et al.* 2012; Park & Lin, 2020).

For Muslim participants, these meanings were also sometimes interpreted through religious values. The preference for using clothing for longer periods and avoiding unnecessary disposal was perceived as compatible with *wasatiyyah* (moderation) and avoidance of *isrāf* (excessive consumption). Islamic environmental scholarship similarly emphasizes moderation, stewardship, and responsible resource use as important dimensions of an environmentally conscious way of life (Nasr, 1996; Izzi Dien, 2000; Foltz *et al.* 2003). The present findings therefore suggest that sustainable identity may be constructed through the intersection of environmental concerns, religious ethics, and everyday consumption practices rather than through environmental awareness alone.

Digital media also appeared in participants' accounts as an important context for the circulation and normalization of sustainable-fashion meanings. Participants referred to social-media content, online thrift communities, styling practices, and anti-fast-fashion discussions as sources through which they encountered ideas about second-hand clothing and sustainable fashion. However, the present study does not establish that digital media directly caused participants to adopt thrifting practices. Rather, the qualitative evidence indicates that digital platforms provide spaces in which particular consumption meanings can be encountered, shared, discussed, and socially validated. This interpretation is compatible with research emphasizing the role of social and cultural meanings in shaping sustainable consumption orientations (White *et al.* 2019).

The qualitative findings also revealed an important tension within thrifting culture. Several participants recognized that buying large quantities of second-hand clothing merely because items are inexpensive, fashionable, or suitable for social-media content can reproduce patterns of excessive consumption. In this situation, the fact that a garment is second-hand does not necessarily make the overall consumption practice sustainable. This observation is particularly relevant to the concept of circular consumption because extending the life of products does not automatically eliminate overconsumption. Sustainable consumption also requires attention to the quantity of goods acquired, the frequency of purchasing, the duration of use, and the motivations underlying consumption decisions (Jackson, 2005; Niinimäki *et al.* 2020).

This tension provides an important qualification to the positive association between thrifting and sustainable identity. The findings suggest that thrifting should not automatically be equated with sustainable consumption. Its environmental significance depends partly on how reuse is practiced and what values accompany it. A consumer who purchases second-hand clothing frequently and excessively may still participate in a consumption pattern that conflicts with principles of sufficiency and moderation. Conversely, purchasing fewer garments and extending their useful life may be more consistent with the environmental and ethical dimensions of circular consumption.

Taken together, the qualitative findings suggest that sustainable identity among Muslim youth may emerge through the intersection of reuse practices, environmental awareness, Islamic ethical values, and culturally meaningful narratives. In this context, thrifting can provide a practical expression of values such as moderation, resource stewardship, and avoidance of unnecessary waste. The *Bulus* adds another symbolic layer to this process by providing a locally rooted cultural reference through which ideas of patience, protection, continuity, and ecological responsibility can be articulated.

However, these findings should not be interpreted as evidence that thrifting or *Bulus* symbolism directly produces sustainable identity or causes behavioral change. The study captures participants' reported meanings, attitudes, and observed practices at a particular community event, complemented by survey data from 215 respondents. Therefore, the findings indicate associations and interpretive patterns rather than causal effects. Future longitudinal research could examine whether these symbolic and ethical orientations are maintained over time and whether they are associated with measurable changes in purchasing frequency, clothing use duration, disposal practices, and other dimensions of circular consumption.

Overall, the findings support the proposition that sustainable fashion among Muslim youth can be understood as a symbolic and ethical practice, rather than solely as an economic or environmental choice. When thrifting is interpreted through moderation, responsibility, ecological awareness, and local cultural meaning, it may serve as one expression of a broader sustainable identity. This interpretation extends previous research on symbolic consumption and sustainable behavior by highlighting the potential role of culturally and religiously embedded meanings in how young consumers understand and communicate responsible consumption (McCracken, 1986; Kearins & Springett, 2003; White *et al.* 2019)

4.5 Eco-Spiritual Circular Behavior

Based on the integrated findings, this study proposes Eco-Spiritual Circular Behavior (ESCB) as an empirically informed conceptual framework for interpreting sustainable consumption among Muslim youth and other community members in coastal communities. The framework emerged from the convergence of qualitative themes identified through interviews, spontaneous participant remarks, and field observations during the *Pasar Murah*, together with broader patterns identified from the survey of 215 respondents. The framework should not be interpreted as a newly validated behavioral construct or as evidence of a causal relationship between eco-spiritual values and thrifting behavior. Rather, it provides an interpretive framework for understanding how environmental concerns, religious ethics, cultural symbolism, and circular consumption practices may be interconnected within a particular socio-cultural context.

In this study, eco-spiritual circular behavior refers to consumption practices in which environmental responsibility is interpreted through a combination of ecological awareness, moral values, spiritual meanings, and culturally embedded understandings of responsible resource use. This conceptualization extends conventional approaches to circular consumption by drawing attention to the meanings and value systems through which circular practices are understood and enacted. While circular economy research commonly emphasizes resource efficiency, reuse, repair, and waste reduction, sustainable consumption research has increasingly recognized that consumer practices are also shaped by values, identities, social norms, and cultural meanings (Jackson, 2005; Ellen MacArthur Foundation, 2017; White *et al.* 2019; Niinimäki *et al.* 2020).

The framework is theoretically informed by Symbolic Interactionism, which proposes that meanings emerge and are continuously negotiated through social interaction (Blumer, 1969), and by symbolic consumption theory, which emphasizes the role of consumption practices in communicating identity, values, and social meanings (McCracken, 1986). In the present study, second-hand clothing was not understood exclusively in terms of economic affordability or material reuse. Participants also attached meanings related to simplicity, avoiding waste, gratitude, environmental responsibility, and religiously informed moderation. These findings suggest that the sustainability meaning of a consumption practice is partly dependent on the cultural and moral context in which that practice is interpreted.

Four interrelated analytical dimensions emerged from the findings.

First, symbolic ecological awareness refers to the interpretation of local cultural symbols as resources for articulating ecological meanings. In this study, the *Bulus* associated with the Great Mosque of Demak provided an example of how a historical cultural symbol could be reinterpreted in relation to contemporary ecological concerns. Participants did not uniformly possess prior knowledge of the historical or academic meanings of the *Bulus*. However, when its ecological interpretation was introduced during conversations, some participants associated its characteristics - such as slowness, protection, endurance, and continuity - with moderation, careful resource use, and ecological responsibility. The *Bulus* therefore functions in this framework not as a direct behavioral determinant but as a symbolic ecological reference through which sustainability can be discussed in locally meaningful terms.

Second, moral-ecological orientation refers to the connection between environmental responsibility and moral or religious values. Participants' accounts contained ideas corresponding to *wasatiyyah* (moderation), avoidance of *isrāf* (excessive consumption), gratitude, and human responsibility as *khalifah* or steward of creation. These interpretations are consistent with Islamic environmental scholarship emphasizing moderation, responsible resource use, stewardship, and balance between human activity and the natural environment (Nasr, 1996; Izzi Dien, 2000; Foltz *et al.* 2003). The findings suggest that these values may provide a moral language through which everyday practices such as reuse and clothing consumption are evaluated.

Third, circular consumption practice refers to observable or reported practices associated with extending the useful life of products, including purchasing second-hand clothing, reusing garments, reducing unnecessary disposal, and considering whether an item remains usable before purchasing or discarding it. These practices correspond with fundamental principles of circular economy and sustainable consumption, particularly the extension of product lifetimes and reduction of unnecessary material waste (Ellen MacArthur Foundation, 2017; Niinimäki *et al.* 2020). Importantly, however, the findings also reveal that second-hand consumption is not automatically sustainable. Purchasing excessive quantities of inexpensive second-hand clothing may reproduce consumption patterns that are inconsistent with sufficiency. Thus, the circular dimension of the framework concerns not simply what is purchased but also how much, how often, for what purpose, and for how long products are used.

Fourth, socially embedded environmental responsibility refers to the role of interpersonal interaction, community settings, digital communication, and shared cultural narratives in shaping how sustainable consumption is discussed and interpreted. The *Pasar Murah* provided a social setting in which participants could exchange opinions, observe others' choices, and discuss the value and usability of second-hand clothing. Digital media similarly appeared in participants' accounts as a context in which sustainable-fashion meanings could be encountered and circulated. These observations are consistent with research emphasizing the social and symbolic dimensions of sustainable consumption (Kearins & Springett, 2003; White *et al.* 2019). Nevertheless, the present study does not establish that community interaction or digital media directly produces sustainable behavior; rather, the findings indicate that these social contexts provide opportunities for sustainability meanings to be shared and negotiated.

The four dimensions can therefore be understood as interconnected analytical components rather than statistically independent variables. Symbolic ecological awareness provides a cultural vocabulary; moral-ecological orientation provides an ethical interpretive framework; circular consumption practice represents the observable or reported consumption dimension; and socially embedded environmental responsibility describes the social context in which these meanings are negotiated. Their relationship is therefore conceptual rather than causal:

Cultural Symbolism → Moral-Ecological Interpretation → Circular Consumption Meaning/Practice ↔ Social Context

This conceptualization differs from a conventional behavioral model in which one variable is assumed to predict another. Instead, it emphasizes the possibility that sustainable consumption emerges through interactions among meanings, values, practices, and social contexts. Such an interpretation is consistent with the broader argument that consumption practices are socially and culturally embedded rather than determined exclusively by rational calculations of economic or environmental benefit (Jackson, 2005; McCracken, 1986; White *et al.* 2019).

The framework also contributes to the literature by bringing together four bodies of scholarship that are often discussed separately: circular economy, sustainable consumption, symbolic interactionism, and eco-spirituality. Circular economy perspectives explain the material dimension of reuse and resource conservation; sustainable consumption research addresses consumer practices and environmental responsibility; Symbolic Interactionism explains how meanings are constructed through interaction; while eco-spiritual perspectives illuminate the moral and spiritual dimensions of environmental responsibility. Their integration provides a culturally situated interpretation of sustainable consumption that is particularly relevant to communities where environmental practices intersect with religious and cultural identities.

The role of the *Bulus* is particularly important within this framework because it illustrates how local heritage can become a contemporary symbolic resource for sustainability discourse. The findings do not demonstrate that knowledge of the *Bulus* causes participants to engage in thrifting. Instead, they suggest that the ecological reinterpretation of the symbol may provide a culturally resonant way of connecting ideas of moderation, continuity, protection, and responsible resource use with contemporary sustainability concerns. In this respect, the *Bulus* operates as a symbolic mediator between cultural heritage and ecological meaning, rather than as a direct predictor of consumer behavior.

4.5.1 Integration of Qualitative and Quantitative Evidence

Integration occurred at the interpretation stage through methodological triangulation. The quantitative survey involving 215 respondents was used to identify broader patterns in ecological awareness, sustainable consumption orientation, and thrifting-related attitudes. These patterns were subsequently interpreted alongside qualitative evidence obtained from the 40 participants involved in the *Pasar Murah*, including informal interviews, spontaneous remarks, participant observations, and field notes.

The two datasets therefore served complementary rather than interchangeable purposes. The survey provided broader descriptive evidence regarding sustainable consumption orientations, whereas the qualitative data provided contextual explanations of how participants understood reuse, moderation, environmental responsibility, and the *Bulus* within an everyday community setting. Where the two datasets converged, the qualitative evidence helped contextualize the broader quantitative patterns. Where differences or tensions emerged, such as the distinction between thrifting as sustainable reuse and excessive second-hand purchasing, the qualitative findings provided additional nuance rather than being treated as confirmation of a causal relationship.

Accordingly, the Eco-Spiritual Circular Behavior Framework should be regarded as a conceptual proposition generated from the empirical findings of this study. Its four dimensions provide a basis for future empirical testing, including the development and validation of measurement instruments, structural modeling, longitudinal research, or comparative studies across different Muslim and coastal communities. Such future research would be necessary before the framework could be considered a validated behavioral construct or before causal relationships among its dimensions could be established.

Overall, the proposed framework suggests that sustainable consumption may be more meaningfully understood when circular practices are examined together with the cultural symbols, moral values, spiritual interpretations, and social contexts in which those practices occur. In the context of coastal Muslim communities in Demak, the *Bulus* provides one locally grounded example of how heritage symbolism may be reinterpreted as an ecological narrative. Its significance lies not in proving that a traditional symbol changes consumer behavior, but in demonstrating how local cultural heritage can provide a meaningful language through which contemporary sustainability values are interpreted, discussed, and potentially incorporated into everyday consumption practices.

4.6 Implications for Environmental Communication

The findings demonstrate that local cultural symbols can serve as powerful instruments for environmental communication by making sustainability messages more meaningful within local social and cultural contexts. While environmental campaigns frequently rely on scientific evidence, technical information, and policy-oriented discourse, the present study suggests that culturally embedded narratives may generate stronger emotional engagement and encourage deeper behavioral commitment. Sustainability messages become more persuasive when they resonate with values, identities, and shared cultural experiences that communities already recognize and embrace (White *et al.* 2019; Kearins & Springett, 2003).

The reinterpretation of the bulus symbol illustrates how local heritage can be transformed into a contemporary ecological narrative without losing its cultural and historical significance. Through social interaction and collective interpretation, respondents reconstructed the symbolic meaning of the *bulus* from a historical marker associated with the Great Mosque of Demak into a representation of moderation, resilience, balance, protection, and environmental stewardship. This process reflects the central proposition of symbolic interactionism that meanings are continuously created and negotiated through human interaction (Blumer, 1969). It also supports symbolic consumption theory, which emphasizes that symbols communicate moral values and collective identities beyond their original material or historical functions (McCracken, 1986).

The findings further indicate that environmental communication in culturally embedded societies such as Indonesia may become more effective when sustainability messages are connected to collective memory, local cultural symbols, religious ethics, and moral narratives. Rather than presenting environmental responsibility solely as a scientific obligation, respondents interpreted sustainable consumption through familiar concepts rooted in

Islamic teachings, including moderation (*wasatiyyah*), gratitude, avoidance of waste (*isrāf*), and stewardship (*khalifah*) (Nasr, 1996; Izzi Dien, 2000; Foltz *et al.* 2003). These values provided an ethical foundation that strengthened participants' willingness to adopt environmentally responsible behaviors.

This finding also complements previous studies arguing that pro-environmental behavior is more likely to be sustained when environmental messages are embedded within culturally meaningful symbolic systems rather than communicated exclusively through technical or regulatory approaches (Jackson, 2005; White *et al.* 2019). In the context of coastal Muslim communities, local heritage functions not merely as cultural preservation but also as a communication resource capable of translating abstract sustainability concepts into everyday moral practices.

Overall, this study suggests that environmental communication strategies should move beyond information-based campaigns toward culturally grounded approaches that integrate heritage, spirituality, and local wisdom. The bulus symbol demonstrates how indigenous cultural heritage can become an effective medium for promoting sustainable consumption by connecting ecological responsibility with collective identity, religious values, and shared historical memory. Such an approach enriches contemporary environmental communication by showing that long-term sustainability is fostered not only through scientific knowledge and policy interventions but also through culturally resonant narratives that inspire moral commitment and collective environmental action (Kearins & Springett, 2003; White *et al.* 2019).

Conclusion

This study explored how the reinterpretation of the bulus symbol shapes eco-spiritual understandings of sustainable consumption among coastal Muslim youth in Java. Rather than viewing thrifting simply as an economic strategy or a contemporary fashion trend, the findings demonstrate that second-hand consumption is embedded within broader symbolic, cultural, and religious value systems. Sustainability is therefore understood not only as an environmental concern but also as a moral practice informed by local heritage, Islamic ethics, and collective identity.

The study shows that the bulus, historically recognized as part of the cultural heritage of the Great Mosque of Demak, can be reinterpreted as an ecological symbol representing moderation, resilience, balance, and continuity. Through this reinterpretation, local cultural heritage becomes a meaningful medium for communicating environmental responsibility. The findings suggest that sustainable behavior is strengthened when environmental messages are connected to familiar cultural symbols and moral narratives rather than relying solely on scientific or policy-oriented discourse.

The principal theoretical contribution of this research is the development of the Eco-Spiritual Circular Behavior framework. Unlike conventional circular economy models that primarily emphasize material flows and resource efficiency, this framework explains sustainable consumption as the interaction of four mutually reinforcing dimensions: symbolic awareness, moral-ecological identity, circular consumption practices, and collective environmental responsibility. By integrating symbolic interactionism, eco-spirituality, and sustainable consumption theory, the framework demonstrates that circular behavior is shaped not only by environmental knowledge but also by culturally embedded symbolic meanings and ethical commitments.

These findings also offer practical implications for sustainability initiatives. Environmental communication, sustainability education, and circular fashion campaigns may become more effective when they incorporate local cultural heritage and religious values as part of their communication strategies. In culturally diverse societies such as Indonesia, heritage symbols can function as bridges between traditional wisdom and contemporary environmental challenges, encouraging behavioral change through narratives that communities perceive as meaningful and culturally legitimate.

This study is limited to coastal Muslim communities in Java and focuses primarily on the symbolic reinterpretation of a single cultural icon. Future studies should examine similar symbolic systems in other cultural and religious contexts to evaluate the broader applicability of the proposed framework. Comparative and quantitative research would also help test the relationships among symbolic awareness, eco-spiritual values, and sustainable consumption behaviors across different communities. Such investigations may further advance understanding of how local cultural heritage contributes to sustainability transitions and environmental communication in diverse socio-cultural settings.

Declarations

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Credit Authorship Contribution Statement

Dian Nafiatul Awaliyah: Conceptualization, Methodology, Investigation, Formal analysis, Data curation, Writing – original draft, Project administration, Funding acquisition.

Atik Suprapti: Supervision, Validation, Review.

Alamsyah: Supervision, Validation.

Djoko Wibowo: Visualization.

Dwi Devy: Administration.

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Declaration of Use of Generative AI and AI-Assisted Technologies: The authors declare that generative AI and AI-assisted technologies were not used in the research process, data collection, data analysis, or interpretation of the findings. Any use of AI-assisted tools for language or editorial support should be disclosed separately in accordance with the journal's policy. The authors retain full responsibility for the content, accuracy, and integrity of the manuscript.

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